

dent body in case doctors run the risk of practising "State-controlled medicine." The examples of judiciary and many Government subsidized universities can be cited where interference of the State is not tolerated, and they discharge their function admirably.

Lastly, when all is said and done, I see the inevitability of the situation. It is a question of earning one's livelihood. After all those years in medical schools and then in hospital service, the doctor has to practise his or her trade, and it seems there will soon be a day when one practically pays all one earns to loudly announce once again to the whole world, "It is a sacrifice which I promise unto death."—I am, etc.,

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* * A shortened version of the G.M.C.'s memorandum on registration fees, in which it discussed its proposal to charge an annual retention fee, was printed at p. 1164 of the *B.M.J.* of 7 May 1966, together with a leading article (p. 1130), and a paragraph on the subject appeared in the Annual Report of Council (*Supplement*, 1966, 1, 187). The matter was debated at both the 1966 and the 1967 A.R.M.s (*Supplement*, 1966, 2, 82; 1967, 3, 97), at two Council meetings in 1968 (*Supplement*, 1968, 1, 51, and 2, 1), and at this year's A.R.M. (*Supplement*, 1969, 3, 72).—Ed., *B.M.J.*

Life-tables for Cystic Fibrosis

SIR,—Life-tables for 128 children with cystic fibrosis and for 43 cases of meconium ileus have been constructed for the five years starting in 1964. These are compared with similar tables constructed for the preceding 20 years, and show narrowing of the gap between the life expectancy of those entered at birth and at diagnosis, and a very marked improvement in survival rate. The majority, but not all the children included in this survey, attended the cystic fibrosis clinic, some being under the care of other physicians in the hospital or elsewhere, and the older ones mostly transferred to the Brompton Hospital for further care.

In the present study, 1964–8, the difference between the survival rates in column 1 and column 2 of Table A is small, suggesting the effect of early diagnosis and treatment. At one year the survival rate is 93% in column 1 and 98% in column 2. At 10 years it is 77% in column 1 and 85% in column 2. However, at 18 years the survival rate is 26% in column 1 and 30% in column 2.

In comparison with the previous study, 1943–64, the differences in the respective years in columns 1 and 2 of Table A are large. For example, in column 1 at one year the survival rate is 34% in the previous study as compared with 93% in the present

TABLE A.—Cystic Fibrosis Not Presenting as Meconium Ileus

Age in Years	Column 1 Entered at Diagnosis		Column 2 Entered at Birth	
	1943–64	1964–68	1943–64	1964–68
0	1,000	1,000	1,000	1,000
1	342	932	849	984
5	189	891	641	956
10	123	769	456	846
15	74	625	276	704
18	—	264	—	298

one, and 19% versus 89% at five years. This large difference is seen throughout. This is probably due to the increased awareness of the nature of this illness among the medical profession and the resultant earlier diagnosis, effective antibiotic therapy, and efficient pulmonary physiotherapy.

Meconium ileus survival rates derived from the Tables show that in 1964–8 the difference between columns 1 and 2 in Table B is small. Entered at diagnosis, the

TABLE B.—Meconium Ileus

Age	Column 1 Entered at Diagnosis		Column 2 Entered at Birth	
	1943–64	1964–68	1943–64	1964–68
Days: 0	1,000	1,000	1,000	1,000
7	609	914	754	952
14	509	805	625	854
Months: 1	327	755	407	807
6	127	679	170	734
1	102	624	143	684
3	102	589	143	648
5	82	477	126	536

survival rate is 91% at seven days, 75% at one month, 68% at six months, 62% at one year, and 48% at five years. There have been no deaths after the five years' age group, and the oldest child is 10 years of age.

In comparison with the previous study there is a significant difference in the survival rates. Surgical mortality at one month after surgery in the present series, 1964–8, is about 25%, whereas in the previous one, 1943–64, it is about 67%. At one year the survival rate is 62% in the present series and 10% in the previous one. This large difference is seen still at five years, when 48% are surviving in the present series in the face of 8% in the previous group.

The figures from the more recent life-table reinforce the guarded optimism with which the prognosis in cystic fibrosis can be considered. They demonstrate the advantage to be obtained from early diagnosis and active treatment, and stress the need for a simple and accurate laboratory method for screening for cystic fibrosis for use in the first weeks of life.—We are, etc.,

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REFERENCE

- ¹ Mantle, D. J., and Norman, A. P., *British Medical Journal*, 1966, 2, 1238.

Depressive Changes after Fluphenazine Treatment

SIR,—Drs. R. de Alarcon and M. W. P. Carney (6 September, p. 564) draw necessary attention to the problem of pharmacogenic depressive psychosis and phenothiazines in general.

Depressive psychosis is a well-recognized complication of reserpine and the butyrophenones, while phenothiazines have usually been considered to be free from this complication. In my experience, however, it is not uncommon for a mild depressive psychosis to develop during the convalescent period in schizophrenics treated with oral phenothiazines, particularly those of high potency. After resolution of the acute schizophrenic symptoms complaints of lethargy, indecisive-

ness, and impaired concentration develop, together with thought-retardation and an affective change phenomenologically identical with that found in depressive psychosis.

