month later. As in all our relapses the ketogenic diet was more rapidly effective in this recurrence than it had been when first used. A healthy baby was eventually born.

In a treatment so dramatically successful in the vast majority of chronic cases which have defied all other measures it is a useful discipline to enlarge on the few cases that have failed to respond to the treatment, or having become sterile, relapsed. The moral of these failures appears to be that however perfect the conditions, however careful the dieting, a small minority will not respond to the treatment. Set out as in this paper the difficulties encountered may perhaps get out of focus. Actually in only three patients has there been failure to obtain a sterile urine. In two of these the failure was apparently due to the absence of ketosis; one patient, a doctor, was dieted at home where I had no control over the diet except that furnished by the pH of the urine: in the third the pH was always high and in addition the ketosis was never satisfactory being absent for part of each day. As far as relapses are concerned, in three patients there was a recurrence of the *B. coli* one to four months after the urine had been found sterile. All rapidly became sterile again on renewing the dieting. In two cases there was a recurrence of the *B. coli* within a week after a sterile report had been received: in one due to abandoning the diet forthwith; in the other apparently due to a decline in the ketosis in the second week perhaps associated with the administration of ammonium nitrate. If the treatment is going to be successful we are not left long in suspense. The majority of patients have reports of sterile urine in from one to two weeks after treatment is begun. A week's treatment after the urine is pronounced sterile is sufficient to insure against relapses. The treatment should if possible be carried out in an institution or nursing home: if the former it is well to be satisfied that sufficient attention can be paid to making the diet tolerable. If the pH is not estimated one is entirely in the dark as to what is happening though the disappearance of symptoms is suggestive. Under such circumstances the patient may be dieted for three weeks without the conditions essential to inhibiting the growth of *B. coli* being once present. However skilful the conduct of the treatment the diet remains disagreeable to the majority, and it is necessary to be able, from knowledge of the pH and of the ketosis, to reassure the patient with the heartening counsel that patience for a few more days will almost certainly result in a sterile urine.

There are not many chronic infections for which we can promise a considerable measure of relief: there are still fewer in which we can say that the infection will be extirpated in the majority of patients within three weeks. But the ketogenic diet will fall into disrepute unless those who use it know what they are doing.

THE USES AND INDICATIONS FOR INTRAVENOUS AND RECTAL ANÆSTHETICS.

By J. H. T. CHALLIS, M.R.C.S., F.R.C.P.,

Assist. Anæsthetist, London Hospital; Hon. Anæsthetist, Golden Square Hospital.

UNDOUBTEDLY the greatest use of these types of anæsthesia are for the very nervous and thyroid cases. They also have the following advantages: (1) Less vomiting. (2) Less after pain. (3) Diminution in the amount of general anæsthetic required to supplement them. (4) Less risk of chest complications developing where the basal anæsthetic is not eliminated by the lungs.

The most commonly used drugs for intravenous anæsthesia are :—

(1) Nembutal. This is made up in 7 gr. ampoules ; to each ampoule is added 10 c.c. distilled water, and the contents shaken until the powder is dissolved. This solution is then injected directly into a vein at the rate of 1 c.c. per minute. At the same time the patient is engaged in conversation until he fails to respond, when the injection is immediately discontinued. The patient can then be taken to the theatre and anæsthetized with N_2O and O_2. Should further relaxation be required the addition of ether is essential.

(2) Pernocton.—Is given in a 10 per cent. solution, the usual dose being 3 c.c. It is injected at the rate of 1 c.c. per minute ; its use has been almost entirely replaced in this country by nembutal.

(3) Ether.—A 5 per cent. solution in normal saline has been used for intravenous anæsthesia but this method is now obsolete.

Rectal Anæsthetics.

These are numerous, but only those in common use at the present time will be mentioned.

(1) Paraldehyde. The dose is 1 drm. per stone of body weight in a 10 per cent. solution of normal saline. This is given one hour previous to the operation, and is run slowly into the rectum. It is the safest rectal anæsthetic but has the disadvantage of having a most unpleasant odour which is most objectionable to all attending the patient. The patients themselves, however, have rarely been known to complain.

