way an adequate fibre intake is achieved in a variety of forms without difficulty.

Fifteen years on, the fibre hypothesis has survived. In the short term, colonic function may be modified and symptoms, particularly constipation, relieved. Gastro-intestinal absorption may be controlled and some metabolic disorders stabilised. Yet the long term benefits from prophylactic use of high fibre diets are not proved and may never be so: too many extrinsic factors play a part both in the diet and in the environment generally. Epidemiological and circumstantial pointers suggest that there may be some advantages in taking a mixed, high fibre diet, but its prophylactic use still remains a matter of philosophy.

RODNEY H TAYLOR

Wellcome Senior Fellow and Honorary Senior Lecturer,
Department of Gastroenterology and Nutrition,
Central Middlesex Hospital,
London NW10 7NS

- ¹ Cleave TL, Campbell GD, Painter NS. *Diabetes, coronary thrombosis and the saccharine disease*. 2nd ed. Bristol: John Wright and Sons, 1969.
- ² Burkitt DP. Related disease—related cause. *Lancet* 1969;ii:1229-31.
- ³ Trowell H, Painter N, Burkitt D. Aspects of the epidemiology of diverticular disease and ischaemic heart disease. *Am J Dig Dis* 1974;19:864-73.
- ⁴ Painter NS, Burkitt DP. Diverticular disease of the colon: a deficiency disease of Western civilisation. *Br Med J* 1971;ii:450-4.
- ⁵ Sinclair HM. The human nutritional advantages of plant foods over animal foods. *Qualitat Plantarum* 1979;29:7-18.
- ⁶ Trowell HC. *Dietary fibre in human nutrition: a bibliography*. London: John Libbey, 1979.
- ⁷ Royal College of Physicians of London. *Medical aspects of dietary fibre*. London: Pitman Medical, 1980.
- ⁸ Spiller GA, Kay RM, eds. *Medical aspects of dietary fiber*. New York: Plenum, 1980.
- ⁹ Vahouny GV, Kritchevsky D, eds. *Dietary fiber in health and disease*. New York: Plenum, 1982.
- ¹⁰ Cleave TL. Natural bran in the treatment of constipation. *Br Med J* 1941;ii:461.
- ¹¹ Cann PA, Read NW, Holdsworth CD. What is the benefit of coarse wheat bran in patients with irritable bowel syndrome? *Gut* 1984;25:168-73.
- ¹² Findlay JM, Smith AN, Mitchell WD, Anderson AJB, Eastwood MA. Effects of unprocessed bran on colon function in normal subjects and in diverticular disease. *Lancet* 1974;ii:146-9.
- ¹³ Arabi Y, Makuria T, Buchmann P, Alexander-Williams J, Keighley MRB. Trial of high fibre diet or local treatment for patients with haemorrhoids. *Gut* 1978;19:A987.
- ¹⁴ Cummings JH, Southgate DAT, Branch W, Houston H, Jenkins DJA, James WPT. Colonic response to dietary fibre from carrot, cabbage, apple, bran and guar gum. *Lancet* 1978;ii:5-9.
- ¹⁵ Kirwan WO, Smith AN, McConnell AA, Mitchell WD, Eastwood MA. Action of different bran preparations on colonic function. *Br Med J* 1974;iv:187-9.
- ¹⁶ Heller SN, Hackler LR, Rivers JM, et al. Dietary fibre: the effect of particle size of wheat bran on colonic function in young adult men. *Am J Clin Nutr* 1980;33:1734-44.
- ¹⁷ Harvey RF, Pomare EW, Heaton KW. Effects of increased dietary fibre on intestinal transit. *Lancet* 1973;ii:1278-80.
- ¹⁸ Liu K, Stamler J, Moss D, Garside D, Persky V, Soltero I. Dietary cholesterol, fat, and fibre, and colon-cancer mortality. *Lancet* 1979;ii:782-5.
- ¹⁹ Thornton JR, Emmett PM, Heaton KW. Diet and Crohn's disease: characteristics of the pre-illness diet. *Br Med J* 1979;ii:762-4.
- ²⁰ Heaton KW, Thornton JR, Emmett PM. Treatment of Crohn's disease with an unrefined-carbohydrate, fibre-rich diet. *Br Med J* 1979;ii:764-6.
- ²¹ Walker AR, Walker BF, Richardson BD, Woolford A. Appendicitis, fibre intake and bowel behaviour in ethnic groups in South Africa. *Postgrad Med J* 1973;49:243-9.
- ²² Cove-Smith JR, Langman MJS. Appendicitis and dietary fibre. *Gut* 1975;16:409.
- ²³ Leeds AR. Modification of intestinal absorption by dietary fiber and fiber components. In: Vahouny GV, Kritchevsky D, eds. *Dietary fiber in health and disease*. New York: Plenum, 1982:53-71.
- ²⁴ Jenkins DJA. Dietary fibre, diabetes and hyperlipidaemia. *Lancet* 1979;ii:1287-90.
- ²⁵ Passmore R, Hollingsworth DF, Robertson J. Prescription for a better British diet. *Br Med J* 1979;ii:527-31.

