We feel that some fundamental points should be mentioned. Contrary to popular belief, Hirschsprung's disease is not a uniform condition; both the clinical presentation and distribution of the aganglionic nerves in the affected bowel are variable. The patients with severe early symptoms tended to have large numbers of nerves in the distal aganglionic bowel, and the least severe cases tended to contain the fewest nerves. The correlation was most apparent for cholinesterase-positive nerves in the circular muscle layers, and these nerves are thought to be responsible for the contracted segment of bowel often seen in this condition. Three of our patients did not show a contracted segment on barium enema; they also had fewer myenteric nerves than in the normal controls. The nerves in the aganglionic segment decreased in number in a proximal direction, and this is believed to indicate that most of the nerves have entered this part of the bowel from below.

The finding that the most distal ganglionic bowel does not have a normal innervation is most important. In the past tissue from this zone has generally been used as a control, and it is now shown to be unsatisfactory for this purpose. Invariably it was found to contain fewer myenteric nerves than the control specimens, and in only three cases did more proximal ganglionic tissue resemble normal. The deficiency of nerves in the muscle tissue of the most distal ganglionic bowel suggests that it can exert only a poor propulsive force. The complexity of the myenteric ganglia was indicated by the variable distribution of the ganglion cells and of their enzyme content in the control specimens.

In summary we consider that bowel dysfunction in Hirschsprung's disease is due to at least four factors:

1. Absence of normal co-ordinated peristalsis, which creates an obstructive effect and is due to absence of ganglia.
2. Absence of relaxation reflexes in the aganglionic bowel adds to the obstruction, and it occurs despite the fact that large numbers of adrenergic nerves are often present in the muscle layers.
3. A strong uncoordinated motor activity is often present in the aganglionic segment. It further increases the obstruction and appears to relate to cholinesterase-positive nerves in the circular muscle.
4. A poor propulsive force is probably present in the most distal ganglionic bowel, owing to the deficient myenteric innervation, and this accentuates the more distal obstructive factors.

The clinical features of Hirschsprung's disease are therefore the consequence of complex variable defects which involve all the autonomic nerves in the muscle layers of the bowel wall.—We are, etc.

J. R. GARRETT
E. R. HOWARD
H. H. NIXON
King's College Hospital, London S.E.5.
Hospital for Sick Children, London W.C.1.

SIR,—I would like to describe a very small variant of the usual technique for cholangiography which I have employed for many years with almost invariable success.

A ureteric catheter is introduced into the cystic duct in the usual way and a ligature put round it. No matter how tightly this ligature is tied the catheter is still freely mobile, owing to the fact that the cystic duct is amply lubricated by bile. A second ligature, passed round the cystic duct just proximal to the first and tied over the ureteric catheter immediately before the latter enters the cystic duct. This fixes the catheter securely at whatever depth one requires, and there is no danger of it being subsequently dislodged.—I am, etc.,

ROBIN BURRITT
Ashford Hospital, Ashford, Middlesex.

**Which Dialysers?**

SIR,—As Mr. A. E. Kulitalake and others (23 August, p. 447) have pointed out, the current widespread application of haemodialysis has been a result of the availability of disposable systems in the form of twin-coil dialysers. The trend is toward continuous dialysate production, using single-pass proportionating and monitoring systems, thereby obviating the need for the initial preparation of 100 l or more of dialysate in tanks, which in varying degrees provide culture media for bacteria.

A practical point is that the arterial and venous lines are constructed of the disposable dialysers manufactured by Ab Gambio cannot readily be used with pump and monitoring systems other than the Gambio machine. For example, when using the Lucas machine we had to revise the blood lines. In order to avoid the need for cutting and re-arranging these lines we have found it easier to use the Travensol arterial (U200R) and venous lines (U200C) with the aid of sterile disposable Y-pieces. These are readily made up from a plastic Y-piece (Portex LOX M.Y.I.), sections of 10 gauge Portex translucent vinyl tubing, together with female and male adapters (Capon Heaton R91), which are autoclaved when assembled and packaged.

In their clinical evaluation of the disposable dialysers developed by Alwalk, Mr. Kulitalake and his colleagues found the urea dialysance was between 65 and 90 ml/min. at blood flow rates of up to 180 ml/min. This compares unfavourably with the urea dialysance of 80—125 ml/min. which we obtain with the "Ultra-fllo 100" coil (Travenol OA65) using cuprophane membranes at comparable flow rates. When Ultra-fllo 100 coils with cuprophane membranes are used (Travenol OA235), an even greater efficiency is achieved and the differential in dialysance is even greater.

