concern primiparae with 2 to 3 fingers dilatation, with severe pain and slow progress. It will very often be useful also in multiparae with imperfect rotation of the occiput.

As with all methods of analgesia in obstetrics, the technique will vary according to the different types of patient. Provided, however, that the proper time is chosen to use it, one can count on anything between 4 and 8 hours of effective analgesia (and also a quite high degree of amnesia) if the patient does not unexpectedly develop second-stage pains—a condition which, of course, is due to imperfect judgment of the progress of labour, but which, even so, is of no great disadvantage, as any of the ordinary methods of anaesthesia used in the second stage are still applicable. About 15 to 20 minutes after the injection the patient begins to sleep fairly deeply between pains, but partially wakes up with a variable degree of restlessness during active contractions. Even then, if only gently restrained and not talked to, she will often know nothing about this period the following day. It is, however, imperative that a midwife be in attendance all the time, as the restlessness may lead to a patient's falling off the bed during the contraction phase. In a high proportion of cases—e.g., primiparae with 2 to 3 fingers dilatation and the occiput in front—this method will obscure and very often completely banish pain not only until full dilatation has occurred but possibly until the head is actually visible, and sometimes even to crowning. It is not expected to be efficient for actual delivery of the head.

Limitations.—It is quite obvious that the most important point is a fairly accurate assessment of the progress of labour. The fact that the patient must be continually watched by the midwife is perhaps a slight disadvantage, but this applies equally to a great many other methods. Again, as usual, some estimate of full dilatation is necessary without repeated examinations, but for practical purposes the bulging of the perineum and the gradual opening of the anus during the pains are suggestive enough to warrant examination. For an unusually prolonged first stage, such as is caused by slow rotation of the occipito-posterior or gradual moulding, with minor degrees of disproportion, it may even be necessary to repeat the routine after 8 hours. A further difficulty arises when the patient is becoming uncontrollable or perhaps has agonizing pain, and something rather quicker than the rectal paraldehyde method is required: it was this point which led me to give it by intramuscular injection. This was first suggested to me by Capt. P. T. Northover, R.A.M.C., who had seen it used with success in mental work.

The Method in Use

Obviously, provided that it acted well, a smaller dose would be required to get the patient under control quickly, and for reasons of general convenience 10 c.cm. (2.8 dr.) was tried provisionally. This amount is not too bulky as an injection, though it is better given in two 5-c.cm. doses, separated by an inch or more, without removing the needle from the original skin puncture. The outer side of the thigh, at about the middle, was chosen for injection (I have used this site for all intramuscular injections for more than twenty years). Morphine 1/6 gr. can be given or omitted according to circumstances.

As a rule the patient is under control and definitely sleepy within 10 minutes. If less than 3 to 4 hours is expected to effect the birth of the child there may be no need to increase the dosage, but if 6 to 8 hours is required the remaining 3 to 4 dr. can be given in olive oil by the rectum once the patient is under the intramuscular dose.

This intramuscular method has been extremely useful in occipito-posterior cases that were partly rotated and required 2 to 3 hours longer to complete. It has also been found very useful in severe toxic cases of the pre-eclamptic type, in which it was desirable to keep the patient quiet when not sufficiently dilated for intervention.

Paraldehyde seems to be completely harmless in the renal damage of pregnancy toxæmia, and after dealing with many cases of this nature it was realized that the method might be particularly useful for actual eclampsia. It has now been employed in 10 consecutive cases of fully developed eclampsia. It can be repeated in 8 hours or more should restlessness, twitching, or the onset of labour occur, though in these acute toxic cases labour is often notoriously silent and relatively painless. By such means the majority of eclamptics can be

well controlled for 24 hours, and after this interval it is extremely rare for the fits to recur, and most patients will recover. There appears to be no harm to either mother or child from the use of paraldehyde. The child may be a little on the lazy or sleepy side for a matter of a few hours, or even to a slight extent for one or two days, but no ulterior results need be anticipated.

All 10 eclamptic cases treated with the primary paraldehyde injection, followed by a further instillation by rectum, recovered, but naturally no conclusions can be drawn from such a small number. In a few instances there was some pain at the site of injection, but even though this may continue for one or two days it seems a very minor point compared with the relief of pain at the critical time.

