

BORDERLINE DISEASES OF THE ESOPHAGUS.*

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For diagnosis and treatment of the diseases of the esophagus, the use of the esophagoscope, which enables one to study and treat the field seen by its aid, is undoubtedly a great advance in this line of work.

In the writer's opinion, it will be only a matter of a short time when all of the other methods of treatment applied to diseases of the esophagus in the dark, so to speak, will be superseded by esophagoscopy.

The chief symptom for which patients come to seek relief is difficulty in swallowing. This may be brought about by a spasm or a mechanical obstruction.

Spasm.—Normal spasm of the esophagus is a condition producing a temporary stenosis at the upper and lower ends, the cricopharyngeus and the hiatal opening of the diaphragm. This is present in all cases examined esophagoscopically without anesthesia. When this normal spasm becomes excessively irritable it is then termed esophagismus. It would, however, be well to call it a neurotic esophagismus, for it is most often encountered in neurotic subjects. Many of these patients suffer from some thyroid derangement and are extremely nervous. They also complain of a constant lump in their throat and come into the office labeled hysteria. The so-called "globus hystericus" from which patients complain of a feeling of a lump in the throat is due to this neurotic spasm element which is frequently associated with difficulty in swallowing. An ulceration may be present in some of the cases, but usually the esophagus is found to be contracted but otherwise normal. Air swallowing is a frequent accompaniment in this type of patient and they belch large quantities of gas. They also complain that certain kinds of food taken aggravate their condi-

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tion. They recite the foods which they cannot swallow and rebel against making any attempt to even try to swallow them. They are pale and anemic, and look half starved.

A patient referred by Dr. Joseph Abraham, who had been unable to swallow for a long time on account of a persistent lump in her throat, complained that she had difficulty in swallowing at certain intervals during the day, and also that she could never swallow cake without great difficulty. She was, however, able to swallow cereals and eat bread, but with each attempt to eat cake it would stick in her throat and she would have a violent choking spell, as she described it. She had been examined by two neurologists, who pronounced her a typical case of hysteria with marked "globus hystericus." Bougies had been introduced blindly and two attempts were made to pass the esophagoscope before admission to the hospital, but were unsuccessful. The patient had a complete set of radiographic plates with her, which showed only the thoracic esophagus which appeared normal. Unfortunately, the pictures were taken not sufficiently high to show the trouble, which was in the cervical esophagus, involving the cricopharyngeus constrictor. A new set of plates made of the cervical esophagus by Dr. Charles Gottlieb showed a very definite contraction which looked not unlike an esophageal stricture. The writer has esophagoscoped several of these subjects. Some of them were apparently cured after the introduction of the esophagoscope without anesthesia. Three of the cases, however, were not cured and only temporarily relieved after the introduction of the esophagoscope, and another required esophageal dilatation at intervals for two years before she could swallow all foods with ease. The case cited had difficulty in swallowing cake, even after the large adult esophagoscope could be introduced with ease, and after ten treatments. As afore stated, spasm of the cricopharyngeus always occurs on the introduction of the esophagoscope without anesthesia, but this can be readily overcome by gentle lifting of the cricoid cartilage. However, on the other hand, there may be a marked spasticity of the cricopharyngeus in patients suffering from malignant disease of the esophagus, even when the malignancy is well below the cricopharyngeus constrictor or even at the cardiac orifice.

