

been received with great enthusiasm as the solution to difficulties encountered in testing the hearing of uncooperative subjects. The psychogalvanic skin resistance test, for example, was a few years ago hailed as the final answer. In many centres expensive equipment was installed only to find later that the results were unreliable. More recently E.E.G. audiometry has been also received with equally great enthusiasm. In some E.N.T. departments thousands of pounds have been invested to purchase the apparatus in the belief that there was no need for other facilities for child audiology. There is no conclusive evidence that this method provides the answers in children who are extremely difficult, have additional brain damage, cerebral palsied, etc. These are precisely the children for whom we want a truly reliable objective test.

There is still serious doubt whether electrocochleography provides answers which could not be obtained by the simpler methods, which are also more informative about many other aspects of the child's function. Cochleography can record only the potentials resulting from the stimulation of the peripheral receptor. Various types of hearing loss in children—especially high frequency losses—are caused not by damage in the cochlea but in the cochlear nuclei in the auditory pathway. It is possible to combine cochleography and evoked response audiometry to cover the whole auditory system, but in view of the inadequacy of the evoked-response technique in many children this procedure would be in question in any case. Cochleography in children is possible only under general anaesthesia and the procedure is laborious and time consuming. It cannot be used as a routine clinical procedure at present. This would not matter if truly it gave results unobtainable otherwise, but there is still serious doubt about that.

The enthusiasm for new "objective" tests is always greatest when no proper facilities for child audiology exist, in the hope that a technical procedure will take the place of proper provision for clinical audiology. One of the main reasons for the failure of so-called objective tests is that certain physiological principles concerning the responses of children to sensory stimulation are disregarded—for example, the law of initial values, problems of habituation, of inhibition, etc. In my chapter I did discuss the problems of objective hearing tests and indicated clearly what should be a favourable development. Electrocochleography is still a highly experimental procedure, and I have serious doubts whether, as Ballantyne puts it, it is "destined to become the best objective test of cochlear function."—I am, etc.,

L. FISCH

Institute of Laryngology and Otolaryngology,  
London W.C.1

### Pancreatin as Source of Salmonella

SIR,—Dr. E. J. G. Glencross's report (13 May, p. 376) prompts us to report the following cases.

In December 1968 a baby aged 2 months was admitted to the Royal Albert Edward Infirmary, Wigan, with cystic fibrosis. The diagnosis had been established three weeks earlier and treatment with pancreatin started. She had an acute illness with diarrhoea and vomiting, and this proved to be associated

with a growth of *Salmonella bovis morbi-ficans*. Three other children on the ward contracted the same infection and one of them (who also suffered from multiple congenital abnormality) died. One of the nursing staff also became infected.

In September 1969 the same organism was isolated from a 7-month-old child in Booth Hall Hospital, Manchester. He also was receiving pancreatin for cystic fibrosis. He had an acute diarrhoeal episode when the organism was first isolated. This lasted only 48 hours, though he continued to carry the salmonella for six weeks. He had had no known contact with the other cases. One other child in Booth Hall Hospital became infected. He suffered from epidermolysis bullosa, from which he died at the age of 9 months. Salmonella was cultured from his stools for only three weeks.

Powder, granules, and capsules from two batches of the pancreatin used in both hospitals were cultured in Selenite broth and subcultured after 18 hours into desoxycholate citrate agar. No salmonellae were grown.

This particular salmonella is extremely rare in human infections, but well known in pigs and cattle. Because we were unable to prove the sources of the infection we felt unable to publish these cases at the time, but in the light of this new evidence we feel that it is useful to do so.—We are, etc.,

R. M. FORRESTER

Royal Albert Edward Infirmary,  
Wigan, Lancs

J. H. KEEN

Booth Hall Children's Hospital,  
Blackley, Manchester

### Anaesthesia by Acupuncture

SIR,—It is, of course, essential that anaesthesia by acupuncture be investigated thoroughly and without prejudice, but this is by no means the first example of major surgery being performed painlessly without general anaesthesia.