While recognizing the practicability of the flat-plane disposable dialyzer, we advise caution in the use of this new era of dialysis, now that a container can be made which permits its being used as a dialysate supply. We are using a simple device which allows the combination of coil dialysers with single-pass proportionating and monitoring systems such as the Lucas machine. Our container improves the basic performance of the twin-coil dialyzer by the addition of low-volume, high-flow dialysate recirculation. In consequence, the coil dialyzer could be used for shorter periods of treatment and has the additional facility of avoiding the need for the ultrafiltration. When the "Ultra-fllo 100" with cuprophane membranes is used the blood loss is of the same order as that with the disposable dialyzer.

In view of the comparative high cost of the Gambio disposable dialyser we wondered whether it would be feasible to wash out, sterilize, and reuse this component. In order to investigate the potential of retaining the removal of blood and blood products despite prolonged wash-out times. Sterilization could be achieved with formalin. This caused the dialyser to function at a considerable saving compared with the "disposable dialyser." The Gambio dialyser is quoted at about £12, as compared with £8.5s. for the Travensol twin coil (UPF100 with cuprophane) and £9 4s. for the coil with cuprophane membranes.

Taking the example of a unit with 10 patients each receiving two dialyses per week, the weekly cost of dialysers alone would be £240 for the "disposable dialyser" and £165 for the twin coil system using cellophane and £184 using cuprophane. Thus an annual saving of between £2,912 and £3,900 may be expected from the system which we recommend.

Having tried both systems we currently advocate the continuing use of the twin coil dialyser in a container with recirculation of dialysate, used in combination with a single pass proportionating and monitoring system. The Alwalk disposable dialyser (Ab Gambio) is an admirable concept and product, but regretfully an expensive one.—We are, etc.,

W. K. STEWART
J. D. GODDARD
W. M. WAKEFIELD
M. F. SALEEM
Renal Unit, Manchester Hospital, and University Department of Medicine, Manchester University.

REFERENCES

3. Wakefield, W. C., et al., to be published.

**Drugs for Cardiac Arrhythmias**

SIR,—One of the problems faced by the author of any review article must be the achievement of satisfactory balance between breadth and depth. The brief "Drugs for Cardiac Arrhythmias" (16 August, p. 402, and 23 August, p. 458) in the available length of article inevitably requires that the survey will perform err on the side of superficiality and generalization, and such superficiality and generalization must be excused. Nevertheless, I must take issue on two points.

The section on digitoxis toxicity contains detailed instruction about the precautions when using potassium chloride, alarming information about the hazards of triiodothyronine edema, and advice about the avoidance of D.C. shock in this context on account of its danger. In contrast, propranolol is accorded half a sentence, with no advice about precautions and no warning of its hazards.
Peritoneal Dialysis and Lysol Poisoning

Sir,—A 62-year-old woman was admitted to the Poisoning Treatment Centre, Royal Infirmary, Edinburgh, two hours after ingesting about 150 ml of Lysol solution (10% in soap). She had collapsed immediately after ingesting the poison but had not vomited. She was drowsy and confused on admission, but was not shocked. Stomach wash-out produced a return smelling strongly of carbolic and containing flakes of gastric mucosa, but no frank blood.

On admission, serum potassium was 950 µg./100 ml with arterial pH 7.33, standard bicarbonate 15.5 mEq/l, and serum potassium 2.9 mEq/l. (Patient had been on long-term diuretics.) Peritoneal dialysis was set up five hours after admission and continued for nine changes of peritoneal solution containing no potassium. Serum potassium rose to 4.1 mEq/l after eight exchanges, and remained in the range 2.7-3.5 mEq/l thereafter. The dialysate contained a small quantity of free phosphorus initially (10 mg. in the first exchange), but only "total phosphorus" were detectable, in insignificant amounts, subsequently. In contrast, 820 ml of urine was passed while dialysis was in progress, and this contained about 26 times (1,589 mg.) the total dialysis yield of free phosphorus. The urine continued to contain appreciable amounts of metabolites for a further 72 hours. The patient was given 500 ml of 5% sodium bicarbonate solution initially, and was also treated with standard doses of hydrocortisone and ampicillin intramuscularly for the first five dialyses. She required potassium supplements for four days after dialysis.

In the presence of adequate renal function, peritoneal dialysis appears to be of no benefit in removing phosphorus from the body. It is estimated that some 130 mEq K+ were removed in the course of dialysis, which may then have been incidentally beneficial in preventing a precipitate rise in serum potassium, possibly an important factor in the early deaths which occur in Lysol poisoning.