Spasm of the Hiatus.—The degree of contraction of the normal hiatal orifice of the esophagus is nothing in comparison to the contraction of the pharyngeus constrictor on the introduction of the tube. In the spastic stenosis at this level we all must admit that Jackson is correct in his assertion that the spasm commences at the hiatus, for such is certainly the case when viewed through the large esophagoscope. However, on the other hand, in all cases of hiatal esophagismus there is seen radiographically some of the bismuth mixture trickling through the hiatal constrictor and abdominal esophagus as a thin streak, to suddenly open as a large mass as the bismuth or barium mixture enters the stomach. While there is difficulty in observing under ocular guidance the relative amount of contraction of the abdominal esophagus and the cardia, at the same time radiographic studies seem to show that there is a complete contraction, or better, a cardio-narrowing from the entrance of the esophagus into the diaphragm to its exit at the cardiac orifice of the stomach. Jackson believes that a spasm of the cardia alone is extremely rare. He quotes Liebault and Roget on their anatomic studies that the hiatal orifice in the diaphragm is the chief factor in the production of the so-called cardiospasm. Mosher, on the other hand, in exhaustive anatomic studies of the esophagus and who knows more about the anatomy of the esophagus than any living man today, still maintains that there is a definite sphincter action of the cardia owing to demonstrable circular muscular fibers which promote a sphincter like action. The writer feels that both Jackson and Mosher are correct. The former having made all of his observations under direct ocular guidance, while Mosher, a finished anatomist, has been able to prove his findings, both by ocular guidance and extensive anatomic studies. The writer not being an anatomist and having a limited experience in this field, can only rely on visual studies and agrees with Jackson that the first definite contraction encountered is at the narrow slit like opening in the esophagus known as the hiatus. It must not be forgotten, however, that a carcinoma of the cardiac end of the esophagus may give all of the symptoms of hiatal esophagismus, cardiospasm or cardiocontraction. Cardiocontraction or cardio-narrowing is certainly what is encountered, and I doubt if the

spasticity is solely confined to the hiatus alone. From radiographic studies the subphrenic portion contributes to the entire contraction.

To distinguish cardioesophagismus from malignant disease of the esophagus is one of the borderline problems in diagnosis. The differential diagnosis is best accomplished by means of ocular guidance, gastric analysis and a careful study of the symptomatology and the radiographic plates.

Cicatricial Stenosis of the Esophagus.—The most frequent source of cicatricial stenosis is in the swallowing of caustic alkalis. When there is a history of a child having drunk from a cup which was used for some washing powder, and is admitted to the hospital in profound shock and suffering from acute esophagitis, it is best to wait until the acute symptoms have subsided before bouginage is attempted. Gastrotomy should be performed early as soon as it is definitely shown that the child is suffering from water and food starvation. For a long time it has interested the writer as to the final locality of the cicatricial stenosis after the subsidence of the acute attack. Guisez states that the most frequent site of the resultant stricture is at the cardia. Jackson differs with him and states that the stricture may occur in any portion of the esophagus, and that he has never seen a stricture at the cardia. In seven cases studied by the writer in children, the stenosis was at the upper orifice in three and below the bronchial crossing in all of the others. In adults the strictures encountered were usually high, but one occurred in the middle third of the esophagus. Why is it that the diluted corrosive has a predilection for attacking one portion of the mucous membrane and not the entire esophagus as in strong solutions, such as carbolic acid and ammonia, etc.? Is it because the child has been a previous sufferer from chronic esophagitis, or is it due to an anatomic peculiarity of the esophageal mucosa which is more susceptible to ulceration than other parts? It would seem that the strictures should occur at the narrowest portion and that part susceptible to narrowing, but such is not the case.

The borderline conditions resembling stricture of the esophagus in children other than impactions of food and foreign bodies resulting in strictures, are comparatively few. On the

other hand, in adults there may be a good history of having accidentally swallowed some caustic alkali in childhood for which they were never treated, and have been able to swallow fairly well until recently when there had been much difficulty in swallowing. When such a case presents itself, it should be studied with great care, both fluoroscopically and radiographically, before esophagoscopy is attempted. Esophagoscopy should then be performed with great care, bearing in mind that the stricture shown in the radiographic plate may be due to a stenotic web or a malignant growth at the site of the former ulceration. Bouginage should be practiced with great care, for if it prove to be a stenosis due to malignancy the esophagus may be ruptured in the attempt to relieve the condition.

A case of this type was referred to the writer with a history of having swallowed accidentally some caustic alkali in childhood. He had never been examined, though at times he had some difficulty in swallowing. He also gave a history of having been a constant sufferer from indigestion, heartburn and belching of gas. These were looked upon by the family doctor as being more or less due to nervousness. Radiographic plates showed a narrowing in the region of the hiatus and cardia. By esophagoscopy the esophagus was found to be normal down to the hiatus and no stricture could be seen. At the hiatus there was a small mass of fungating tissue which was resistant and bled easily. A section taken showed it to be an epithelioma. Gastrostomy was performed two days later and revealed the mass involving the whole of the cardia. Whether this had been the previous site of the original caustic stricture I was unable to state. However, the contraction at the hiatus was much more resistant than a malignant stricture usually is, and no doubt the resultant ulcerative cicatrix had been the starting point for the development of the cancer.

