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President—R. D. Owen, F.R.C.S.

The Problem of Hypopharyngeal Carcinoma (abridged)

PRESIDENT'S ADDRESS

By R. D. OWEN, F.R.C.S.

The anatomists label all structures from the level of the soft palate to the pharyngo-œsophageal junction as " pharynx " ; but I like the old terminology of " hypopharynx ", by which I mean the pyriform fossae and postcricoid space, down to the entrance of the œsophagus.

I do not propose to discuss carcinomatous lesions involving the epiglottis, aryepiglottic folds, and the lateral wall of the pharynx above the laryngeal opening.

In a discussion in this Section on malignant disease of the pharynx (Simpson *et al.*, 1948) it was shown that cancer of the lower pharynx still remained a difficult proposition.

Negus (1948) states regarding prognosis, that extrinsic cancer is amenable to extensive operation in a limited number of cases only, and rarely with a permanently successful result. Irradiation offers no better prospects.

The choice of treatment is not easy to decide upon. When we are confronted by an early operable case there is a tendency to take the path of least resistance and hand over the patient to the radiotherapist. Irradiation has been and is being tried in various forms, but still with limited success. It makes one wonder what constitutes the greater form of misery—to die with no attempt having been made to cure with radical surgery ; the suffering that comes with the recurrence after radiotherapy ; or the lot of a patient who has had a pharyngo-laryngectomy performed, and the suffering that follows when a recurrence appears, particularly before the plastic phase has been completed. The uncontrolled dribbling of saliva, and being without a voice to express one's misery, still remain a grim and sad picture.

Our sincere hope is that improvement in radiotherapeutic methods may one day reach the stage when pharyngeal cancer can be treated with greater confidence, and even make us forget about the necessity for radical surgery.

The history of the patient must be carefully taken and the significance of symptoms described as " catch in the throat " or " pricking sensations " must be appreciated.

This symptom of " pricking sensation " can be very confusing, as a common

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cause of discomfort in the throat is the retention of debris or pus, or even small calcareous deposits in the tonsillar crypts. It is very easy to clean out and empty the crypts, and then follow this by using the laryngeal mirror to examine the lower pharynx and the larynx. Having found a normal larynx and clear pyriform fossae, without the retention of mucus in them, one may conclude that the cryptic activity in the tonsils is the cause of the pricking sensation.

Tonsils have been removed as being the cause of this discomfort, and within three months I have seen the patient referred because of dysphagia and glands in the neck, due to a postcricoid growth, which was undoubtedly present at the time of the removal of the tonsils.

When the patient's throat symptoms are combined with voice changes, such as a moist, muffled tone, or huskiness, one immediately becomes suspicious of a laryngeal or a pyriform fossa lesion. Voice change, with a postcricoid growth, is, however, a late symptom. Yet it is sometimes amazing what an enormous mass can be present behind the cricoid with very little voice change, and even without the fixation of a vocal cord.

It is also true that dysphagia need not be very pronounced when the lesion is localized to the posterior or anterior wall of the hypopharynx, but when the spread is tending to become annular, then real dysphagia appears, with the usual squelching noise and a slight cough when attempting to drink fluids.

There are recorded cases of congenital narrowing of the upper gullet, without the history of dysphagia. Brown Kelly once showed a post-mortem specimen of a man of 35 who never complained of trouble in swallowing, and yet the lumen of the pharyngo-œsophageal junction had a diameter of only 4 mm. Chevalier Jackson made the observation that well-masticated food can pass through a lumen of 5 mm., and that a malignant stricture of a 3 mm. lumen will take food ordinarily eaten by the average man, provided it has been put through a sieve of 25 meshes to the inch.

It is little wonder that the general practitioner, when confronted by a dysphagic patient, can be misled.

It means also that indirect laryngoscopy is not always enough. The hypopharyngeal speculum, or the œsophagoscope, ought to be used when there is a doubt about the character of the pain or discomfort. This is the only way to try and establish an early diagnosis.

It is true that operation, in properly selected cases, is justified by results. As John Simpson said, the figures published by the late Mr. Colledge in 1943 still remain the peak to which this branch of surgery has been brought : That 13 out of 39 patients, i.e. 33 per cent., were well, ten years after lateral pharyngotomy, and that out of 16 cases of pharyngo-laryngectomy, 6 (or 37 per cent.) were alive and well.

The radiotherapist cannot as yet produce figures comparable to those published by Colledge. Radiotherapy for cancer of the pyriform fossa, the postcricoid area, and the cervical portion of the œsophagus still proves to be disappointing, though fairly good results are obtained in the vallecular regions, epiglottis, and the aryepiglottic folds, but not in the hypopharynx proper. That is why we have to continue to think in terms of radical surgery. The classification of neoplasms in this area is important, with an accurate picture of the localization and extent of the growth.

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These essentials were discussed at a memorable meeting of this Section in December, 1931 (*Proc. r. Soc. Med.*, xxv, 431).

The merits of plain excision on the one hand, and radium combined with surgery on the other, were discussed. That is nearly nineteen years ago, and as far as I can see, the problem remains the same to-day.

To-day we are of the opinion that under certain conditions the loss of the larynx is relatively of minor importance in a life-saving undertaking. The ideal, however, is to try and make certain that cases are brought to one's notice early enough to avoid the necessity of mutilating operations. We still have to admit that the net survival rate, even for treatable cases, is disappointing, and that the proportion of late cases coming for treatment is far too high.

What, then, are the difficulties that continue to make this hypopharyngeal problem so elusive ? I believe that up to now we lack the courage of conviction. We refuse to recognize the fact that certain early signs and symptoms belong to a phase that ought to be regarded as precancerous. I know that the word " precancerous ", in the pathological hierarchy, is not altogether popular, but there is no reason why the word should not be used, provided one knows its meaning. According to Professor Scarff it should be used to denote any condition of the tissue in which malignancy is more likely to occur than in normal tissue.

In a discussion that took place in this Section in February, 1936 (*Proc. r. Soc. Med.*, xxix, 526), Mr. Negus described two cases of chronic hypopharyngitis that eventually developed postcricoid carcinoma. He went so far as to say that the right course was to excise that segment of the œsophagus before carcinoma developed.