This patient recovered slowly and eventu-

ally, but a serum "total phosphorus" of 1 mg./100 ml. or more would seem to be of serious prognostic significance.—I am, etc.,

D. A. LAWRENCE WATT.
Stobhill General Hospital, Glasgow N.1.

References

Analgescic Neuphopathy

Sir,—"There is nothing like eating hay when you are faint," the king said to Alice. "I did not say there was nothing better, I just said there is nothing like it." Perhaps, too, there is nothing like phenacetin, but the paper of Dr. David Bell and others (16 August, p. 278) adds confusion to an already confused picture. The cases reported had all taken multiple drugs, and following admission and diagnosis received general supportive therapy, including treatment of hypertension, acidosis, etc., as well as withdrawal of analgesics. It would be difficult to attribute their recovery, therefore, to any of these measures.

The consensus of world opinion would accept that analgesic nephropathy is a real and life-threatening condition, but to ascribe the renal lesion to a particular drug, however, is not only premature but could falsify physicians and the public into a false sense of security with regard to the components of commonly prescribed analgesic mixtures.

The Royal Australasian College of Physicians' plans to issue a warning against the prolonged use of analgesic mixtures containing aspirin, phenacetin, and codeine, and this action would be in line with most of the evidence presently available.

Dr. Bell quotes Prescott, and suggests that cases of papillary necrosis associated with aspirin "are rare." Certainly they are, but reports of abuse of phenacetin alone are rarer still, and I have been able to find only two cases in the world literature. We are dealing here with the abuse of a commonly prescribed and freely available analgesic mixture on the one hand and a not uncommon disease which may pass undiagnosed in its earlier stages on the other; this is then a difficult area of research. A critical appraisal of reports referring to "phenacetin nephritis" has led many working in the field to look more closely at the other constituents of analgesics taken in quantity, and recent animal work has thrown further doubt on the exclusive role of phenacetin. Until the controversy is settled, therefore, the more embracing term "analgesic nephritis" rather than the restrictive concept "phenacetin nephritis" is preferable.—I am, etc.,

JULIAN H. SHELEY, Director, Boehringer Ingelheim Ltd.

Ileworth, Middx.

References

Malmström's Vacuum Extractor

Sir,—I have been greatly interested in the modification of the Malmström vacuum extractor described by Dr. G. C. Bird (30 August, p. 526), and I consider that this modification has some advantages over the original Malmström instruments both of 1957 and 1957.

I believe, however, that oblique traction should rarely be applied, and that even Bird's instrument will produce the same forces tending to promote detachment as are shown in his Fig. 1, though in the absence of leverage from a central tube the forces will certainly be less. The preparation of the instrument for application, which will not involve threading of a chain through the tube to the traction handle as is done in the Malmström instruments, will, however, certainly be an advance and should obviate occasional difficulties met with particularly by the occasional users of the instrument. I have not found the central position of the tube in the original instrument to present any difficulty in insertion and application of the cup, and if episiotomy is carried on there is no difficulty in removing this as far back on the vertex as is required.

I shall look forward, however, to an opportunity of using this modification of the instrument, although I shall still hope to use pendicular traction only.—I am, etc.,

Royal Infirmary.

J. A. CHALMERS.
Worcester.

Sickness Certification

Sir,—Dr. G. F. Petty (30 August, p. 535) refers to motion 157 at the conference of L.M.C.s. This condemns the present need for general practitioners to issue National Health Insurance certificates. Dr. Petty's letter does not give any argument or evidence against this resolution.

He writes "not all are agreed..." We are unlikely to reach such agreement on anything, but this must not prevent progress. He then goes on to say that it is the doctor's job to advise the patient in relation to his capacity to work. This is surely one thing we all agree on, but it is quite irrelevant to the issuing of National Insurance certificates. He continues, "It is our moral duty to supply certificates..." Those who feel it their "moral duty" will be free to do so, but why must those of us who feel quite differently be compelled to do so, as we are at present by our terms of service? It is not clear here whether he is referring to National Insurance certificates, which are specified in resolution 157, but the rest of his letter clearly refers to industrial certificates and so has no relevance to the conference resolution.

If industry finds such certificates valuable they should be prepared to pay the economic price and not ride on the back of the N.H.S. I believe they will soon discover their lack of value and give them up.

As general practitioners our job is to advise our patients, but they must be free to accept or ignore our advice. I am not sure whether Dr. Petty agrees with this—I am, etc.,

Michael T. WADE.
Newport, Mon.