As a rule the endoscopic picture of a cicatricial stricture is readily recognized. Cicatricial strictures usually present a whitish appearance with surrounding normal mucosa. The difference between an esophageal stricture due to a cicatrix and a neoplasm, is that the former is very firm and the surrounding esophagus does not give as it does in a malignant stricture. A cicatrix is very firm to the touch and the open-

ing often very difficult to locate, while the malignant stricture is seldom impermeable, unless the mass has been ingrafted on a cicatricial stenosis. The cancerous mass is usually fungating and readily recognized. However, there may be a cicatricial ulceration at the site of the malignancy, and both may be present and cause complete stenosis.

Paralysis.—When there is a paralysis of the esophagus, there usually are found palsies existing in other localities. They most frequently follow the acute infectious diseases, such as diphtheria, poliomyelitis, etc. Difficulty in swallowing may occur early or late in these diseases. Sensory paralysis of the larynx as well frequently accompanies this. Often in these patients direct laryngoscopy and bronchoscopy can be performed without discomfort to the patient, for they complain of no sensation and are apparently cocainized. The writer called attention to this loss of sensation a few years ago in a treatise on diphtheria. In examining these patients with a mirror retention of secretion is seen in both pyriform sinuses. The sinuses gradually fill to overflowing, and as the secretion cannot flow into the esophagus it trickles over between the arytenoid cartilages and flows downward into the lungs. If there is complete loss of sensation and the cough reflex is impaired, these patients are unable to cough up the secretion and the lung becomes "sponge soaked," and they succumb to a terminal pneumonia. Bronchoscopic evacuation will, of course, relieve the condition, but this cannot be kept up indefinitely and the patient should be placed in a position to establish postural drainage. The best way to overcome this pouring of secretion into the lung is to insert a rubber intubation tube into the esophagus so that the secretion can flow into the esophagus and allow the lungs to act.

Case Report.—A very interesting example of what I supposed to be a bulbar paralysis came under my observation. Mrs. J. S., an old lady of seventy-two years, had a slight stroke of paralysis with involvement of the facial muscles two years previously. At that time she had a very high blood pressure, but this had fallen and she had gradually regained her health. She had been able to eat breakfast and luncheon with ease on the day of the second stroke, but when she sat down to eat dinner she was unable to swallow. She stated

that she felt peculiar before dinner, and when she sat at the table and attempted to eat she was unable to do so. She then drank some water and had a violent choking spell. I saw her the same evening with Dr. Theodore H. Allen, who gave me the foregoing history. On indirect inspection the larynx was seen to be normal. The vocal cords moved freely; there was no loss of sensation at this time in the pharynx or larynx. The pyriform sinuses were filled with secretion which would pour over between the mouthlike arytenoids into the larynx. With inspiration the excessive tenacious salivary secretion would flow in and then there would be a violent coughing spell, and at this time she had some difficulty in getting it out. There was no loss of voice or impairment of speech. She was put in postural drainage which greatly improved the condition. Her blood pressure at this time Dr. Allen reported as being high, but not as high as it had been during her slight paralytic stroke two years previously. There was slight drooping of the corner of her mouth on the right side, but no other paralysis could be noted. The tongue protruded straight and there was no loss of sensory reflex or cough reflex. The following day she was admitted to St. Luke's Hospital and esophagoscoped. Before esophagoscopy was performed Dr. Le Wald gave her some bismuth subcarbonate in an aqueous solution to swallow to see if there had been any relaxation of the cricopharyngeus constrictor at the upper end of the esophagus. Watching her through the fluoroscope a teaspoonful of bismuth mixture was given, and it promptly trickled downward, but too far forward to be in the esophagus. We watched it carefully, and when it reached the bifurcation of the trachea it made a turn to the left and entered the left main bronchus and passed downward to the lower lobe branches. Having had previous experience with the injection of bismuth mixtures into the bronchi of the living, we felt that the mixture would do no harm. While she had an irritable cough the day previously when secretion trickled into the trachea and bronchi, there was noted at this time that there was no attempt to cough as the bismuth mixture entered the tracheobronchial tree. The cough reflex was lost. It is extremely interesting to note that the bismuth mixture was spat up by the patient and the lung drained of the bismuth mixture even without any