This complication of oral high-potency phenothiazines is often mild in intensity, and is attributed by many to the schizophrenic process itself. The depressive psychosis is often unrecognized, largely owing to the fixity of the clinician's "diagnostic set," but also to failure to analyse the phenomena of the patient's symptoms. There is some evidence that combined phenothiazine and electric convulsion therapy (E.C.T.) induces a quicker remission from a schizophrenic illness than phenothiazines used alone.¹ This empirical combination may well operate, in part, by the rapid resolution of the pharmacologically induced depressive psychosis by the E.C.T.

Drs. Alarcon and Carney have rightly drawn attention to the development of severe depressive psychosis with systemically administered high-potency phenothiazines. It is hoped that it will also make clinicians aware of the less severe depressive psychoses which not infrequently complicate high-potency oral phenothiazines used in the treatment of schizophrenia.—I am, etc.,

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REFERENCE

- ¹ Gonzalez, J. R., and Imahara, J. K., *American Journal of Psychiatry*, 1964, 121, 253.

Hospital Letters

SIR,—With reference to Dr. H. N. Levitt's letter (6 September, p. 594) on hospital letters, I wish to mention that, for various reasons, it is not always easy to send a detailed letter to the general practitioner immediately following the discharge of a patient, although some immediate information is highly desirable.

It is the routine practice in this hospital (for psychiatric cases) to fill printed forms containing date of admission and discharge, with diagnosis and recommended treatment, and post them to the general practitioner on the date of discharge, to be followed by a detailed letter a few days later. I do not see why this simple and effective procedure should not be made use of in other hospitals.—I am, etc.,

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Bowel Innervation in Hirschsprung's Disease

SIR,—The recent report (9 August, p. 338) on adrenergic nerves in the bowel from nine cases of Hirschsprung's disease confirms work we have reported previously.¹ We have extended this work, and have described the distribution patterns of cholinesterase-positive myenteric nerves as well as the adrenergic nerves.² Resected bowel from 19 patients with Hirschsprung's disease and bowel, including rectum, excised for other reasons from four controls has been studied. The age range of these 23 patients was 3 months to 4 years.

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 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 the 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 bowel³ 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 moderately strong unco-ordinated 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.,

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- Bennett, A., Garrett, J. R., and Howard, E. R., *British Medical Journal*, 1968, 1, 487.
- Garrett, J. R., Howard, E. R., and Nixon, H. H., *Archives of Disease in Childhood*, 1969, 44, 406.
- Howard, E. R., and Nixon, H. H., *Archives of Disease in Childhood*, 1968, 43, 569.

An Aid to Cholangiography

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, therefore, is 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.,

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Which Dialyser?

SIR,—As Mr. A. E. Kulatilake and others (23 August, p. 447) have pointed out, the current widespread application of haemodialysis has been a result of the availability of the mass-produced presterilized disposable 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 at present supplied with the "disposable dialyser" manufactured by Ab Gambro cannot readily be used with pump and monitoring systems other than the Gambro machine. For example, when using the Lucas machine we had to revise the blood lines. In order to avoid the need for cutting and rearranging these lines we have found it easier to use the Travenol 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 H gauge Portex translucent vinyl tubing, together with appropriate male and female adapters (Capon Heaton R91), which are autoclaved when assembled and packaged.

In their clinical evaluation of the disposable dialysers developed by Alwall, Mr. Kulatilake 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-flo 100" coil (Travenol OA65) using cellophane membranes at comparable flow rates. When "Ultra-flo 100" coils with cuprophane membranes are used (Travenol BKM 0235), still greater efficiency is achieved and the differential in dialysance is even greater.

While recognizing the practicability of the flat-plate disposable dialyser with its avoidance of the need for a blood pump and its low priming volume, we believe that the coil dialyser can enter this new era of dialysis, now that a container can be made^{1,2} which permits its use with any system of 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.³ Our container improves the basic performance of

the twin-coil dialyser by the addition of low-volume, high-flow dialysate recirculation. In consequence, the coil dialyser could be used for shorter periods of treatment and has the additional facility of negative pressure ultrafiltration. When the "Ultra-flo 100" with cuprophane membranes is used the blood loss is of the same order as that with the disposable dialyser.

In view of the comparative high cost of the Gambro disposable dialyser we wondered whether it would be feasible to wash out, sterilize, and reuse this component. In the event the major difficulty was in the removal of blood and blood products despite prolonged wash-out times. Sterilization could be achieved with formalin. This caused us to look once again at the coil dialyser which would operate at a considerable saving compared with the "disposable dialyser." The Gambro dialyser is quoted at about £12, as compared with £8 5s. for the Travenol twin coil (UF100 with cellophane) 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," compared with £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 Alwall disposable dialyser (Ab Gambro) is an admirable concept and product, but regrettably an expensive one.—We are, etc.,

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REFERENCES

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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 perforce 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 digitalis toxicity contains detailed instruction about the precautions when using potassium chloride, alarming information about the hazards of trisodium edetate, 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.