malignancies. The clinical usefulness of this test, however, was questioned in the discussion which followed.

H. BEGEMANN (Munich) presented the results of a trial of asparaginase therapy. Asparaginase was given in a dose of 200 international units per kg. body weight per day for 28 days. Of over 120 patients who were treated, 80 had had acute lymphoblastic leukaemia, and in them the remission rate was 50%, being higher in children than in adults.

The use of pipobroman (Vercyte) and piposulfan (Ancyte) among other less well known antileukaemic agents in the treatment of chronic myeloid leukaemia was reported by J. BOHNEL and A. STACHER (Vienna). In this instance both drugs were given in a daily dose of 1 mg./kg./body weight, and remissions occurred in about half the number of patients treated with these drugs. Thus it appeared that they could be used successfully when a patient no longer responded to busulphan.

Immunological Aspects

Citing the increased incidence of malignant disease in patients with inherited immunological defects or chromosomal abnormalities, W. HITZIG (Zurich) suggested that this might be due to the paralysis of a system for rejecting spontaneously arising malignant clones. G. MATHÉ (Paris) and his colleagues reported on the clinical use of non-specific immunological stimulation by B.C.G. inoculation. Their latest results in acute leukaemia—in which one adult patient was still alive after more than 1,150 days and some 20 patients had survived for 300 to 900 days (a favourable comparison with the control group's longest survival of 120 days)—showed that a definite increase in the length of the remission could be obtained with immunotherapy.

NEW APPLIANCES

Further Modifications in the Children's Jejunal Biopsy Capsule

Dr. SIMON LATHAM, senior paediatric registrar, and Mr. A. J. BECKET and Mr. D. A. CHAPELL, senior technicians, Hammersmith Hospital, London W.12, write: Cereal is now introduced very early into some babies' diets and consequently coeliac disease may manifest itself in very small babies. There is therefore a need for a safe and reliable method of obtaining a jejunal biopsy specimen in these infants. With any capsule the risks of perforation will be less if the port is small, and if the capsule itself is small it will be easier to pass. There are some excellent modifications (Read *et al.*, 1962; Salem, 1965; Lacerte and Pelletier, 1968) to the original Crosby capsule (Crosby and Kugler, 1957), but like all miniature equipment they share the common disadvantage that the restricted space limits the freedom of the moving parts. In the conventional capsule the spring is mounted as in capsule A (Fig. 1) so that its free end locks on to a vertical pin mounted in the base of the capsule. Unfortunately the pin further limits the diameter of the spring and it is also apt to cause friction against the side of the spring when the capsule fires. The moving parts are so light that any impediment may either prevent the capsule firing or hinder it from taking a full biopsy specimen.

Capsule B (Fig. 1) shows a modification in the mounting of the spring to overcome this disability. Here the spring has an arm at its free end, and this is held by inserting it into a hollow tube mounted vertically in the base of the capsule. This has the advantage that the spring rides freely above its fixation and is therefore able to make use of the full internal diameter of the capsule. There is no source of friction and its movement is therefore free. The size of the port can be very small if a sample is required only for examination, photography, and histology. If, on the other hand, a sample is also required for enzyme study the biopsy specimen must be large enough to be cut in half. The smallest port that allows this is about 3 mm. in diameter, which appears to be safe for large children. Although some have found a port of this size to be safe in babies (McNeish, 1967), this experience has not been shared by all (Anderson, 1966). If a smaller port can still yield an adequate biopsy specimen its use would seem justified, as an ideal instrument should have the widest possible margin of safety in all hands.

A further modification was used in capsule C (Fig. 2), in which two ports are used to provide two separate specimens cut by the same knife. The capsule is only 0·8 mm. longer than the Watson intestinal biopsy capsule (Fig. 2 D) (Ferraris Development and Engineering Co. Ltd., London N.18) and is of the same diameter. Our experience showed that elliptical ports 1·5 by 3 mm. were suitable for large children and yielded specimens varying between 6 and 12 mg., which are suitable for estimation of lactase, maltase, and sucrase. A smaller elliptical port of 1·25 by 2·5 mm. was suitable for babies and yielded a specimen of about 4 mg., which is suitable only for the determination of lactase. The size of the specimen, however, varies with the speed at which the capsule is fired and the lightness with which the trip mechanism is set.

James (1968) suggested using a double lumen tube in which the outer tube is stiff, so that the capsule can be passed through the pylorus under fluoroscopy. This certainly simplifies duodenal intubation in larger children, but in babies and small children we favour simply a fine, stiff, radio-opaque tube for which an arterial catheter (Odman–Ledin *x*-ray opaque catheter) is used, as it is easier to swallow and it causes less irritation at the back of the throat.

It is unfortunately not possible to give any strict safety limits, for the amount of the gut that is drawn into the capsule varies with its tone, the size of the port, the setting of the trip mechanism, and the speed at which the vacuum is created. It would therefore seem wise to test any new capsule on the toneless gut of an infant at necropsy, for if this is not perforated the capsule should be safe to use in a child in whom the tone of the live gut adds further protection. In our experience with these capsules the biopsy specimens have all been superficial and have never involved the muscular layers. Sedation with quinalbarbitone suppositories has been used and there have been no failures or complications.

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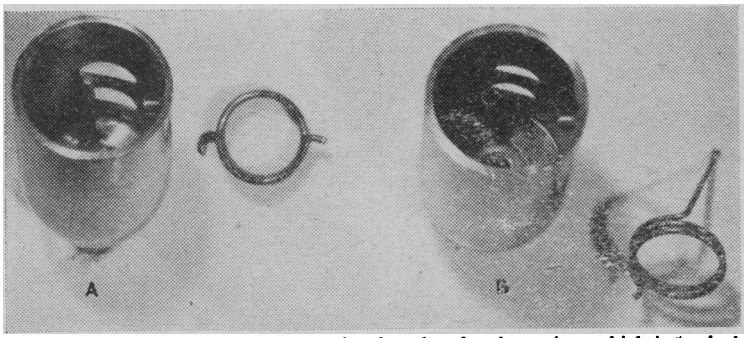

FIG. 1.—Model A shows the conventional anchor for the spring, which is hooked round the upright pillar. Model B shows a modification which enables the arm at the free end of the spring to slot into the upright hollow tube.

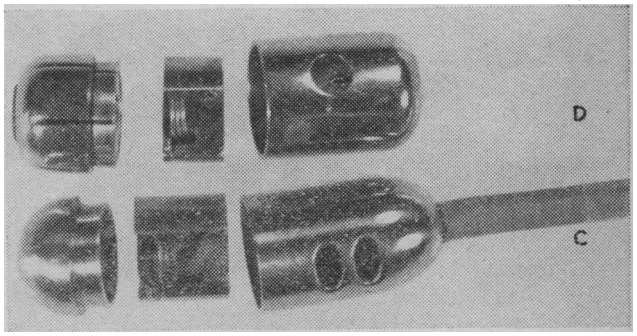

FIG. 2.—Model C shows the modification of a double port and a longer knife. External diameter 7·2 mm., external length 15·5 mm. Model D: the Watson intestinal biopsy capsule. External diameter 7·2 mm., length 14·7 mm.