sign of an expulsive cough. Of course some of it came from the reservoirs of the pyriform sinuses, but the lung was drained of the mixture before the cough reflex returned. The patient was esophagoscoped. There was a marked spasticity of the cricopharyngeus such as I had never encountered before on the introduction of the esophagoscope without anesthesia. This certainly was not a case of cricoesophagismus with which we had to deal, for the patient was not of the hysterical type and had never complained of her throat before. After the introduction of the esophagoscope and its passage through the cricopharyngeus the esophagus was found to be relaxed, but otherwise normal. On gently removing the tube the lip was violently grasped as it started to emerge through the cricopharyngeus. The esophagoscope was again pushed down and the spasm once more relaxed. Again this was tried with the same result. Finally, a stomach tube was introduced through the esophagoscope and the instrument withdrawn. The patient was fed in this manner and by having the tube in the esophagus the normal secretions were able to leak past the constriction. The trachea and larynx were covered with the bismuth mixture. The bismuth was coming out while she was in the recumbent position, but she had made little effort to cough. Bronchoscopy was not performed. The patient was fed by the stomach tube for more than six weeks before she was again able to swallow normally. In the meantime Dr. Allen had reduced her blood pressure, and I am happy to state that at the present time she is in good health.

This extremely interesting case was at first glance taken to be one of hysterical spastic esophagitis, but on further study it proved to be due to some involvement of the glossopharyngeal nerve supply, and therefore should be classified as a peculiar type of bulbar paralysis caused by a central lesion.

Another extremely interesting case I had the good fortune to see with Dr. F. J. Bevan. This young lady of twenty-two years had been in fairly good health, but was anemic and lacked outdoor life, being confined to an office all day. One evening on returning from work she had some difficulty in swallowing her dinner and choked several times. She was put to bed and the family physician notified. On his arrival at the home he found her very hysterical and attributed her

general rundown state and poor general health as the probable cause of the condition. After a small dose of morphia the patient quieted down and seemed to be improved. A further test to swallow, however, proved unsuccessful. I saw the patient the same evening. At this time there was ptosis of the left eye and a divergent squint. The pupil was widely dilated and she complained of seeing double.

She also had difficulty with respiration but was able to speak. She complained of pain in the region of her heart. The larynx was examined with a mirror and the vocal cords were found in good working order. There was no paralysis to be seen and they moved freely. Both pyriform sinuses were filled with secretion which would pour over into the larynx. The cough reflex was partially lost and with each endeavor to expel the secretion the sound produced was similar to the paralytic nasal grunting cough so often heard in diphtheritic paralysis. Later there was complete loss of sensation. The patient's difficulty in breathing was due to phrenic paralysis. The diaphragm did not move with inspiration and the epigastrium remained flat. An esophageal spatula was rapidly introduced and a rubber feeding tube inserted. A diagnosis of polioencephalomyelitis was made and the spinal cord tapped. Dr. Edward D. Fisher, the neurologist who was called to see the patient, did not arrive in time to find her alive. The temperature remained normal throughout the attack which covered a period of fifteen hours from the time I saw her.

Pouches.—Diverticula of the esophagus are classified into two groups according to their etiology: Traction diverticula and pulsion diverticula. Traction diverticula are extremely rare conditions. Jackson has reported one case. Arrowsmith had a very remarkable case of this type which the writer had the privilege of assisting him with at the esophagosopic examination. Arrowsmith's case seemed to be a combination of a traction and a pulsion diverticulum. As a rule, the traction diverticula are seldom seen, as they are small and readily overlooked. They usually open upwards so that the bismuth mixture does not enter them. This was what Arrowsmith demonstrated in his case. The traction and pulsion diverticulum occurred in a patient suffering from pulmonary tuberculosis, who also had tuberculosis of the esophagus. There

were more fungations in the esophagus which looked not unlike malignancy. The case was diagnosed by Arrowsmith from the radiographic plate and demonstrated by Mosher's ballooning esophagoscope.

Pulsion diverticula are hernial sacs which most frequently occur in the cervical esophagus. They may have a sudden onset, especially in the aged, after an attack of coughing, and produce marked dysphagia and simulate paralysis in the suddenness of the attack. Usually, however, they come on more slowly, and may give no symptoms and are only found on the introduction of the esophagoscope. This occurs when they are extremely small.