(2) Avertin.—Dose 0·075 to 0·12 c.c. per kilo of body weight in a 3 per cent. solution in distilled water. For convenience avertin fluid is now used ; this is a solution of avertin in amylene hydrate 1 c.c. of which contains 1 grm. of avertin. The dose varies with the metabolic rate of the patient, but no routine dosage can be laid down. A table should be obtained from the manufacturers which shows the required dose in relation to body weight. The solution must be freshly prepared and tested immediately prior to administration by adding a few drops of congo red to 5 c.c. of the solution. Should the colour change to blue, it shows the presence of hydrobromic acid which is liable to slough the rectum.

The injection should take about twenty minutes to run into the rectum. The patients usually go to sleep during the avertin.

(3) Nembutal. This is sometimes given to children instead of paraldehyde. From $\frac{1}{2}$ to $1\frac{1}{2}$ gr. in a gelatin capsule is introduced into the rectum about three-quarters of an hour previous to the operation.

(4) Rectal ether. Dose, 3 oz. in 4 oz. of olive oil is run into the rectum twenty minutes before the operation. This method is almost out of date as it is necessary to give extensive rectal wash-outs afterwards. Even then proctitis is not unknown.

All the above-mentioned methods have, or have had, their place in anæsthesia and serve a useful purpose. Those used extensively at the present time are : Paraldehyde by rectum ; nembutal intravenously or by mouth ; avertin by rectum.

They all add slightly to the dangers of anæsthesia and cannot be used without the addition of inhalation anæsthetics. Moreover, as it is not considered advisable to give ethyl chloride or chloroform after their administration, the use of N_2O and O_2 or ether is essential.

The **following types of cases are** those particularly suitable for the administration of rectal and intravenous anæsthesia.

(1) The very nervous patients who dread the thought of an operation. Often in these cases it is the anæsthetic which is the chief cause of apprehension. Thus much of their fear is removed if they can quietly lose consciousness while still in bed. This type of anæsthetic is also sometimes useful for children who have retained unpleasant memories of previous anæsthetics.

(2) Toxic thyroid cases particularly benefit from these modes of anæsthesia. Here again the patients are usually in a state of high nervous tension. Rectal avertin or intravenous nembutal followed by local infiltration, with the further addition of N_2O and O_2, is the most desirable form of anæsthesia in these cases.

(3) As a premedication before local and spinal anæsthetics, e.g., abdominals under durocaine stovaine, amputations, bronchoscopies, septums, &c., and like conditions in which it is essential to avoid further injury to the lungs by irritating inhalation anæsthetics. Naturally chest conditions such as bronchitis and asthma came under this heading.

(4) Cranial surgery, especially in hot countries where the administration of ether is difficult, if not impossible.

(5) Maternity cases: Here the basal narcotics undoubtedly relieve to some extent second stage pains. All, however, tend to prolong the period of labour and increase the number of forceps deliveries.

N_2O and O_2. It is the most satisfactory anæsthetic so far produced for this type of case as it neither prolongs or adds in any way to the difficulties of normal labour.

The main contra-indications to rectal and intravenous anæsthetics are:—

(1) The very old and debilitated.

(2) In liver and kidney diseases 80 per cent. nembutal is excreted by the kidneys, and some authorities assert that avertin has a deliterious effect on the liver.

(3) Patients suffering from a low blood-pressure are not suitable as these anæsthetics tend to lower it still further. Under this heading also can be mentioned those patients with a low metabolic rate.

(4) Nembutal by rectum, or intravenously, is never given to supplement an oral administration, as it has to some extent an accumulative action.

(5) Rectal anæsthetics cannot naturally be given in operations involving this area.

FURTHER REMARKS ON CASES FOR DISCUSSION.

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Case II.

THIS case illustrates how misleading a history may be. From the history, a diagnosis of hæmorrhage from a gastric ulcer seemed obvious. It was only after three months that the real nature of the case was suspected. With the onset of severe headache, rise of temperature, diminution in the amount of urine with the presence of albumin, one suspected uræmia due to chronic nephritis. This diagnosis was confirmed