Even in 1931 Mr. Negus emphasized the need of early diagnosis, and supported this teaching by mentioning the case of a patient with pain on swallowing, which was referred to the pyriform fossa. Direct examination showed raised small masses on the lateral wall of the pyriform fossa. Microscopical examination showed this to be a fibroma, with inflammatory infiltration. Mr. Negus performed a transthyroid pharyngotomy, which was a complete success. He made it clear that there were no malignant changes on examination of the specimen, but still he regarded it as precancerous.

That to me is the courage of conviction. In other words, whenever one is certain that a condition of hypopharyngitis is progressive, everything else being equal, it is one's duty to regard it as precancerous.

While dwelling on this precancerous problem, I shall refer to the Paterson-Brown Kelly syndrome—sometimes incorrectly described as the Plummer-Vinson syndrome. Paterson, in 1919, was the first to draw attention to the fact that the development of a postcricoid carcinoma, in women complaining of this syndrome, was far too frequent an occurrence to be a mere coincidence. Brown Kelly in his Semon Lecture in 1926 said : " I think that the relation of pharyngo-œsophageal spasm to anæmia would be a fruitful subject for investigation, particularly when we consider some of the complications such as post-cricoid carcinoma."

In 1939, R. R. Simpson, of Hull, stated that examination of the records of his cases suffering from this syndrome, where œsophagoscopy was carried out for dysphagia, revealed that at least 50 per cent. either had, or developed, a

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carcinoma. His figures, however, showed that the lower end of the œsophagus was more vulnerable than the postcricoid area. Ten out of 18 cases developed malignant disease : 4 postcricoid, 5 the lower end, and 1 the lower third—all of them complaining of simple achlorhydric anæmia and a long-standing " small swallow ".

I cannot say that in my experience of the Paterson-Brown Kelly syndrome has the incidence of carcinoma as a complication been so high.

Ahlbom of Sweden, in his long series, appeared to have no difficulty in associating a proportion of carcinoma of the mouth, the pharynx and the œsophagus with the Paterson-Brown Kelly syndrome, but no figures regarding the postcricoid lesion have been mentioned. Since then, Flett of Derby has stated that out of 100 cases which he followed up complaining of this syndrome, not one developed a carcinoma, but after communicating with him later I know that he has altered his opinion since then. Colledge, in his Lettsomian Lectures, mentions a case of a female with the Paterson syndrome and a postcricoid carcinoma, on whom he had performed a pharyngo-laryngectomy for the removal of the growth. This patient, ten years later, came under observation (at the Cardiff Royal Infirmary) with a carcinoma of the lower end of the œsophagus and the cardiac end of the stomach.

In August of this year I followed up the subsequent history of 34 female patients who had been in-patients at the Cardiff Royal Infirmary for investigation of the syndrome of dysphagia with anæmia. These patients had been admitted during the years 1934-5, and I am excluding all those who appeared during those years for the first time with a postcricoid carcinoma. I chose the years 1934-5 as we happen to have had an exceptional number of these cases during those two years. Also, now that fifteen years have elapsed it gives, in my opinion, a fair period to enable one to assess the course of events.

R. R. Simpson in 1939 said : " The few writers on this subject referred to the supervention of malignant disease as a possibility, but so far no attempt has been made to assess the frequency of this occurrence, despite its general recognition."

Of the 34 female cases that came under my care, all had direct œsophagoscopy performed on them, as well as the usual blood counts, and some had fractional test meals. They were diagnosed as cases of dysphagia with simple hypochromic anæmia. Direct examinations were carried out in order to dilate the cricopharyngeus web, to improve the swallowing, and in particular to try and assess correctly the mucosal changes.

The follow-up of these cases after fifteen years showed :

TABLE I.

No. of cases seen during 1934-5		34
No. still surviving without any evidence of malignant disease ..	23	
No. that developed a post-cricoid carcinoma	5	
No. not traced after 1939, but free from malignant disease up till then	6	

I was surprised to see that so many of these women remained free from malignant disease. My impression had been that cancer occurred more frequently, but not in the high percentage mentioned by R. R. Simpson.

Of the five that developed a postcricoid carcinoma, Table II shows the

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varying periods at which this developed after direct œsophagoscopies, and this enables one to focus attention on the possibility of a precancerous condition in this syndrome.

TABLE II.

Patient	No. of dilatations (direct œsophagoscopy)	Postcricoid growth developed	Age when developed
1	3 { 1934, 1938, 1940	1947	75
1	2 { W1934, W1935	1938	55
1	2 { W1934, W1936	1937	63
1	1 1935	1937	39
1	1 1934	1942	42

Out of the 23 classified as having no malignant disease, 12 of these women reported having had considerable benefit after dilatation. They swallowed solids easily for about twelve months to two years; after that symptoms gradually reappeared. They returned to a diet of soft food and liquids and any attempt at solids produced a choking attack. The following letter is typical of others sent to me from these patients during the course of the follow-up: "I received treatment at your Hospital in 1935 and 1945. After both occasions I enjoyed a period of two years of perfect swallowing but now the condition has gradually returned and I cannot go without the fear of choking during a meal when trying to swallow solids." Eleven, however, said that they are very much better and able to eat everything with reasonable care.

Their own doctors followed up the treatment of the hypochromic anæmia very conscientiously in the majority of cases, and I daresay that this, as well as the dilatation, has helped to bring about an improvement in so many.

But what about the 12 that continue to complain of the dysphagic symptoms? Is it the right treatment to encourage these women to come up for repeated dilatation? I have already mentioned that three direct œsophagoscopies during a period of six years made no difference to one patient, and did not prevent the appearance of a postcricoid growth thirteen years after the first dilatation. Would more frequent dilatations have succeeded in preventing malignant changes? At the same time the fact that 11 out of 23 are more or less symptom-free after one dilatation makes one hesitate in being dogmatic about the fact that hypopharyngitis is to be regarded as precancerous.

This question is whether these 12, whose ages average 64, are becoming more vulnerable to the development of hypopharyngeal cancer, or even the localization of cancer lower down in the œsophagus and why should the dysphagic symptoms reappear?

The results of the follow-up inquiry of these 34 females who were seen first in 1934-5 may be interpreted as follows: At the end of fifteen years, the proportion who had developed postcricoid carcinoma lies somewhere between

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15 and 32 per cent., assuming that the six who were not traced after 1939 can be regarded as free from cancer.