Killian was first to recognize the anatomic weak point in the production of diverticula of the cervical esophagus. The etiology of the adherent traction type has already been mentioned.

At times there may be a cicatricial stenosis of the subdiverticula orifice and also the subdiverticula esophagus, especially in large pouches which continually cause pressure by over-distention with food. In one of the writer's cases there was a complete cicatricial stenosis of the whole of the subdiverticula portion of the esophagus and the man was suffering from starvation. Gastrostomy was performed by Dr. Bodine, but unfortunately the patient did not survive. In another case there was a malignancy of the upper esophagus which simulated a pulsion diverticulum.

In a third case in an old lady of seventy-eight years the onset of the diverticulum was extremely sudden. She had never had difficulty in swallowing that she could recall. She contracted a severe cold, and it was after an attack of violent coughing that she first noticed that she was unable to swallow. The family physician was notified and pronounced the difficulty to be due to a paralysis on account of her age, high blood pressure and suddenness of the attack. No one thought of having an esophageal examination and no radiographic plates were made. She continued to suffer in this condition for seven years. She was referred to the writer on account of such difficulty in swallowing that she was beginning to suffer from starvation. By mirror inspection the larynx was seen to be normal. The pyriform sinuses were filled with secre-

tion. An esophageal pouch was suspected from the history, which was confirmed by radiographic plates made by Dr. Charles Gottlieb. Dr. Gottlieb reported as follows: "There is a diverticula present in the cervical esophagus about twice the size of a hen's egg. There is a small trickle of bismuth to the left of the pouch which passes down through the subdiverticula esophagus."

The patient was prepared for esophagoscopy. The laryngeal speculum was introduced, for from the radiographic plates the opening into the subdiverticula esophagus was extremely high. The laryngeal spatula was introduced its full length and search made on the left side for the orifice. By pulling the cricoid cartilage well forward I noticed a small dark spot on the anterolateral wall. A small bougie was readily inserted and passed through into the stomach. A 7 mm. esophagoscope was now introduced, using the bougie as a guide, but it would not enter the lumen of subdiverticula esophagus. Then a series of bougies were introduced and the orifice dilated. There was a cicatricial fold hanging over the slit of the esophageal opening. This pouch seemed to spring from the esophagus very high up, and in fact the whole of the pharynx seemed to be included in the pouch and continuous with it. After sufficient dilatation was accomplished the patient was able to swallow better. The writer had Mosher's operation in view after he had sufficiently dilated the subdiverticula esophagus.

The writer also had in mind the dangers of opening into the mediastinum. With a long pair of alligator forceps one blade was introduced into the subdiverticula esophagus and the other blade into the pouch. By this means the common wall was held firmly in between the blades of the forceps and squeezed together. The purpose of this procedure was to set up adhesions between the wall of the pouch and the esophageal wall and shut off the mediastinum before cutting the common wall, and thereby lessening danger of mediastinal infection. Perhaps this is not at all necessary, for Mosher in his series of cases does not mention clamping the common wall before cutting, and so far by opening directly into the mediastinum he has had no bad results. Perhaps these adhesions which I was trying to produce by the clamping method before cutting are already present. To the writer's great surprise the squeez-

ing together of the subdiverticula wall and the pouch wall made the subdiverticula opening into the esophagus increase in size and the patient has been able to swallow much more comfortably ever since. She swallows semisolid food and even solid food when it is finely cut.

So far the writer has not cut the common wall, but he feels at this time that it is a perfectly safe procedure, and the danger of mediastinitis produced by cutting the common wall would be averted.

This method of treatment seems applicable to diverticula in the aged. It relieves their suffering; adds only a minimum amount of danger, and effects a cure as far as their condition is concerned.

In younger subjects the resection operation performed by the surgeon seems to give the best results and permanent relief. A very unique operation was devised for this purpose by Gaub and Jackson, when the external operation was performed in such cases. It consisted of the esophagoscopist introducing the esophagoscope as a guide so that the redundant pouch would be removed and not the lumen of the esophagus which would result in a stricture or contraction later. This operation may be performed in one stage; but it seems best to perform all operations which are apt to involve the mediastinum in two stages to avoid fatal mediastinitis. Cryle is an advocate of the two stage operation for esophageal diverticula, and had recorded by this method gratifying results. In the cutting of the common wall, as advised by Mosher, the writer has attempted to make this a two stage operation by clamping the two sides of the common wall together to produce adhesions before any attempt is made to sever it. It was also found that by carrying out this procedure the opening into the subdiverticula esophagus may be kept open and allow sufficient food to pass. Of course a stricture of this subdiverticular portion of the esophagus must necessarily be dilated before any operation is attempted. Many of these patients refuse operations—that is, major operations proposed for relief; but on the other hand the two cases that the writer has treated by dilatation and fusing of the common wall have had relief and have improved in health.

