

of this lesion is accentuated if the patient slides down and forward under the seat belt so that the full force of the belt is transmitted to the abdominal wall and the subjacent viscera because the belt is no longer anchored by the pelvis. This process, which they term "submarining," is more likely to occur if the patient is sitting in a soft seat or if the belt is applied loosely. J. Sube and his colleagues⁶ record a deceleration type of accident in which the mesocolon and outer layers of the sigmoid colon were torn away, only an intact mucosal tube being left. They conclude that the mechanism in such a case is that the inertia of the fluid-filled bowel is suddenly halted by the limits of its mesocolon.

Recently J. Shennan⁷ has recorded two patients with isolated injury to the left colon produced by the lap strap of the seat belt. Both wore seat belts comprising lap strap and diagonal belt, both were the drivers, and both were involved in head-on collisions. These patients were able to walk away from the accident, apparently without serious harm. The first, who sustained ischaemic damage to the descending colon with a segment of gangrene, developed pain after 12 hours and had exteriorization of the damaged segment of colon performed at operation nearly 24 hours after injury. The second patient developed severe pain three hours after the accident and at laparotomy was found to have an almost completely severed descending colon. Again exteriorization was performed. Shennan points out that most reports of the "seat belt syndrome" in which either the large or small intestine is injured have stressed that delay before the patient presents himself is common. There is no doubt that delayed rupture of the bowel after traumatic ischaemia does occur. Though the rupture usually appears before the fourth day, it may be delayed for longer periods.

As car seat belts come into more general use the possibility of visceral injury should be borne in mind. In particular, careful and continued observation, if necessary for several days, is needed to exclude ischaemic damage and delayed rupture of the intestine.

¹ Garrett, J. W., and Braunstein, P. W., *Journal of Trauma*, 1962, 2, 220.

² Lister, R. D., and Milsom, B. M., *Practitioner*, 1963, 191, 332.

³ *Drive*, Autumn 1973, No. 29, p. 50.

⁴ Shennan, J., *British Journal of Hospital Medicine*, 1973, 10, 199.

⁵ Towne, J. B., and Coe, J. D., *American Journal of Surgery*, 1971, 122, 683.

⁶ Sube, J., Ziperman, H. H., and McIver, W. J., *American Journal of Surgery*, 1967, 113, 346.

⁷ Shennan, J., *British Journal of Surgery*, 1973, 60, 673.

Radiation Protection in Dentistry

Protection against radiation in the interests of patients, hospital staff, industrial workers, and the general public is a substantial activity, employing a few thousand full-time staff and many more part-time in Britain. Though the standard of safety is generally high, mistakes still occur and most of them are avoidable. In the belief that something useful can be learned from other people's accidents, the National Radiological Protection Board and the Department of Employment have begun the regular publication¹ of information about radiation incidents which, though not causing severe injury, offer lessons that should be widely heeded.

An experienced service engineer received a radiation burn while adjusting x-ray crystallographic equipment in a technical college. Though the apparatus embodied precautions preventing the escape of radiation in normal use, the protective

devices had been put out of action to allow realignment of the x-ray tube. The burn did not develop for some weeks. A radiotherapist estimated the radiation dose at 1,500-2,000 rads, which could have been incurred in less than 20 seconds.

In another incident a dentist took a radiograph and then left the surgery. Some 15 minutes later an assistant discovered that the x-ray set was hot and disconnected it. The tube had been delivering x-rays during this time because of a short-circuit caused by a loose nut and washer inside the timer. The staff were not carrying film badges (few dentists do), but their radiation doses were probably not dangerous. The patient, had he remained sitting in the chair, would have received a severe exposure.

The National Radiological Protection Board have had little response to the offer of radiation surveys and checks of radiological procedures in dentistry, partly because of the financial penalty to dentists in loss of earnings during the survey. In a new technique the exposure to the x-ray beam of a specially prepared packet containing film and absorbing filters gives enough information for a preliminary assessment of the hazard without disruption of the dentist's work. The limited information available to the board suggests that conditions are often unsatisfactory and that more attention should be given to the protection of dentists, surgery assistants, and patients from radiation hazards.

¹ National Radiological Protection Board, *Radiological Protection Bulletin*, No. 5, October 1973. Harwell.

Child Development Study

Probably no other normal children have been the subject of so much research as those born in March 1958 who formed the 17,000 subjects of the National Child Development Study. The plan was for every child born in Britain in a single week to be examined at birth and as much relevant data as possible recorded about his parents, mother's pregnancy, and birth. The children have been followed from birth and their progress—physical, psychological, and educational—assessed in two detailed re-examinations at the ages of 7 and 11. At the age of 7 over 90% of the children were traced and examined; and at 11 it was still possible to trace 89%. This year the children reach the age of 15 and they are being examined once more.

Much information, some of it unique, has already come from this project¹⁻³ and it would be most unfortunate if there was any marked fall-off in the response rate at the current examination. However, 15-year-olds are by nature rebellious, and some of those in the cohort being examined are being asked to go to some personal inconvenience to attend for testing. Professor Neville Butler, one of the directors of the study, and his colleagues are asking for help from family doctors and medical officers of health in encouraging these teenagers to co-operate (see letter p. 100). Longitudinal studies of this kind are rare—few research workers are willing to embark on a project lasting nearly 20 years—but the information that they yield may be invaluable. The quality and interest of the work so far published from the study are such that anyone asked about it need have no doubts about giving it unequivocal approval.

¹ Davie, R., Butler, N. R., and Goldstein, H., *From Birth to Seven*. London, Longman, 1972.

² Pearson, R., and Peckham, C., *Community Medicine*, 1972, 127, 113.

³ Butler, N. R., Goldstein, H., and Ross, E. M., *British Medical Journal*, 1972, 2, 127.