We know of no figures showing the incidence of the disease in the general population, but Stocks has shown (Statistical Review, part 3, text, 1940-45, Table LXXX) that the mortality rate from cancer of the pharynx in females since 1911 has not been greater than 25 per million at any age-group. 15 to 32 per cent. seems, therefore, a very high figure, and certainly suggests some extra risk of incurring the disease amongst people with dysphagia and simple hypochromic anæmia.

Mean ages of the groups are perhaps not the best approach to the study of the effect of age on prognosis, and in any case they should all be measured from the same point of time. One would like to measure them from the age at which the so-called " precancerous " state developed, but we do not know this, and the nearest approximation we can get to it is the age at which patients were first seen and dilatation was performed.

In the following table the three categories have been classified to 10-year age-groups, according to their age in 1934-5, when first seen.

TABLE III.

AGE DISTRIBUTION OF PATIENTS ACCORDING TO THEIR AGE IN 1934-5 WHEN FIRST SEEN

		Ages				
		30–	40–	50–	60–	Total
A.	With symptoms but no growth	4	3	4	1	12
B.	Without symptoms	2	8	1	—	11
C.	Developed growth	2	—	1	2	5
	Total	8	11	6	3	28
C	as percentage of total	25%	—	16%	66%	

The figures are too small to draw any valid statistical deductions—the difference could have arisen by pure chance—but if the percentages should remain the same on a larger set of figures, or if the analysis was repeated on several series of patients with similar results, then it would be suggestive that it is after the age of 60 that the risk of growth developing becomes greatest.

In the present age distribution of Groups A and B, 50 per cent. of the 12 women with symptoms but no growth are now, in 1949, over 60, as compared with 64 per cent. of the 11 women who are free from symptoms. The actual age distributions are shown in Table IV and it will be interesting to follow the subsequent history of the two groups.

TABLE IV.

AGE DISTRIBUTION IN 1949 OF GROUPS A AND B

	Age 40–	50–	60–
A ..	2 (16·7%)	4 (33·3%)	6 (50·0%)
B ..	1 (9·1%)	3 (27·3%)	7 (63·3%)

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My clinical conclusion is that 12 women whose ages average 64, and have complained of dysphagia for at least fifteen years, so far show no sign of malignant disease. Eleven responded to treatment and are more or less symptom free. Five developed postcricoid carcinoma ; 3 after more than one dilatation. It is important to remember the insidious onset of cancer. These women, through the years, have schooled themselves to put up with this persistent, painless pushing down of food. Some become so accustomed to it that they regard it as normal. Then sudden serious attention may be drawn to it by mischance when a bolus of food sticks in the upper food passage. A direct examination may be carried out with a view to dilatation and to assess the condition of the mucosal lay-out. At the same time a piece of mucosa may be taken for microscopical section and, more often than not, a report is returned, showing that the appearance is not suggestive of neoplasm but more like inflammatory granulation tissue.

For years one can watch patients with this kind of history and the majority seem to go on without developing the complete picture of malignant disease—but they must be regarded as vulnerable and followed up if proper and early diagnosis is to be made.

Early diagnosis of carcinoma of the postcricoid space and the upper end of the œsophagus means the avoidance of the major and mutilating operation of pharyngo-laryngectomy.

If the mortality rate in this disease is to be reduced, the recognition of signs and symptoms suggestive of a precancerous condition is important, but I shudder to suggest that *all* these patients should be operated on during that phase, apart from having direct œsophagoscopy performed.

The series of malignant tumours that I have removed from the hypopharynx show certain variations in the clinical pictures. There is a marked clinical difference between the soft, spreading, ulcerative type (Fig. 1), which generally involves the postcricoid space and the upper end of the œsophagus, and what one may call the hard, scirrhous, infiltrating variety. With the former, secondary infection colours up the picture and metastases are more frequent, whereas with the latter, active ulceration is less of a feature, as is secondary infection, and secondary glands are not so frequent. Fig. 2 illustrates the endoscopic appearance of the soft ulcerative type. It is to be seen mostly in females who have had a postcricoid web for years. As already stated a number seem to improve after dilatation. Some, however, turn up two or three years later with a foul-smelling ulcerating mass involving the pyriform fossae and both the anterior and posterior walls of the hypopharynx. The cords may be fixed and there may be further extension of the growth to involve the soft tissues of the neck, such as the thyroid gland, as well as secondary glands.

The other clinical endoscopic picture to be seen is the type where a direct œsophagoscopy has had to be repeated three or four times, and where, at the first dilatation, the so-called membranous web is not encountered. In these cases, even after four dilatations, improvement is not maintained. Instead of a web one meets a rigidity and firmness surrounding the whole of the hypopharyngeal wall as illustrated in Fig. 3. One may not see any mucosal changes, but if handled roughly there is a tendency to bleed.

Here the stenosis may be due to submucosal fibrosis. The anæmic picture

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Fig. 1.

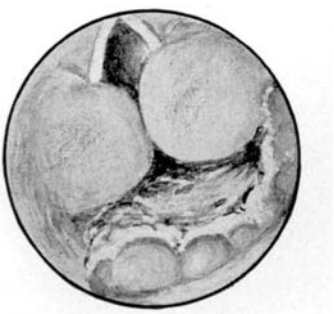


Fig. 2.
Endoscopic view of the "soft ulcerating type".

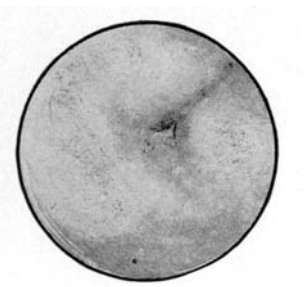


Fig. 3.
Endoscopic view of the hard rigid walls with a narrow lumen at crico-pharyngeas level.

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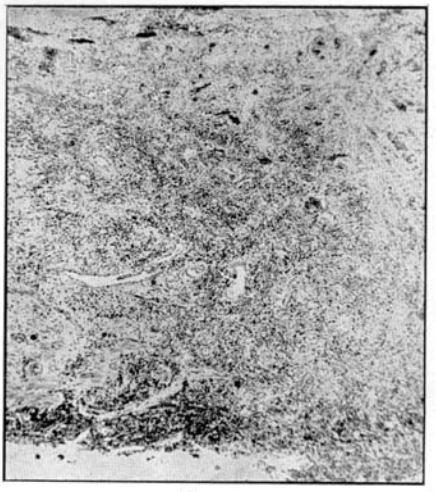


FIG. 4.
Low power.