In the 1840s Surgeon James Esdaile, of the Indian Medical Service, performed hundreds of major operations in Bengal under hypnotic suggestion; his success was acclaimed all over the world. After investigation by a committee presided over by the Inspector-General of Civil Hospitals, Bengal, a Mesmer hospital was started in Calcutta. Large tumours were removed without pain in a high proportion of cases. Seven out of 10 patients in one series were successfully mesmerized before operation. The advent of chloroform anaesthesia with 100% success put an end to Esdaile's work, details of which may be found in Crawford's *History of the Indian Medical Service*.<sup>1</sup>—I am, etc.,

GEORGE R. McROBERT

Ewell, Surrey

<sup>1</sup> Crawford, D. G., *History of the Indian Medical Service*. Vol. 2. London, Thacker and Co., 1914.

### Effects of Dietary Fibre

SIR,—The notion that a rapid and serious fall in consumption of dietary fibre by the British population followed the introduction of roller milling in about 1880, and has thus been the cause of various diseases of civilization,<sup>1</sup> is mistaken. There is evidence that even in the late 1840's, and probably for several years before, the "crude fibre" of the

usual bread flour did not exceed 0.5% at the very most.<sup>2</sup> Over the next 50 years its fibre content was gradually reduced by various milling developments and by the use of new wheats of better milling quality to current levels (0.1-0.15%). Moreover,<sup>3</sup> there has been no fall in the fibre content of the British diet over the past 100 years, though the relative contributions of its sources have changed appreciably.

The clinical basis for the "low-residue" theory of the cause of diverticular and other serious diseases of the colon rests on reported differences in faecal bulk and consistency, as a result of high- or low-residue diets, causing large differences in intestinal transit time of faeces.<sup>4</sup> Though low-residue diets produce low-bulk stools, the clinical significance of any difference in transit times resulting from diets differing only in the fibre contributed by the flour component requires further study under British conditions. Comparisons of inhabitants of the U.K. with African communities of much lower life expectation, or of the latter communities with Negro populations elsewhere, inextricably intermix major differences—genetic, medical,<sup>5</sup> environmental (for example, bowel infections and infestation), as well as dietary changes such as the much higher fat and sugar content of "Western" diets. It could be alleged that the lower expectation of life in African communities may be partly due to excessive consumption of vegetable roughage.<sup>6,7</sup> Crawford and co-workers draw attention to Burkitt's own work on the association of certain high bulk diets with adult intussusception, volvulus, and double volvulus. The excessive use of bulking agents (including wheat bran) may itself be hazardous.<sup>8</sup> Some individuals cannot tolerate high residue diets.

In correspondence in this journal the rarity of certain diseases in developing countries has been questioned by Osuntokun.<sup>9</sup> Goulston<sup>10</sup> has disagreed with the statements of Cleave and Campbell<sup>11</sup> on the incidence of diverticular disease in Ethiopia, while Dr. A. O. H. Tellegen (20 May, p. 467) has contradicted Captain T. L. Cleave's statement (4 March, p. 629) on the rarity of venous disorders in Africa.

The study of diverticulosis in rats cited by Painter and Burkitt<sup>1</sup> involved numerous groups of animals in an experiment which does not permit the logical separation of the effects of high dietary fibre from other major factors. Indeed, a major weakness of the evidence presented for the prophylactic, or therapeutic, action of bran is the lack of direct intercomparisons of the effects on health or life expectation of its presence in, or absence from, otherwise identical diets. Consideration of the references<sup>1-11</sup> relative to high pressures in the colon show that these pressures could not be demonstrated under basal conditions, and only developed under the influence of prostigmine. Under these conditions their relevance to the development of the disease seems uncertain.

Some of the other evidence for the Cleave-Painter-Burkitt hypothesis<sup>1-4</sup> appears to be statistically unsound. For example, the difference in incidence of diverticular disease in two locations, stated<sup>4</sup> to be significant at the 5% level, is not significant even at the 30% level. Painter and Burkitt's graph of the mortality data for diverticular disease shows no sex differentiation from 1923-52, and then a rapid rise in female mortality