Malignant Disease of the Esophagus.—Many cases suffering from malignant disease of the esophagus may have borderline relations to neurotic esophagismus and be mistaken for "pure neurotics," and treated as such.

In one of the writer's cases a woman of sixty-two years had been treated by six different specialists for different conditions, and after twelve months referred to the writer as a case of probable foreign body in the bronchus. All of them, however, agreed that she was suffering from some neurosis which was producing the symptoms. The history of difficulty in swallowing and constantly choking on taking food or water pointed strongly to esophageal obstruction.

On indirect examination there was seen a paralysis of the left vocal cord. Both pyriform sinuses were filled with secretion which would pour over into the larynx and produce the cough. After having seen the paralyzed left cord I naturally suspected a large aneurism to be at the bottom of the trouble, but such had not been reported by any of the physicians. On swallowing the bismuth mixture, there was plainly seen fluoroscopically a stenosis of the thoracic portion of the esophagus about the bronchial crossing. Radiographs showed no aneurism present. The following day the patient was esophagoscoped and an ulcerative fungating mass was seen and recognized as malignant. A section was taken and examined by Dr. J. G. Callison, who reported it to be an epithelioma. Gastrostomy was advised but the family refused permission. They did not object to having her treated by the tubes. Radium was applied and she was able to swallow better for one week. Then she started to completely close, so much so that a 4 mm. soft rubber intubation tube was introduced. The patient was now able to swallow liquids and was greatly encouraged. An esophageal tube may be left in for one week and then changed and cleansed and reintroduced. As a rule the smallest intubation tube has to be discontinued in time, for the malignancy as it increases will gradually close the lumen and the size of the tube used will have to be smaller and smaller until it cannot be introduced at all.

It is not difficult to introduce an esophageal intubation tube. The esophageal spatula is best for introduction and the tube is introduced through or along the side of the spatula.

Esophageal intubation has prolonged the lives of three hopeless cases of esophageal malignancy, and gastrostomy was performed just prior to the time of demise.

In removing an esophageal intubation tube the same rule applies as in removing a tube from the larynx or a tracheal cannula. There must be in readiness another tube which is immediately reintroduced, for contraction of the esophagus within a short time will render reintubation impossible. The writer has had palliative success with soft rubber esophageal intubation tubes. The writer has also made applications of radium to the esophageal lesion, but aside from the slight improvement in swallowing, there is little gained over esophageal intubation. In one instance the esophagus perforated after radium and the patient succumbed to bronchopneumonia. This, however, is frequently the termination of most of the cancerous growths of the esophagus of long duration. So far little has been accomplished by any form of treatment in esophageal cancer and the endoscopic treatment is in most cases purely palliative. Of the surgical procedure the trans-thoracic method as advised by Willy Meyer, Frans Torek, and others, seems to be on the road to success in cases diagnosed esophagoscopically early. Frans Torek has one case on whom he operated for a malignancy of the esophagus in the middle third who made a complete recovery and is still alive and well after seven years.

Luetic Stenosis of the Esophagus.—Luetic stenosis of the esophagus may be associated with luetic disease of the larynx. It may occur in the form of a mucous patch, an ulcer, a gumma or a cicatrix. The writer has studied two cases of luetic disease of the esophagus. One was in a man suffering from a gumma of the larynx as well, and the other was in a woman with cicatricial stenosis. The man was unable to swallow and was extremely dyspneic. He was sent to the hospital with the diagnosis of laryngeal diphtheria. Tracheotomy was performed shortly after admission to save his life. He was still unable to swallow after the introduction of the tracheotomy tube and the esophagus was examined and found to be gummatous. A soft rubber feeding tube was introduced and the patient fed in this manner. Mercury and salvarsan were administer after the Wassermann reaction

returned 4 plus. He readily improved under treatment and was able to swallow fairly well two weeks later. An examination of the esophagus after two months' treatment showed a cicatricial web stenosis of the upper esophagus. The larynx greatly improved, but it was impossible to decannulate the patient, for he preferred to wear the tube. He had a husky voice. He insisted on leaving the hospital three months later and was transferred to the Metropolitan Hospital and lost sight of thereafter. At the time of discharge from the hospital he still had laryngeal stenosis, and a cicatricial esophageal web.