FIG. 5.
Low power.

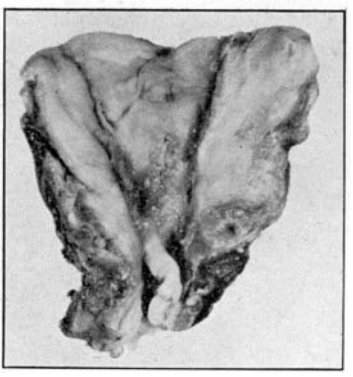


FIG. 6.

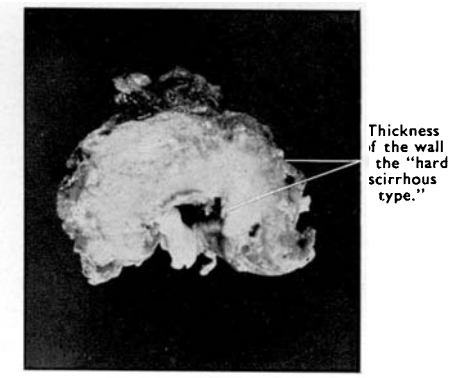


FIG. 7.

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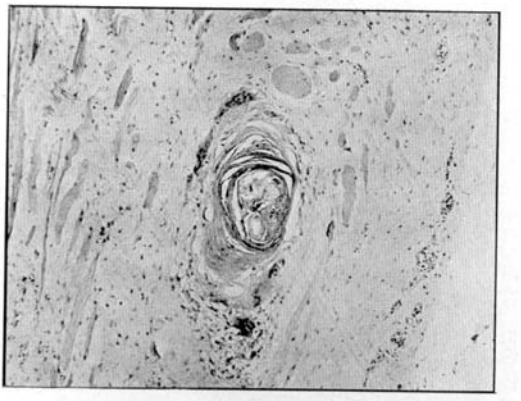


FIG. 8. × 60.



FIG. 9.

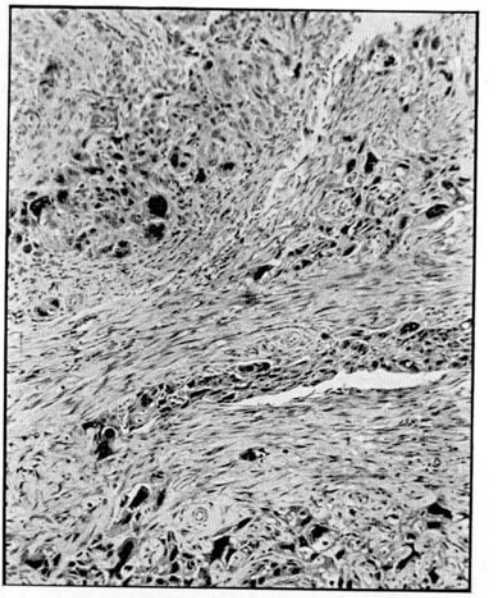


FIG. 10. × 80.

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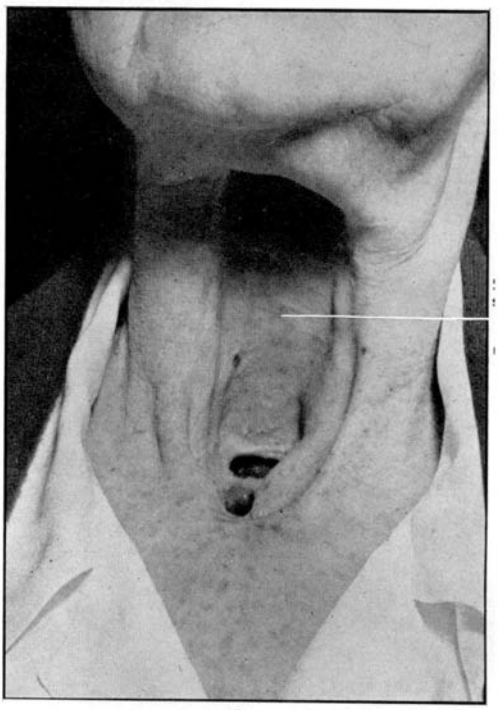


FIG. 11.

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associated with web formation is not always present and makes one conclude that this is another distinct clinical type of postcricoid narrowing. It differs entirely from the " web " formation of the Paterson-Brown Kelly syndrome.

As an example of what I regard as the persistent or progressive fibrotic type, without malignant changes, I am reminded of a woman, aged 64, who was admitted as an emergency with a history of dysphagia for at least thirty years. Ten days before admission she found herself unable to swallow anything solid, and even fluids gave her the greatest difficulty.

On admission she was extremely dehydrated, frail and wasted. She looked anæmic, but the tongue did not show the usual glazed atrophic appearance, and the nails were not spoon-shaped. Indirect laryngoscopy showed nothing, apart from the retention of mucus in the pyriform fossae. A direct œsophagoscopy showed marked rigidity and thickening of the hypopharyngeal wall, commencing about 2 cm. below the level of the arytenoids. The picture gave the impression of a circular stricture. In the very narrow lumen was found impacted a small foreign body, and this was removed without difficulty. Within a few months the same accident happened again from which she did not recover.

Post-mortem examination showed that there were two constricted areas, the centres being 3·5 cm. and 9 cm. respectively, below the laryngeal opening, the upper one being by far the most marked. To the naked eye the mucosa in the pyriform fossae appeared normal, but in the postcricoid region it looked opaque and thickened. This latter appearance extended in a marked degree for about 12 cm., the rest of the œsophagus being normal. Histologically, at the side of the stricture there was marked infiltration with inflammatory cells, principally lymphocytes and plasma cells, but also a few polymorphonuclears.

The microscopical section, Fig. 4, showed that at one place the inflammation extended through the muscular coat, completely destroying the latter. Nearby, where the lesion was less severe, the muscle fibres were thin and there were fibrosis and inflammatory infiltration.

Another section, Fig. 5, showed the part below the upper stricture, where the inflammatory infiltrations were more confined to the submucosa, and the muscle layer showed little infiltration and less atrophy.

In extent the fibrotic infiltration involved at least 9 cm. of the hypopharynx and the upper œsophagus, with the main stricture 3·5 cm. below the laryngeal opening. I feel it fair to assume that the whole of this segment must be regarded as more vulnerable than the rest of the œsophagus, and that had she lived, other changes such as malignancy might have supervened at any level within the 9 cm. There is no doubt that continued trauma to this inflamed mucosal surface, plus the unhappy fibrotic bed on which it lies, are factors that cannot be ignored in regarding this segment as precancerous.