The spleen preserved

The surgical removal of a normal spleen has been—and still is—performed too often. External trauma may shatter a spleen, but it may also merely lacerate it or tear the capsule, leaving the organ largely intact. I have memories of a consultant whose desire to divide all the short gastric vessels in doing a gastrectomy for peptic ulcer often led to “Damn it, sister, the spleen” and to the rapid excision of a spleen denuded of its capsule at its upper pole. This was assumed to do no harm, though clinical observations suggested that the patients concerned had a more complicated convalescence. In reality we should never have accepted that removal of a quarter of the body's lymphoid tissue would be harmless.

Cooper and Williamson recently reviewed the operation of splenectomy and collected comprehensive evidence of its harmful effects.¹ These are predictable from the nature and functions of the spleen; they first became evident in

children, who developed fulminant infections with a variety of organisms, death occurring especially in younger children. The risks are greater when a diseased spleen is removed, and current advice is that children who have their spleen removed, for whatever reason, should be given polyvalent vaccines and prophylactic penicillin for at least two years.

There is less evidence of the effects of splenectomy in adults. In 1967 a 48 year old man enjoyed a holiday in the west of Ireland and shortly afterwards developed a fulminant, febrile illness from which he died.² This proved to be babesiosis, a disease of cattle transmitted by ticks and due to a protozoal parasite resembling that of malaria. He had had a splenectomy (in the course of a gastro-enterostomy) that year. Seven similar cases have been reported in Europe; all the patients had had splenectomies, and five died.³ This can hardly be regarded as a common risk; the mechanism is clearly an immunological deficiency. Robinette and Fraumeni followed up veterans of the 1939-45 war and showed an apparent excess of mortality from ischaemic heart disease and infections among those who had had splenectomies,⁴ but the evidence is not as convincing as that in children. Furthermore, Okiye and his colleagues found no increase in infections in patients who had their spleens removed before renal transplantation—a group that might be expected to be particularly at risk.⁵

Nevertheless, the evidence shows that splenectomy is harmful in children and probably so in adults, and the potential harm is likely to be greater in tropical countries. Clearly there are some diseased states or some severe traumatic injuries in which the benefits of splenectomy will outweigh the disadvantages. But what of the rest? In what ways can the spleen be preserved?

If the spleen is uniformly diseased—for example, by lymphoma—it must be excised. A cyst, however, might be excised or enucleated with preservation of at least part of the spleen. If the spleen is normal but damaged partial splenectomy is possible. For lesser degrees of damage a laceration may be sutured, and bleeding from a capsular tear may usually be controlled by the application of a haemostatic agent such as gelatin foam. Prudently chosen, these methods are safe and effective. If the spleen must be excised a portion of it can often be inserted into the omentum as a free graft, where it will survive, but whether full splenic function is regained is less certain.

Surgeons depend on assumptions, and one such used to be that if the spleen is believed to be damaged a laparotomy is essential. Isotope scanning now enables us to image the spleen, and the technique has shown that patients with damaged spleens may be treated without operation. A teenager I saw recently two days after injury with minimal signs of peritoneal bleeding had a scan showing a fragmented spleen. He was observed in hospital for two weeks and then discharged. Two months later he was well—and another scan showed a damaged but functioning spleen. Joseph and colleagues reported on 39 children with traumatic injuries to the spleen, of whom 24 were successfully managed without laparotomy,⁶ and there have been many other reports. The surgeon still needs to be alert for secondary haemorrhage from a damaged spleen in which the initial bleeding has been naturally arrested by keeping patients under observation, but this is probably an unusual event, and recovery of the damaged spleen is more likely.

Dogma has again been discredited by the exercise of judgment. The spleen should and often can be preserved by conservative management, provided that careful observa-

tion is possible, or by reconstructive surgery if the skill is available.

DOUGLAS ROY

Professor of Surgery,
Queen's University,
Belfast BT12 6BJ

¹ Cooper MJ, Williamson RCN. Splenectomy: indications, hazards and alternatives. *Br J Surg* 1984;71:173-80.

² Fitzpatrick JEP, Kennedy C, McGeown MG, Oreopoulos DG, Robertson JH, Soyannwo MAO. Human case of piroplamosis (babesiosis). *Nature* 1968;217:861-2.

³ Garnham PCC. Human babesiosis: European aspects. *Trans R Soc Trop Med Hyg* 1980;74:153-5.

⁴ Robinette CD, Fraumeni JF. Splenectomy and subsequent mortality in veterans of 1939-45 war. *Lancet* 1977;ii:127-9.

⁵ Okiye FD, Zeincke H, Engen DE, et al. Splenectomy in high risk primary renal transplant recipients. *Am J Surg* 1983;146:594-601.

⁶ Joseph TP, Wyllie GG, Savage JP. The non-operative management of splenic trauma. *Aust NZ J Surg* 1977;47:179-82.

