

1/6d. worth of halothane. The immediate post-operative period will thereby be more satisfactory to both patient and anaesthetist, and the whole anaesthetic a source of great satisfaction to all concerned, including the group treasurer.—I am, etc.,

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Education of Mentally Subnormal Children

SIR,—Not only educationalists and parents welcome the proposed transfer of responsibility for the education of mentally handicapped children. Many medical officers of health have for some years thought this to be a logical move, and the Society of Medical Officers of Health has, I believe, endorsed the principle.

In your leading article (17 January, p. 130) you misrepresented the proposal as being one to bring these children "back to the field of formal education." It results as much from the fact that good education is now far from formal as from the great strides made by doctors, psychologists, teachers of the mentally handicapped and others, so that what goes on today in a good school for mentally handicapped (the so-called "junior training centre") is indistinguishable from the activities in a good (and non-formal) school for E.S.N. children.

You also appear to envisage that existing teachers of mentally handicapped children (or "supervisors" as you call them) will be replaced by another group of teachers with "appropriate special experience." This is quite mistaken. There are no other teachers at present with experience in this field, nor with the specialized training given on the courses developed under the auspices of the Training Council for Teachers of the Mentally Handicapped, set up following the "Scott" Report in 1962.

One accepts that subsequent generations of teachers, trained alongside other teachers in Colleges of Education, may be even more expert—but this is one of the reasons for transfer.

Having said this I heartily endorse several of your words of caution. We must keep what is good in the present system and build on it. There must not be undue haste. We want existing teachers to transfer willingly and with enthusiasm—and here the Secretary of State for Education has made a regrettable mistake in his first action, by ruling that qualified teachers of mentally handicapped children will be regarded as "unqualified teachers" until they have five years' post-diploma experience.—I am, etc.,

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Dialysis and Mortality

SIR,—I have read with interest the article on integrated regional haemodialysis by Dr. R. A. Branch and others (31 January, p. 291). I would like to comment on the rather high mortality in their patients on haemodialysis.

The importance of more intensive dialysis

cannot be overemphasized. Reviewing their causes of mortality, it is quite clear from my own experience that three- or even four-times-a-week dialysis has virtually eliminated death from hyperkalaemia and cardiac failure due to fluid overload. It might well be that their superior results in home treatment are due to more frequent haemodialysis, but this is not mentioned by the authors. The replacement of the external arteriovenous shunt by the Cimino fistula¹ has again in my experience virtually eliminated the medical complications associated with clotting of shunts and infections, so much so that our antibiotic bill in the last two years has been reduced by over 80%, in spite of an increase in number of patients on treatment.

One's conclusion is that with three-times-a-week dialysis and an internal fistula an improvement in survival rates is to be expected. In addition one would anticipate a reduction in medical problems, including development of peripheral neuropathy. Finally, the quality of life and degree of rehabilitation enjoyed with the Cimino fistula is greater than with the external arteriovenous shunt.—I am, etc.,

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REFERENCE

- ¹ Shaldon, S., McKay, S., *British Medical Journal*, 1968, 4, 671.

Endocrine Dysfunction with Lung Carcinoma

SIR,—In the clinicopathological conference reported from the Royal Postgraduate Medical School (31 January, p. 281) on a patient with bilateral adrenocortical hyperplasia from an oat-cell carcinoma of the lung producing A.C.T.H. the low serum calcium level was discussed. The question of calcitonin production in addition to A.C.T.H. was mentioned, but as the parathyroid glands were of normal size this was unlikely, and patients with calcitonin-producing medullary carcinomas of the thyroid rarely show hypocalcaemia. The low serum protein level of 4.5 g. was suggested as the best explanation of the low serum calcium level of 4.4 mN., but the extremely high plasma cortisol levels might also have caused the hypocalcaemia.

We have reported¹ a patient with a bronchial neoplasm producing A.C.T.H. with hypocalcaemia whose blood calcium level became normal after bilateral adrenalectomy and a normal maintenance dose of cortisone was given. Large doses of glucocorticoids may lower pathologically raised plasma calcium levels,² and withdrawal may be followed by an increase in plasma calcium.³ In sheep from which the adrenal, thyroid, and parathyroid glands had all been removed, raising the daily maintenance dose of mineralocorticoids resulted in falls in the plasma potassium, calcium, and magnesium levels.⁴ In other patient (to be reported) with equally severe endocrine dysfunction to the first patient mentioned the hypocalcaemia remained after bilateral adrenalectomy, and subsequently she was shown to have an A.C.T.H. and calcitonin-producing medullary carcinoma of the thyroid. This patient appears to have been one in whom calcitonin was the cause

of the hypocalcaemia.

The association between adrenals and calcium homeostasis has been known for some time from the hypercalcaemia in some patients with Addison's disease⁵ and the rise in blood calcium seen on occasion after adrenalectomy. It is possible that the hypocalcaemia in the patient discussed in the clinicopathological conference was due to excess blood levels of corticosteroids secondary to gross adrenal cortical hyperplasia. I am, etc.,

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- ¹ Hockaday, T. D. R., and Keynes, W. M., *Journal of Endocrinology*, 1966, 34, 413.
² Dent, C. E., *British Medical Journal*, 1962, 2, 1419.
³ Sprague, R. G., Kvale, W. F., and Priestley, J. T., *Journal of the American Medical Association*, 1953, 151, 629.
⁴ Keynes, W. M., and Care, A. D., *Proceedings of the Royal Society of Medicine*, 1967, 60, 1136.
⁵ Loeb, R. F., *Sciences*, 1932, 76, 420.

Hypertrophic Osteoarthropathy

SIR,—Professor H. E. de Wardener adduced evidence supporting the existence of a hormonal control of sodium absorption in the proximal renal tubule.¹ I would like to suggest that hypertrophic osteoarthropathy (H.O.) is a disorder of this mechanism. It has been reported in association with tumours of the nasopharynx,² oesophagus,³ lungs, pleura, and stomach; hepatic cirrhosis; achalasia of the cardia;⁴ and bronchiectasis.

Some of its features are an increased blood-flow and vascularity, especially in the limbs, oedema of the feet, ankles, and often of the hands. Removal of the primary disease (or, in the cases of inoperable lung tumours, vagal section⁶) results in immediate relief of the symptoms of H.O. It is believed that the glossopharyngeal nerve contributes to the innervation of the pharyngeal and tonsillar arteries, and that the vagus nerve contributes to the innervation of the oesophageal, pulmonary, hepatic, and gastric arteries.⁷

It is reasonable to assume that, via 9th and 10th cranial nerves, afferents reach the dorsal sensory nuclei of the vagi from which there are connexions with the hypothalamus and other parts of the brain.⁸

It is suggested that (1) some of these afferent nerves are an integral part of a sensing-system for blood volume control. (2) In H.O., as a result of reverse-flow and Venturi effects in the vessels close to the tumour or in the diseased organs (e.g., bronchiectasis), these afferent nerves are inappropriately stimulated—in effect, a localized simulation of a contraction in the extracellular fluid volume. (3) In H.O. a hormone which increases sodium absorption in the proximal renal tubule is secreted in excess by the brain.

The resulting increase in extracellular fluid would be partly counter-balanced by other factors, including the natriuretic response to atrial distension. With a normal response to increased venous return to the heart there follows an increase in the blood flow and volume in the arterial side as well as the venous side of the circulation.

One corollary from this hypothesis is that the distribution of the afferent limb of an extrarenal blood-volume control mechanism,