In view of these clinical pictures that I have mentioned I would like to discuss the types of tumours operated on.

The soft ulcerating type when it involves the whole of the lumen and is not confined to the postcricoid plate is, as far as my experience goes, the most difficult to cure surgically. The presence of glands, however early, makes the prognosis much worse. Even after a very sweeping pharyngo-laryngectomy, and with the absence of secondary glands at the time of operation, recurrence

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may take place sooner or later. This happens either lower down in the œsophageal stoma or with secondary glands elsewhere. Even when a cut margin of an inch has been allowed below the level of the growth, recurrence has taken place at the cut margin. This takes one's mind back to the possibility of segmental vulnerability due to chronic inflammatory infiltration of the œsophageal submucosa as shown in Fig. 5; in other words chronic hypopharyngitis.

A lateral pharyngotomy should never be performed on the soft ulcerative type, even if considered operable and localized to the postcricoid plate. A pharyngo-laryngectomy gives a better chance of a cure.

As for the hard infiltrating scirrhous variety, as shown in Fig. 6, here the thickening of the œsophageal wall reduces the lumen to 2 or 3 mm. There is very little superficial ulceration and when the same segment is cut transversely, the submucous thickness of the wall compared with the degree of ulceration is seen (Fig. 7).

The tendency, when treatment is considered for these cases, is to advise removal by performing a transthyroid pharyngotomy, and in the majority there is no difficulty in peeling off the lower pharynx from the back of the larynx. When the whole segment is sectioned microscopically, one too often sees that only a small rim of healthy tissue remains beyond the limit of the neoplastic infiltration—far too small a margin for real safety (Fig. 8). This section illustrates the point. It so happens that this patient had been irradiated previously and the effects are well seen with some dead cancer cells.

I find it sometimes very difficult to be certain as to the type of operation that ought to be carried out, and I think it is fair to ask the question "How do we assess operability of a postcricoid neoplasm, and when do we consider the tumour as suitable for the operation of transthyroid pharyngotomy?" We know from the teaching of Trotter and Colledge that this operation is an excellent means of approach to growths involving the epiglottis, the lateral wall of the pharynx, and the aryepiglottic fold, but what about its suitability to lesions situated lower down in the postcricoid space and extending to the upper end of the œsophagus?

When one is faced with this type of growth, the question foremost in one's mind is whether the mass can be removed without sacrificing the larynx. Indirect examination with the laryngeal mirror may show free and mobile vocal cords and normal arytenoids. When this is the case, the tendency is to decide upon a transthyroid approach, particularly when glands in the neck do not appear to be involved. But mobile vocal cords and normal arytenoids are no guarantee that the hypopharynx can successfully be separated from the larynx.

There is nothing more embarrassing than, having started on a transthyroid pharyngotomy, to find when mobilizing the thyroid lobe that the growth has extended insidiously into the posterior edge of the lobe or on to the back of the larynx. The involvement of the gland under the edge of the thyroid isthmus generally means that the larynx is involved as well, and that the hypopharynx cannot safely be separated from the larynx. With this state of affairs, a transthyroid operation has to be converted into a pharyngo-laryngectomy, and this cannot be done unless care has been taken at the very beginning to fashion

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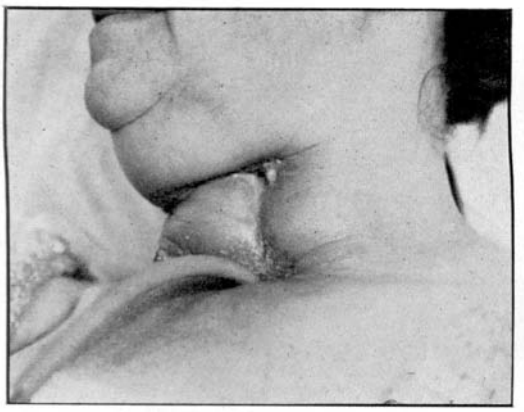


FIG. 12.

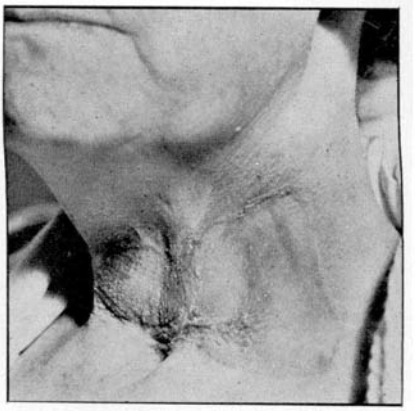
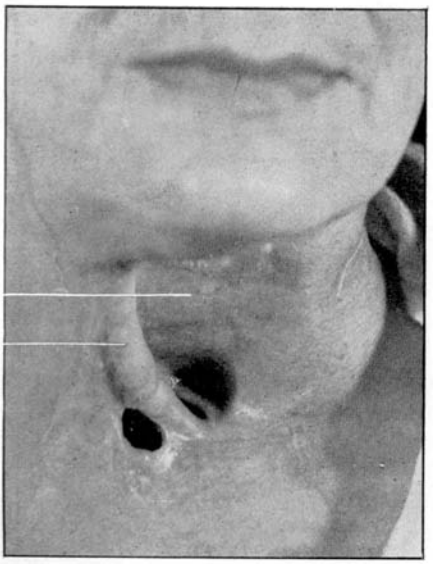


FIG. 13.



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FIG. 14.

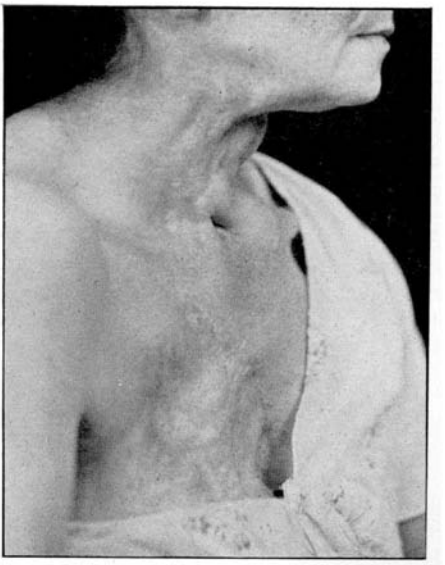


FIG. 15.
Pharyngostome closed by pedicle graft from chest wall.

