Inside Ring Circumference

Size	Closed		Open	
	in.	cm.	in.	cm.
1	14	36	16	41
2	17	43	20	51
3	21	53	24	61
4	25	64	28	71
5	29	74	33	84

to adjust the level of the upper half-ring without having to change the entire splint and without danger of losing the position of the fracture. When the swelling subsides the ring can be readjusted, so that it fits at all times. (3) The nuts fit tightly into the notches on the rods and prevent the upper half-ring being pulled off when suspended from a Balkan beam. (4) When knee flexion

exercises are permitted on the splint they are easier to perform without the upper half-ring than with a complete ring. (5) As few splint sizes are needed, less storage space is required.

I am grateful to H. W. Poole & Son, Appliance Makers, Leeds, for constructing the splint ring, and to Mr. P. Rowley of the same firm for his help.

FIG. 1

FIG. 2

FIG. 3

FIG. 1.—The two components of the ring. Left, upper half-ring. Right, lower half-ring with tubular sockets and nuts. FIG. 2.—Ring closed. FIG. 3.—Ring opened.

A Fibreoptic Colonoscope

Mr. J. A. Fox, senior surgical registrar, the Royal Free and Royal Northern Hospitals, London, writes: The development of flexible fibreoptic viewing bundles provides a method of extending the range of conventional rigid-tube sigmoidoscopy into the proximal colon. Flexible forward-viewing endoscopes are available for the oesophagus, bile ducts, and ureters, and a similar instrument has now been used for colonoscopy.

The main problem is one of guidance around the various bends of the mobile colon against peristalsis. Retrograde colonic intubation is satisfactory up to the splenic flexure and occasionally into the transverse colon (Fox, 1967). For total colonoscopy end-to-end intubation is necessary, provided that there is no intestinal obstruction, and the guide line can be used to pull instruments up from below (Provenzale *et al.*, 1966)

The colonoscope described here is designed to be used only after preliminary retrograde intubation with a special polyvinyl tube. It consists of a fibreoptic viewing bundle, a lighting bundle, and an irrigation/air insufflation channel housed in a polyvinyl sheath. The colonoscope is 250 cm. long and has an external diameter of 7.5 mm. (Fig. 1).

After inserting the colon tube under radiological control the colonoscope is introduced through it until its forward-facing lens is positioned just inside the end hole of the colon tube (Fig. 2). A complete guide channel is therefore provided for the colonoscope, which prevents it from coming into contact with the mucosa during insertion and makes for easy removal to clean the lens and reinsertion afterwards. The lens and colon can also be cleaned by warm water through the irrigation channel, which is then used for

local air distension of the bowel as in sigmoidoscopy. Satisfactory views of the transverse, descending, and sigmoid colon have been obtained, and both still and cine colour film can be taken if a special light source (FCB 1,000) is used.

An improved colonoscope with a greater depth of focus, a movable tip, and biopsy facilities is now being constructed. This instrument will also have a better quality fibre bundle to give more mucosal detail.

The colon tube (specification 76/2) is available from Portex Ltd., Hythe, Kent. The colonoscope and light source (FCB 1,000) are made and developed by the American Cystoscope Makers Inc., 8 Pelham Parkway, New York 10803, U.S.A.

REFERENCES

- Fox, J. A. (1967). *British Journal of Surgery*, **54**, 867.
Provenzale, L., Camerada, P., and Revignas, A. (1966). *Rassegna Medica Sarda*, **69**, 149.

FIG. 1.—The colonoscope. Inset shows viewing lens, lighting bundle, and irrigation channel. FIG. 2.—Intubation of transverse colon by the colon tube with the colonoscope positioned inside it.