RESULTS OF BACTERIOPHAGE TREATMENT OF BACILLARY DYSENTERY AT ALEXANDRIA

A STATISTICAL RETROSPECT*

BY

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The war, with its influx of troops into the Near and Middle East, has underlined the importance of therapeutic control of bacillary dysentery. The experience of more than twelve years of the use of anti-dysentery bacteriophage in the city of Alexandria may therefore usefully be placed on record. The present paper is based on a statistical investigation of the mortality rates from dysentery over the period 1928-40, and a comparison is made between the statistics for Alexandria and those for the rest of Egypt, where phage has not been so freely available. The direct investigation of bacillary dysentery mortalities has not been possible because an accurate knowledge of the annual number of deaths and of cases in various localities in the country is lacking. The problem has had to be tackled by inference, because for the most part only the aggregate statistics of cases and deaths for the two forms of dysentery, amoebic and bacillary, are tabulated in the official returns.

FIG. 1.—Case mortality from dysentery in Egypt for 1928-40.

[The author furnishes a table showing for the period 1928-40 the number of cases and deaths and the percentage case mortality for dysentery in Alexandria, in Cairo, and in the rest of Egypt (including Cairo). In Alexandria the total annual number of cases of dysentery has averaged about 650 during this period, and has not gone down to any great extent; but the number of deaths has fallen sharply, and the case mortality, which in the earlier years of the period was over 20%, has not during the last five years exceeded 6.5%. In Cairo, on the other hand, there has been no such marked diminution in case mortality, which averaged 29% for the years 1936-8. The

* Abridged for publication.

author considers that in view of the slightness of the variation from year to year in the case ratio of bacillary to amoebic dysentery,* and of the recognized constancy of the treatment of amoebic dysentery with emetine with successful results, the variations in the total numbers can be indirectly used, in the absence of direct knowledge as to the bacillary numbers, as an index of the variations in bacillary case mortality. He mentions certain qualifying features of the statistics, both general and local, but these do not greatly modify the general deduction. The dysentery case-mortality curves (amoebic and bacillary) for Alexandria, for Cairo, and for the rest of Egypt (including Cairo) are shown in Fig. 1.]

It will be seen that the case mortality for Alexandria has fallen steadily from approximately 25% in 1928 to 5% in 1938, with the exception of a transitory rise of about 8% in 1933. The corresponding Cairo case-mortality curve shows a quite erratic course varying between a maximum rate of over 60% in 1928 and a minimum of 25% in 1938.

State of Phage Therapy in Egypt

The only factor which seems to explain the decline in mortality rates at Alexandria as compared with the rest of Egypt is the use of bacteriophage by the medical profession of that city, where it has become an established rule to treat acute bacillary dysentery and its frequent precursor, the acute enteritis popularly known as "guppy tummy," with an ampoule of 2 c.cm. of bacteriophage as soon as possible, and thereafter an ampoule every 4 hours, while the patient goes to bed and is put on a starvation diet, with Vichy or Evian water only, for 24 hours. Thirteen years ago certain early work from these laboratories was published on the phage therapy of bacillary dysentery (Compton, A., *Lancet*, 1929, 2, 273, 528) which established clinically the success of the treatment to the extent that a definite demand for phage became established. With the inauguration, about 1930, of the Laboratoire de Bactériophage, Paris, under the direction of Prof. d'Herelle, for the manufacture of commercial phages of controlled potency, it became possible to meet the demand with reliable therapeutic material. Since then the Municipal Public Service in Alexandria has budgeted annually for commercial bacteriophages for the specific treatment of bacillary dysentery and like conditions in the municipal hospitals and children's clinics. Thus the phage therapy of bacillary dysentery has been employed in Alexandria on an important scale for at least 12 years. In Cairo, phage has not been used to any appreciable extent until recent years, and the rest of Egypt may be considered as practically not having known phage therapy at all.

There is reason to believe that if the treatment of bacillary dysentery were stabilized throughout the country, in the same way as amoebic dysentery is stabilized in terms of emetine injections, the total statistics from both forms of the disease would result in mortality curves of very much the same aspect, no matter what locality was selected for study.