[face p. 442

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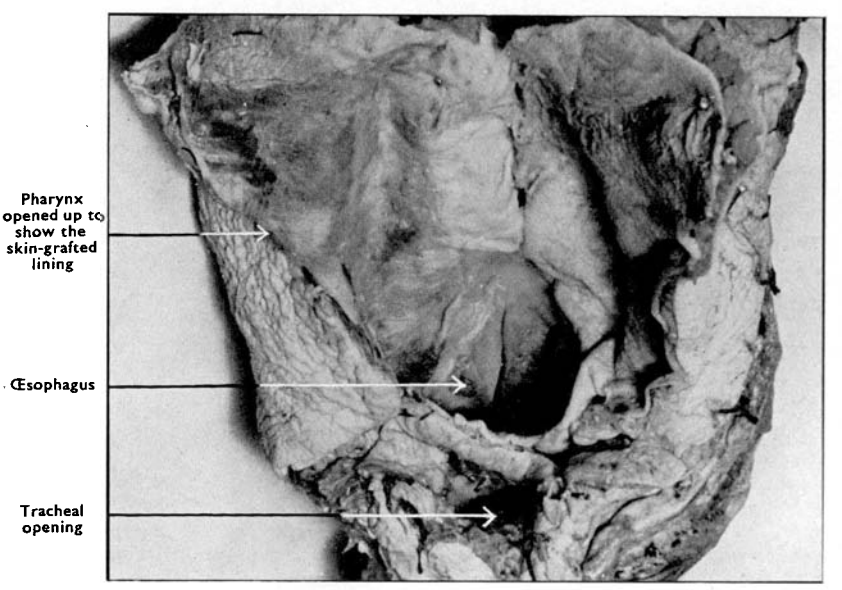


FIG. 16.
Post-mortem specimen. U-shaped flap opened up, showing skin-grafted pharynx and upper œsophagus.

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a skin flap in such a way as to enable one to prepare for the subsequent plastic repair.

The downward extension of the growth cannot always be judged by direct examination. While soft tissue X-ray can prove helpful one cannot be certain of the extent of the growth until it can be palpated by exposure. The size and the type of flap made at the beginning are therefore important.

Colledge made it a rule that neoplasms of the pyriform fossae and advanced postcricoid growths required a pharyngo-laryngectomy, and it was his custom to fashion a flap for this operation by turning back large skin flaps from the mid-line of the neck, whether a gland dissection was necessary or not. I prefer, however, the large skin flap as suggested by Wookey, with a wide base hinged either on the right or the left side, behind the sternomastoid. There are greater advantages to be had with this exposure as a lateral pharyngotomy can be transformed into a pharyngo-laryngectomy should one find, half-way through the operation, that the larynx cannot be saved.

Operative results. I find that in spite of grading, the clinical soft, spreading, ulcerating tumour gives a far higher percentage of recurrences than the hard, infiltrating type, even when both are graded as 1.

The suggestion that it is unwise to advise radical surgery for the more anaplastic Grade 4 is not always true. Fig. 9 shows very superficial ulceration, beginning in one pyriform fossa with œdema of the aryepiglottic folds and extending downwards for nearly two inches. The section of this growth (Fig. 10) shows a carcinoma which here and there has differentiated into obvious squamous cells, but for the most part is anaplastic. Many of the cells are large, and have bizarre nuclei. Others are multinucleated. On cytological structure this tumour might be considered malignant, but in the part sectioned there is only superficial infiltration into the muscle, and this is important.

The case is that of a woman on whom I operated nearly sixteen years ago, at the age of 59, and she is still alive. She was shown at this Section about two years ago, and there is no doubt that the reason why she has shown no signs of recurrence, in spite of the growth being classified as anaplastic, is the fact that infiltration into the muscle was at a very early stage, or that in this giant-celled type the histological appearance belies its malignancy.

This patient is rather unique inasmuch as she refused to undergo the plastic operation for the closure of the pharyngeal stoma. For sixteen years she has thrived and enjoyed solid food. She has taught herself to care for her Gluck's tube properly, and by this means she has perfect control of her swallowing and secretion of saliva (Fig. 11).

Pharyngo-laryngectomy and *transthyroid pharyngotomy.* One or two points may be mentioned: Firstly, the difficulties encountered in a neck that has recently been irradiated when one has to decide to perform a transthyroid pharyngotomy for a recurrence. The trouble in these cases is confined mostly to the skin reaction (Fig. 12) with its reactionary œdema complicated by the persisting lymphatic stasis. When this occurs it is necessary to wait for months before one proceeds with the plastic operation for closing up the stoma. Even then great attention must be paid to the lower opening, as there is an extreme tendency for this to close up, reducing the lumen to 2 or 3 mm. This can happen although care has been taken at the first operation to cut the œsophagus

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obliquely. If doubt remains as to the fate of this narrowed lumen it is by far safer to remove the scarred lumen, and skin-graft the raw surface. This can be held in position either with a Souttar's tube or a polythene tube of the same shape and length. Fig. 13 shows the neck of the same patient after the plastic operation has been completed, the skin lymphatic stasis having been absorbed completely.

Another difficulty encountered during a pharyngo-laryngectomy is the preservation of the sternomastoid muscle where gland dissection of the neck has had to be carried out. This is particularly so when the large Wookey flap is used.

Fig. 14 is an example of what happens to the skin flap when its blood supply has been interfered with as the result of having to sacrifice too much sternomastoid. The tendency is for the upper attachment to slough off and roll back leaving a large pharyngostome. When this happens co-operation with a plastic surgeon is essential.

Fig. 15 shows the neck closed by means of a large pedicle flap raised from the chest, and in this case I am indebted to Mr. John Grocott for his kind and valuable help.

The avoidance of multiple operations. As Colledge points out in his Lettsomian Lectures it is sometimes necessary to proceed with as many as four stages before a lasting result can be achieved. There is nothing more distressing for the patient after a pharyngo-laryngectomy, than to find herself without a voice, and dribbling saliva through an open pharyngostome. In addition she has to be fed through a tube.