Tuberculosis of the Esophagus.—The writer has seen many cases of laryngeal tuberculosis who were also suffering from esophageal involvement. He feels that much of the difficulty in swallowing in laryngeal tuberculosis is often due to involvement of the esophagus as well. Esophageal ulcers may often be present in tuberculous subjects when the lesion is not suspected, but only seen when performing the esophagoscopy. At times there may be a tubercular lesion of the esophagus which looks not unlike a fungating epithelioma. These healed lesions at times may produce cicatrices and subsequent stenosis.

There are many other lesions of the esophagus which the writer in a rather limited experience has not been so fortunate to see. They are angioneuritic edema, esophageal varix, angioma and actinomycosis.

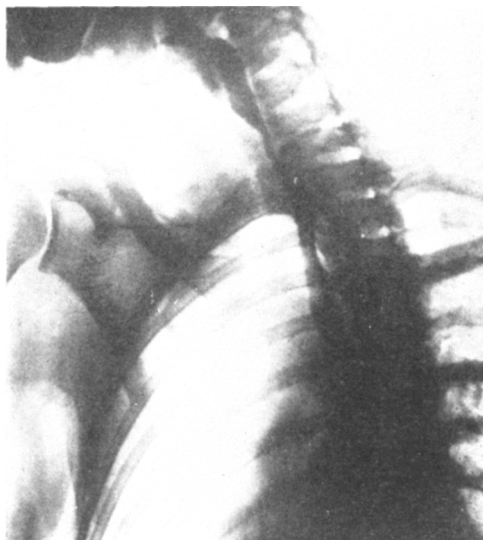


Fig. 1. Neurotic cricopharyngeal spasm. Note the narrow constriction of the bismuth mixture in the cervical esophagus. Cured after repeated introduction of the large esophagoscope.

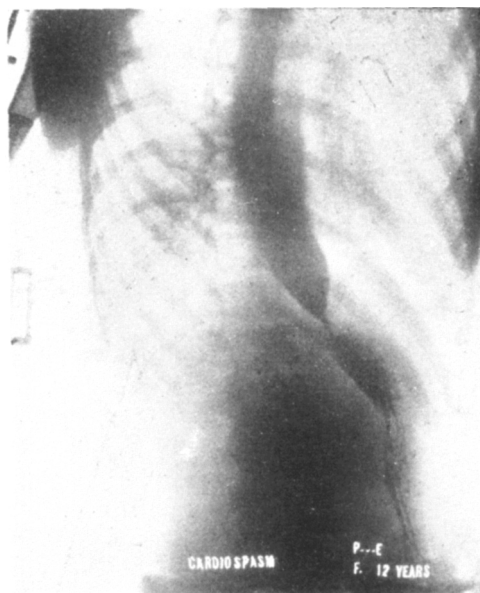


Fig. 2. Cardiocontraction and narrowing of the abdominal esophagus in a boy of twelve years. The whole of the subphrenic portion of the esophagus shows narrowing and demonstrates that the whole of the subdiaphragmatic esophagus contributes in the production of so-called cardioesophasm.

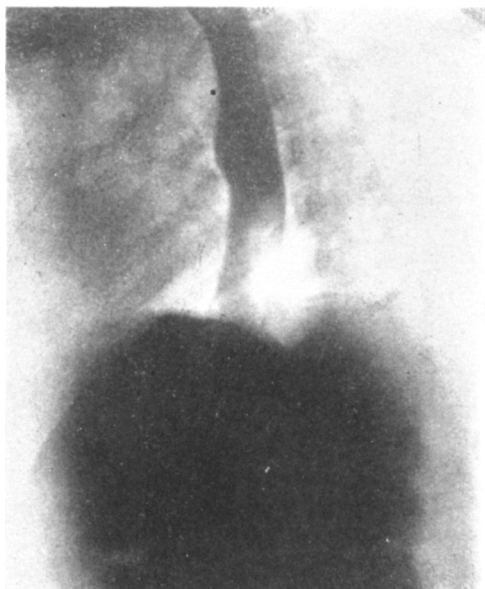


Fig. 3. Hiatal esophagismus or cardiocontraction in an adult. There is marked dilatation of the thoracic esophagus above the diaphragm.