Management of spontaneous pneumothorax

To drain or not to drain is the question often posed by the patient who presents with a spontaneous pneumothorax. If the pneumothorax is small (less than 20%) and asymptomatic it may be treated conservatively on an outpatient basis—provided that the patient returns to hospital immediately if he develops breathlessness. Similarly, most people agree that active intervention with the insertion of an intercostal tube and drainage through an underwater seal is essential for patients with a tension pneumothorax and for pneumothoraces complicated by breathlessness or by an appreciable haemothorax or pyothorax.

Patients with a pneumothorax who fit neither of these categories form an important subgroup, and their management remains controversial. The conservative would argue that most large asymptomatic pneumothoraces will re-expand spontaneously over three to four weeks,¹ thereby avoiding the need for drainage through an intercostal tube, which is uncomfortable, needs to be left in position for an average of four days,² and carries hazards.² The activist (probably in the majority nowadays) would argue that tube drainage avoids prolonged inpatient and outpatient medical supervision and reduces time off work. Simple aspiration fell into disfavour because of anxieties about laceration of the lung by metal needles, but it has recently been revived successfully with the use of a Teflon intravenous cannula.^{3,4}

My personal experience confirms the view that this is a simple and atraumatic way of dealing with this group of patients. The air is gently aspirated from the pneumothorax through the Teflon cannula with a 60 ml syringe and a plastic three way tap and is expelled under water. Aspiration is stopped when resistance is felt. If four litres is aspirated with no resistance an x ray film will usually confirm that no expansion has taken place, indicating that the pneumothorax is open and needs drainage through an intercostal tube. Complete aspiration without recurrence was achieved in 16 of the 23 cases reported in the two series.

Thus a group of patients with a large pneumothorax, in whom tube drainage is unnecessary, may be treated readily by simple aspiration, and this method further identifies a group in whom the pneumothorax is open and who are likely to benefit from more aggressive treatment with tube drainage and suction. The use of suction is another controversial aspect of management,⁵ although some of the controversy may stem from its use in cases where it is not required—for example, for a closed pneumothorax, where

simple aspiration or tube drainage without suction is sufficient to re-expand the lung. Proponents of the technique believe that for patients with an open pneumothorax, suction seals the leak more rapidly by opposing the pleural surfaces. Once it is started suction should continue uninterrupted until expansion is complete and has been maintained for 24 hours. In my view, failed treatment is often due to inappropriate interruption of suction—for example, by clamping off the intercostal drain during nursing procedures or visits to the x ray department.

Finally, definitive surgical treatment is required when tube drainage and suction have been unsuccessful and when, in effect, a bronchopleural fistula has formed. Furthermore, given a recurrence rate of 10% to 25%, surgical prophylaxis is usually indicated after a second ipsilateral or a first contralateral recurrence, and after the initial event if the patient's lifestyle is such that a recurrence might be life threatening or highly inconvenient. In younger patients with a simple pneumothorax pleurectomy is the prophylactic procedure of choice, with a very low recurrence rate.^{6,7} In older patients with severe chronic airflow obstruction, chemical pleurodesis with talc, dextrose, or another irritant is safer but less effective.

J F RIORDAN

Consultant Physician in Thoracic Medicine,
Central Middlesex Hospital,
London NW10 7NS

¹ Stradling P, Poole G. Conservative management of spontaneous pneumothorax. *Thorax* 1966;21:145-9.

² So S, Yu D. Catheter drainage of spontaneous pneumothorax: suction or no suction, early or late removal? *Thorax* 1982;37:46-8.

³ Raja OG, Lalor AJ. Simple aspiration of spontaneous pneumothorax. *Br J Dis Chest* 1981;75:207-8.

⁴ Hamilton AAD, Archer GJ. Treatment of pneumothorax by simple aspiration. *Thorax* 1983;38:934-6.

⁵ Klassen KP, Meckstroth CV. Treatment of spontaneous pneumothorax. Prompt expansion with controlled thoracotomy tube suction. *JAMA* 1962;182:111-5.

⁶ Gaensler EA. Partial pleurectomy for recurrent spontaneous pneumothorax. *Surg Gynecol Obstet* 1956;102:293-308.

⁷ Raj Behl P, Holden MP. Pleurectomy for recurrent pneumothorax. *Chest* 1983;84:785.

How might we improve surgical services for rural populations in developing countries?

Any doctor who has worked in a developing country will not easily forget the widespread and pathetic evidence of surgical neglect in the villages. Huge hernias and hydroceles, unsightly lumps on the faces of women and children, and compound fractures infested with maggots bear testimony to the failure of so many countries to provide even a basic level of surgical care to their people.

Is it possible in countries where the expenditure on health is just over £1 per person a year to provide the rural population with a more comprehensive surgical service?¹ Probably the answer is yes—but only with a more rational use of existing resources, discarding unimaginative, inefficient, and inappropriate systems of health care delivery. We must first stop building ever more costly but politically rewarding large showpiece “disease palaces” in the big cities² to which only 20% of the population has access,³ and divert much of our material and medically trained manpower to the villages. Two important papers suggest how this might be done.