The primary closure of the pharyngostome will minimize this drastic change. This can be done if the original incision is of the " U "-shaped type as used for ordinary laryngectomy. When the lower pharynx and the larynx have been removed a Gluck's tube is inserted into position, and then surrounded by a stent mould. The whole stent now surrounding the Gluck's tube is removed and covered completely by a Thiersch graft removed from the thigh. The stent tube and skin-graft covering are now replaced into position and the " U "-shaped skin flap brought over the whole area and sutured into its original position—the lower end being carefully adjusted to the tracheal stump.

The external pressure. Particular attention must be paid to the pressure that is applied on the surface of the skin flap and kept constant for at least seven days.

Two other steps are essential to the successful skin-grafting of a new pharynx : A gastrostomy and the provision of nasal suction to withdraw the pharyngeal secretions.

Fig. 16 shows a post-mortem specimen of a pharynx that was successfully grafted.

In conclusion one may emphasize that the only solution to this problem is early diagnosis and the recognition of the precancerous phase. If this, as a clinical entity, is accepted and recognized, one can decide on one of two things :

1. Repeated œsophagoscopy as a method of routine follow-up when symptoms continue.
2. When the dysphagia recurs with persisting mucosal changes, the vulnerable hypopharyngeal segment ought to be replaced by skin flap.

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This in itself would be a great step to enable one to avoid the mutilating operation of pharyngo-laryngectomy which prevents the return of normal function as compared with a transthyroid pharyngotomy.

Finally the following figures show the low survival rate for extrinsic cancer as compared with intrinsic laryngeal cancer (Table V).

TABLE V.

Extrinsic cancer of the larynx	Pharyngo-laryngectomy No. of cases	Post-op. deaths	Recurrence within 12 months	Recurrence within 5 years	Survived 5 years and more
	22	5	8	5	4 =18%
	Lateral pharyngotomy for postcricoid carcinoma and upper end of œsophagus	Post-op. deaths	Recurred within 12 months	Recurred within 5 years	Well after 5 years
	14	4	6	2	2 =14%
Intrinsic cancer of the larynx	Operations: Thyro-fissures, Radium fenestration, Total laryngectomy	46		Well 5 years and more 35 =76%	

I would like to express my gratitude to my colleague, Mr. Emlyn Lewis, for his invaluable help and co-operation with the reconstruction and skin grafting of the pharynx following pharyngo-laryngectomy. Also to Professor Jethro Gough and members of his Pathological Department for their help and advice, and to Dr. Lewis Fanning, of the Statistical Department of the Welsh School of Medicine.

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V. E. NEGUS said it was a matter of great regret that it had not been possible to obtain better results in this disease. One started by seeing Mr. Trotter at work and accepted anything he said as the right teaching; but confidence had been rather shaken as time went on. Mr. Negus would like to repeat what Mr. Owen had quoted him as saying in 1931 about the precancerous condition; he had not the slightest doubt about the relationship and Mr. Owen had confirmed this opinion in his Address. In 1938 he (Mr. Negus) was in the United States and in a discussion there on what was called the Plummer-Vinson syndrome, some surprise was expressed at the idea that this might be a precancerous condition. He did not feel that anyone could possibly be in any doubt; one saw cases too frequently.

The term "postcricoid" was misleading; most of the growths started at the mouth of the œsophagus on the upper surface of the cricopharyngeal fold, in the region affected by chronic inflammation. This was the lowest part of the pharynx and he would suggest that the proper term was "chronic hypopharyngitis". The condition commenced on the fold away from the larynx, on the posterior wall.

If treatment were carried out and failed to arrest the disease by dilatation or other means, and if it was thought that ulceration was going on, possibly with a little irregularity of the epithelium which, although not proved to be carcinomatous, seemed to have a probability of becoming malignant, the right thing to do appeared to be to remove that segment of the lower pharynx and upper œsophagus. It would be easy to separate the œsophagus from the back of the trachea and larynx with little chance of recurrence. The malignant changes would be on the posterior wall and reconstruction would give the patient the ability to swallow well, making the operation justifiable.

If malignant disease were established, one could see if there were any extension into the larynx or trachea by direct examination; if there were any infiltration it would be futile to leave the larynx in position. He had tried various conservative operations and had been very disappointed with results. It was a small matter whether one used the single large flap of Trotter or two shorter flaps. The latter appeared to be more reasonable and one was thus able to reconstruct the pharynx and œsophagus and restore swallowing. His experience had been that many, indeed the great majority, of these cases recurred. It was not possible to tell beforehand which case would and which would not recur.

There was a second possibility; if the top of the œsophagus and the lower end of the pharynx were removed, and reconstruction was carried out, the larynx was left lying against the raw front of the vertebral column. A case was referred to him recently where this had happened. The patient could not swallow because the skin tube was not complete; it was possible to complete it, but when the patient made an attempt to swallow, everything he drank ran straight into the larynx. All his saliva overflowed throughout the day and night and the man was in a most miserable state. There was also double recurrent paralysis; he could not close the larynx and he could not pull it up against the base of the tongue because it was fixed. His distress was so great that the speaker removed the larynx and found in its lymphatic vessels some carcinomatous cells. It would have been better if the larynx had been

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removed earlier. He had seen the same condition occur in a woman who had had a very small growth irradiated. The growth was limited to one small patch on the posterior wall, but removed within a year. At operation it was possible to remove the segment and restore continuity by turning in two skin flaps. She had a left recurrent nerve paralysis because the skin flap lay over it, and the right recurrent nerve later became paralysed. She was in the same miserable state as the other patient ; later she died from recurrences.

After these and other unfortunate experiences he felt that the limited operation was not justifiable. He did not believe that irradiation would cure these patients and there were therefore two alternatives : one, to do nothing, and the other to remove the lower part of the pharynx, the larynx and the top of the œsophagus. Pharyngo-laryngectomy could allow a patient to live happily ; they could even learn œsophageal speech or have an artificial larynx, and he believed that it was the right operation in this dire disease.

The next point was with regard to restoring continuity. One had tried the ordinary procedure of turning in flaps, but this was tedious and was sometimes followed by stricture. Mr. Charles Rob and Mr. Bateman at St. Thomas's Hospital had tried a means of primary repair, at first using tantalum gauze and in later cases a plastic tube ; discussing the problem with Professor Kilner, it was agreed that it was illogical to do any repair work without skin graft. About a week previously Mr. Negus operated on a patient who had a growth at the cricopharyngeal fold ; it was extensive and therefore the larynx, part of the pharynx and the top of the œsophagus were removed, together with three rings of the trachea. The trachea was fixed to the skin and the top of the œsophagus was attached by some stitches to the prevertebral fascia. A plastic tube was inserted, reaching from the pharynx to the œsophagus with a skin graft around it ; the skin flaps were closed over it. Irregular flaps were made, on the advice of Sir Archibald McIndoe, so that the line of incision did not coincide with the line of the skin graft. If one could carry out primary repair with safety, even if slight alteration were required later to assist healing, it would be of very great benefit both to surgeon and patient.