Fig. 4. Stricture of the cervical esophagus simulating neurotic cricopharyngeal spasm. The stricture was caused by the prolonged sojourn of a small spicule of bone following a submucous resection of the septum.

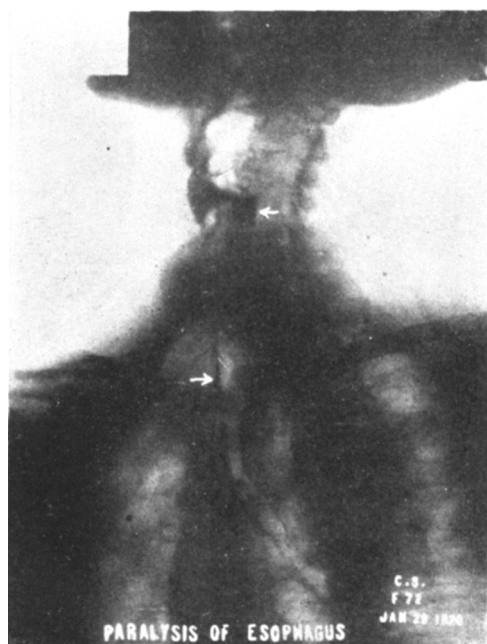


Fig. 5. Paralysis of the esophagus. The bismuth mixture was held in the reservoirs of the pyriform sinuses and poured over between the arytenoids into the larynx, trachea and bronchi. The bismuth in this instance entered the left bronchus and not the right. There was no cough reflex. It was expectorated and the lung drained of bismuth without the aid of cough.

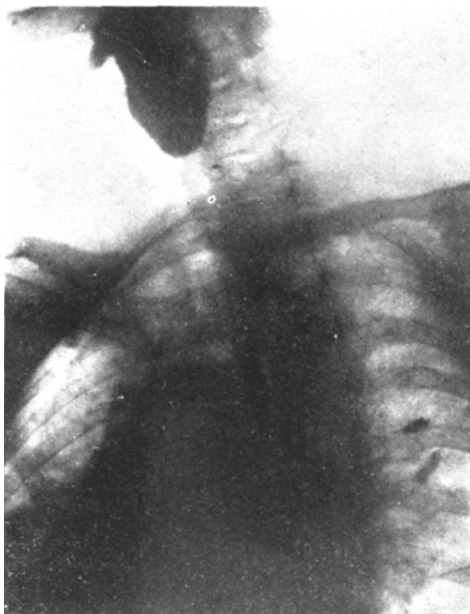


Fig. 6. Esophageal pouch in a woman of seventy-nine years. The pouch involved the entire pharynx. There was partial stenosis of the sub-diverticula esophagus.

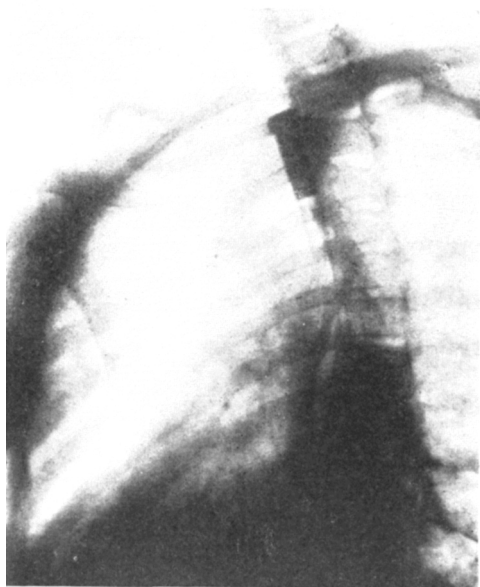


Fig. 7a. Malignant stenosis of the thoracic esophagus. The short silver intubation is covered with soft rubber and is shown as two long lines below the end of the metal tube.



Fig. 7b. Radiograph of same patient showing the bismuth mixture passing through the tube.