only ascertained at the time of the next ailment. This amnesia does not occur when purgatives and mechanical laxatives are taken. It is necessary to remember to take "medicine" and to gauge the dosage with the results obtained. It is seldom that they produce the clocklike regularity experienced with bran. Many patients who take purgatives experience symptoms such as flatulence, headaches, colicky abdominal pain, and sometimes alternate between constipation and diarrhoea. In such circumstances how can they be anything but "colon-minded"?

Prophylaxis

Bran may be used as a prophylactic agent to prevent the occurrence of constipation in patients who are: (a) constitutionally liable to constipation; (b) placed in circumstances which may produce constipation.

(a) Some patients who are liable to attacks of constipation ward them off with bran once a week. Its action gradually diminishes over a period of three to eight days in the patients who find it effective in this way. I believe that bran is a useful prophylactic against the attacks of spastic colon.

(b) Bran can be used during the post-operative, antenatal, and post-natal periods. Other laxatives are often necessary as well, but it is not difficult to minimize them, especially if the patient has used bran previously. As the occurrence of constipation often dates from childbirth or an abdominal operation, prevention of constipation is particularly important at these times. The influence of different localities on the laxation of certain people has never been satisfactorily explained. The water supply has been indicted, but a recognized authority on water supplies (Thresh, 1932) states that hard water is not known to cause constipation. One of my patients who varies between normality in Hampshire and obstinate constipation in Hertfordshire has obtained no benefit from the use of a water softener. Many people become constipated when travelling, and bran as a prophylactic is much superior to the purgatives usually employed.

Summary

The principle for the use of high-fibre diets for constipation has not been appreciated. High-fibre diets should be used for prevention and not for treatment.

Investigations have shown that: (1) the laxative value of foodstuffs depends upon the type of fibre contained therein; (2) the fibre of wheat bran is much more effective than that of fruit and vegetables; (3) no evidence of irritation of the alimentary tract by bran has been observed.

The nomenclature in common use has been criticized.

One hundred and twenty-one patients with habitual constipation, 80 per cent. of the total, were treated with processed bran. The results in 110 cases of simple habitual constipation showed that: the treatment was successful in restoring normal bowel habits in 90 per cent. of the cases; that women were more common sufferers than men in 3 to 1 ratio; that the menopausal age is the most difficult; and that the prognosis and rapidity of response to treatment depend upon the length of the history of constipation.

The psychological benefit conferred on these patients is contrasted with the outlook of the patient taking laxatives.

The importance of prophylaxis is emphasized.

The results in patients with haemorrhoids were particularly encouraging.

Two cases of mucous colitis due to purgatives were successfully treated by bran.

In spastic colon the importance of the prevention of constipation during the intervals between the attacks is emphasized, for it is suggested that constipation induces spasticity in the susceptible person.

The processed bran used in the investigations was Kellogg's All-Bran.

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TREATMENT OF CARCINOMA BY INSERTED RADIUM PLAQUES

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Probably the most important factors in the successful irradiation of carcinoma are that the irradiation should be uniform over the whole region under treatment and that its amount should be accurately known. In the possibility of satisfying these conditions lies the real advantage of radiation from a distance, whether by large radium units or by x rays.

The insertion of seeds or needles into the tissues, however skilfully carried out, can only give a very rough approximation to the result desired, and in any event there must be a number of points of excessive irradiation and local destruction of tissue. The method which I propose to describe avoids such local damage while retaining the convenience and economy of seeds and needles; moreover, in the regions where it is applicable it would appear to meet with a high degree of accuracy the conditions we have stated as fundamental.

Method of Procedure

The method consists in the introduction into the tissues of small plaques made of dental wax and carrying within the wax the seeds or needles used as sources of radiation. The latter are so arranged as to give the flattest possible

FIG. 1.—Showing form of plaque and incisions for introduction.

field, and where it is possible to introduce two opposing plaques these can be so arranged that the whole of the intervening tissue receives an almost uniform radiation.

If introduced into suitable tissue planes the plaques are readily tolerated, and if they are removed at the end of four or five days the small wounds made for their introduction heal without difficulty. As no foreign body has been left in the tissues additional radiation from an external source may be at once applied should this be desired.

Application to Post-cricoid Pharyngeal Carcinoma

I shall describe the method in relation to pharyngeal carcinoma in the post-cricoid region to which it is peculiarly applicable. An incision four or five centi-

FIG. 2.—Outer wall of pharynx, exposed by blunt dissection.

FIG. 3.—Interior of larynx and pharynx.

metres in length is made on each side of the larynx, dividing the skin and platysma, when it will be found that a fascial space can be opened up between the larynx and the great vessels, so that both sides of the larynx and pharynx from the hyoid bone downwards are exposed

with facility. The only important structure crossing the space is the internal laryngeal branch of the superior thyroid artery, and this is divided between ligatures.

Two circular plaques have been prepared, three centimeters in diameter and consisting of four layers of dental wax, between which the seeds or needles are suitably arranged, whilst a piece of tape is inserted to facilitate removal. The plaques are inserted facing one another on either side of the pharynx, which is thus subjected to a cross-fire resulting in a very uniform field of irradiation. The incisions are closed by a few stitches, leaving the tapes projecting. At the end of three days the incisions are reopened, the plaques removed, and the incisions again sutured. The inconvenience to the patient is remarkably small.

As regards the quantity of radium required, if twenty-five radon seeds of 1 millicurie each are distributed radially around the margin of each plaque at the end of three days there will have been 21 millicuries destroyed, and if the plaques are four centimetres apart the whole of the intervening tissues will have been subjected to an irradiation of just over 6,000 *r* units.

Other Applications

The method as described is applicable to the lower pharynx, the larynx, and the sinus pyriformis. With suitable modifications it may be applied to the tonsil, and to the vallecula and the root of the tongue, and also to the cervical oesophagus. No doubt it has many other applications, but here it appears to be peculiarly suitable and to meet effectively cases of a difficult class. The number of cases in which it has been used is too small to justify conclusions, but the results have been encouraging and would seem to indicate both the safety and effectiveness of the procedure.

A. Laskiewicz (*Rev. Laryng.*, January, 1937, p. 40) discusses a special group of foreign bodies in the trachea and bronchi, such as beans, peas, maize, and soft stones of fruit, all of which have the property of expanding when lying in contact with the tracheal and bronchial mucous membrane after aspiration. The foreign body may lie in the right bronchus at first. As it expands the coughing efforts sometimes dislodge it, and it may come to lie near the bifurcation, causing death by obstructing the left bronchus as well. Soft foreign bodies also lead to rapid suppuration of the mucous membranes with the formation of pulmonary abscess, as do fish bones and small pieces of wood. Before the invention of the bronchoscope the mortality of expanding foreign bodies was 52 per cent. At present the mortality is still 27.5 per cent. because bronchoscopic removal presents great technical difficulties. The foreign body often breaks into several parts when seized with the ordinary type of bronchoscopic forceps. Special forceps ends have been invented, also hooks which simply dislodge the foreign body without seizing it. After loosening them in this manner they are sometimes coughed up, especially if a tracheotomy opening has been made. In infants and children a choice must be made between upper and lower bronchoscopy. For many reasons the author prefers lower bronchoscopy, the endoscopic tube being introduced through a tracheotomy opening. In upper bronchoscopy, if the tube has to remain in the larynx of a child for more than fifteen minutes there is considerable danger of oedema of the glottis. The article includes eight case histories of children with three deaths.