One other point was that he had been advised by McIndoe that it was best to leave the tube, covered with a skin graft, in position for six months. The patient could swallow through the tube, which was anchored with a piece of stainless steel wire.

In Mr. Negus' opinion the present position was that for carcinoma of the hypopharynx the proper procedure was pharyngo-laryngectomy with primary repair.

J. F. SIMPSON also thanked the President for his most interesting and excellent presentation of his subject matter. He had covered so much ground that his audience could only hope to speak on one or two points. He noticed that the President drew a distinction between the various forms of the growth, the hard infiltrating type and the softer fungating type. The speaker had recently had the misfortune to operate on a case of the latter type of growth which appeared very small when he looked at it through the pharyngoscope but when he removed the pharynx much of this was studded with pin-point deposits of growth so that the mucous membrane had a mammillated appearance. He thought this type in which there was quite a small primary ulceration and at a

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considerable distance multiple small deposits giving a mammillated appearance to the mucous membrane constituted a distinct clinical type. He took it he had wasted his time by operating on that throat.

Mr. Negus had clarified the question of whether to remove the larynx or not and his views fell into line with Mr. Lionel Colledge's teaching. There could be no doubt that if the growth had become attached to the back of the larynx the correct procedure was to remove the larynx and pharynx and not to risk leaving a small piece of neoplasm on the larynx.

The pictures shown at the meeting indicated that the removal of a larynx to-day was not nowadays such a gross disability. He noticed that Mr. Negus spoke of the " œsophageal " voice, he believed the speech therapists were now cultivating a " pharyngeal " form of voice.

PROFESSOR F. C. ORMEROD congratulated the President on his very remarkable results. He, like others, had struggled with these extensive removals of the larynx and pharynx, which were tedious, required a number of operations and much care over long periods, and the results were not always satisfactory. There was a tendency to recurrence on the mucous membrane side of the junction with the skin flaps, either above or below, and he felt that this was due to a submucous extension of the growth far beyond its visible or palpable limits.

He felt that there were still hopes that radiation would cure these growths. He had worked for more than twenty years with radium bombs, from 1 gramme up to 5 grammes, and the results had been very poor. Now that 10-gramme units were available, more successful results were being achieved. In January 1948 two old ladies, over 70 years of age, were treated with the 10-gramme bomb, one for a postcricoid and one for pyriform fossa growth. Both were perfectly well to-day and swallowing normally. It was anticipated that similar results might be achieved with the new very high voltage X-ray apparatus.

R. R. SIMPSON supported Professor Ormerod in his plea that irradiation should not be altogether discarded. He was reminded of the earliest hypopharyngeal carcinoma on which Mr. Colledge operated. It was a growth about the size of one's little finger-nail. He had advised irradiation but he gave the patient the alternative of seeing Mr. Colledge who advised resection. It was carried out in Mr. Colledge's masterly fashion but the skin flap sloughed and the patient was sent back to the speaker until such time as repair could be made. Within two months the patient suddenly had a hæmoptysis and when his chest was X-rayed it was found that he had extensive secondaries all over the lungs.

On the other point of the incidence of hypopharyngeal carcinoma with anæmia and dysphagia, it had interested him very much for years. It was rather remarkable that there was such a wide variation in the published incidence. For instance, the President's figures at Cardiff were at variance with Flett's of Derby, and both these sets of figures were at variance with the figures which he got in the East Yorkshire-Hull area which again were entirely at variance with Vinson's figures in America. Vinson wrote him at the end of 1939 to say that he never saw carcinoma and they still regarded the condition as hysterical manifestation although they did agree that mucosal change occurred which they thought was due to defective keratinization and probable

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riboflavin deficiency. In the European figures there was a wide divergence. The Swedish figures showed a much higher incidence than was seen in this country, the figures for the different countries gradually decreased until in the Mediterranean area they appeared not to see carcinoma. In the East one saw anæmia with dysphagia but he did not see any cases with carcinoma. Was this a geographical variation in one type of disease? It did occur in other diseases; were they dealing with some geographical variation of the pre-cancerous phase?

H. V. FORSTER said he would join other members in their appreciation of the Presidential Address, and not having done any major operations to relieve this dismal affliction of the female hypopharynx he would praise the diligence and courage of those who had performed them.

He had not found in his experience that the syndrome of dysphagia with anæmia had been a regular precursor of postcricoid cancer, and from his reading imagined this was the opinion of some other observers.

He had seen for the first time in 1935 at the Finsen Institute in Copenhagen soft tissue radiographs demonstrating amelioration in this disease where improvements in insulation of the apparatus had made possible the use of higher voltages.

He would express the hope that having reflected the skin of the neck, and perhaps separated deeper tissues, short period massive doses of X-rays may be applicable to cancer of the hypopharynx.

THE PRESIDENT, in reply, expressed appreciation for the kind things that had been said by Mr. Negus and others. He was grateful for the contributions made during the discussion. In his view the most important fact brought out was the agreement regarding the necessity of recognizing the precancerous phase in cases of chronic hypopharyngitis, with or without anæmia.

The replacing of the vulnerable segment with skin flap, during that phase, was not a difficult procedure, but one had to be very certain of the presence of this early phase before advising operative interference.

Mr. Negus's point regarding bilateral recurrent laryngeal nerve involvement was not a usual picture, but where it did occur it was, as a rule, caused by a recurrence of the growth. It need not take place as part of the operative technique, and the possibility should not act as a deterrent in dealing with cases of chronic hypopharyngitis. He was glad to hear that primary repair following pharyngo-laryngectomy was recognized as the reasonable thing to carry out.

Mr. J. F. Simpson's remark regarding his own case emphasized the importance of recognizing the mode of downward extension that is liable to take place. This sometimes could be palpated during operation, before the pharynx was opened. If in doubt as to whether one could get below the growth, then the case was best left alone and ought to be referred for deep therapy treatment.

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