FIG. 2.—Case mortality from typhoid in Egypt for 1928-38

It is instructive to contrast the aspect of the Alexandria dysentery curve with the Alexandria typhoid curve (Fig. 2). The gradual slope downwards of the former from a 25% to a 5% mortality level, to remain at about that level for the last

* The extent to which a public becomes phage-minded can be roughly gauged by the laboratory estimate of the ratio of amoebic to bacillary cases. From 1928 to 1938 at the Municipal Central Laboratory, Alexandria, the cytological findings for the two dysenteries, on an annual average of 700 positive findings, give the following values for this ratio: 0.246, 0.154, 0.264, 0.260, 0.309, 0.763, 1.087, 0.833, 1.852, 0.637, and 0.8.

5 years, and the comparatively stationary aspect of the typhoid curve, showing only minor oscillations about a mean level of 18%, are significant. If the explanation of the comparatively horizontal course of the typhoid curve is that no change of any sort has taken place in the treatment of typhoid in the period, then the progressive fall of the dysentery curve suggests an improvement in the treatment of dysentery at Alexandria. This is known to have occurred; the treatment of amoebic dysentery has not undergone any change during the period taken, but that of bacillary dysentery has been altered by the introduction of phage therapy. This improved position represents an actual saving of some 70 lives a year as compared with 10 years ago. During the first three years of the period (1928-30) there was in Alexandria an annual average of 105 deaths from the dysenteries, and during the 3 years 1938-40 the average number of deaths was 35.

Summary and Conclusion

The analysis of the official dysentery statistics for Egypt indicates that Alexandria occupies a much more favourable position in case mortality from dysentery than anywhere else in Egypt. This cannot be due to the better treatment of amoebic dysentery, for that is uniform and standardized throughout the country; nor is it due to geographical or climatic factors, for the typhoid case-mortality rate for Alexandria and for Cairo has not appreciably changed. The conclusion reached is that the cause of Alexandria's favourable position is the use of bacteriophage therapy for bacillary dysentery.

The statistical evidence, whether convincing or not to the statistically minded, is only part of the case; a much more convincing part is clinical observation, which shows the favourable effect of phage preparations administered early in dysenteriform conditions of a bacillary nature.

CARE OF THE TUBERCULOUS

As announced in the House of Commons last October (*Journal*, 1941, 2, 530), the Medical Research Council is investigating the causes of the rise in the incidence of tuberculosis, and pending the result of that inquiry the Ministry of Health has circularized local authorities (Circular 2526) on the need for maintaining and improving their tuberculosis services, wherever possible. The increased incidence in 1940 over the figure for the previous year, as revealed by mortality statistics, was most noticeable among young women between the ages of 15 and 25, the death rate per million for respiratory tuberculosis in this group having risen from 762 in 1939 to 881 in 1940. Local authorities are asked to review their arrangements for the care and after-care of tuberculous persons, and are reminded that the annual report for 1935 of the Chief Medical Officer indicated (pp. 77-81) the steps that could be taken in the interests of patients and their families. Beds in E.M.S. hospitals are released from time to time for the treatment of tuberculosis, and if any authority needs more beds for either hospital or sanatorium treatment the medical officer should take up the matter with the Principal Regional Medical Officer, who has been instructed to do all he can to help. Shortage of nursing and other staff remains, however, a major problem, and much has been done centrally to solve this by the recognition of nursing and of domestic duties in hospital as work of national importance, and by the appointment of a committee to draw up agreed scales of salaries for State-registered and student nurses. But effective results can only be obtained if this is supplemented by local effort. Salaries in sanatoria, etc., should be considered in the light of the revised rates payable to the Civil Nursing Reserve, and salaries and conditions of service together should be such as to counteract any possible prejudice against the work. A study of the memorandum "Tuberculosis Among Nurses," issued by the Joint Tuberculosis Council in 1937, might indicate where improvements in existing conditions are necessary. Recruitment might be stimulated by publicity (for example, by articles in the lay press, preferably by well-briefed journalists) on the human importance of the work done in tuberculosis institutions, the life of the nurses there, etc. The employment of ex-patients on the nursing and domestic staff should be encouraged, and also the transfer to tuberculosis institutions of any suitable nursing staff who can be spared or can be replaced from the Civil Nursing Reserve.