

uncovered it is of little consequence. So, after all, while it is a very beautiful thing, I do not see that we profit a great deal by it.

DR. FRANK ALLPORT, Chicago: I do not feel that criticism such as that of the preceding speaker should be made without some challenge. We can not say that any progress, anything that sheds light on a case, should be brushed aside as of no use, or not of distinct use. Those of us who have operated on many mastoid bones will, I am sure, feel that we would have been glad if before we operated we had known the internal condition of things. I have many times found conditions that I would like to have known about before operating, and I certainly think it would be unwise to pass up such work and say that it is not of much use. It is unquestionably of great use.

DR. S. MACCUEEN SMITH, Philadelphia: This past winter Dr. Manges has been doing some of this work. It seems to be of little worth in acute cases, but it certainly is of considerable value in pointing out two features of the greatest interest to the operator—the position of the lateral sinus and the condition of osteosclerosis.

DR. SAMUEL IGLAUER, Cincinnati: I am very much pleased with the discussion and that Dr. Lange was able to take part in it. This work requires an expert radiographer as well as an otologist and I agree with Dr. Randall that it takes these two to make the diagnosis. It is important to take all the pictures in the same way and at the same angle. The suggestion concerning the injection of bismuth seems to me a good one. I believe Dr. J. Beck of Chicago is employing this method. I have put a piece of lead foil in the meatus and another piece on the tip, and the pieces of metal give two fixed points, which serve as guides in interpreting the radiograms. There is often a difference in the two mastoids, especially if one be diseased. Chronic inflammation in the mastoid retards development on the inflamed side. It is true that we have been able to get along without the x-ray, but that is true in general surgical work also. It might as well be said that fractures of the long bones can be treated without x-ray pictures. Of course they can; but we know that they can be treated to much better advantage with the aid of the x-ray. I am pleased to learn that Dr. Smith's findings correspond with mine, and agree that we can not as yet tell much about the acute cases.

BRONCHOSCOPY AND ESOPHAGOSCOPY

GLEANINGS FROM EXPERIENCE *

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One hundred and five deaths, recorded in North America in five years, from foreign bodies in the air and food passages, or from ill-advised efforts at removal, show the necessity of acquainting the general profession with the advances already made and still being made in esophagoscopy and bronchoscopy. Further, I wish to report cases which point out lessons for us all. As evidence of the prevalence of blind groping after foreign bodies, 36 per cent. of the foreign-body cases that have come to me have been in a state decidedly the worse for



Fig. 1.—Specimen forceps tip to fit universal handle. The side jaw will bite into a flat lateral wall. The cross forms the bottom of a basket to hold the tissue removed.

the unjustifiable, obsolete attempts at removal, which, moreover, had failed to remove the intruder.

In one case, seen in consultation, a child of 2 years was dying from acute esophagitis. A penny had lodged

in the esophagus five days before. Forceps had been passed blindly, without an esophagoscope. Two days after this utterly unjustifiable procedure, the temperature was 104 degrees, pulse 150. When I saw the patient, five days after operation, the temperature was subnormal, pulse fluttering and uncountable, sloughs were being vomited, and the child was sinking away in the profound shock of a traumatic esophagitis. I concurred in wording the death certificate: "Death from acute esophagitis following the swallowing of a penny." It was really due to the absolute ignorance of the family physician who had never heard of esophagoscopy, and its safety in trained hands.

In another instance a prominent surgeon did a rapidly fatal thoracotomy for a glass bead which at autopsy was found free in the right bronchus. The pathologist who did the autopsy called the surgeon's attention to the

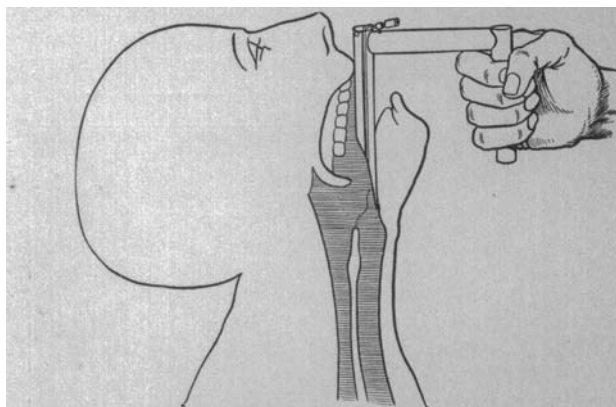


Fig. 2.—Misleading schema of direct laryngoscopy and bronchoscopy.

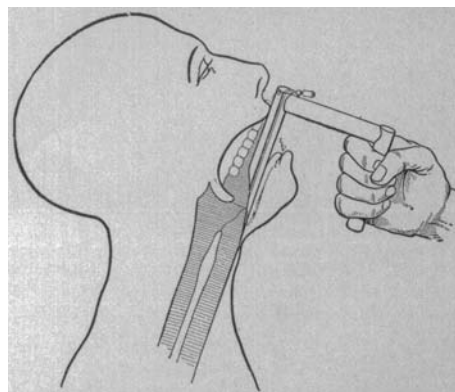


Fig. 3.—Schema showing correct position of patient and of the instrument in relation to the air passages. The instrument should touch the upper teeth very gently if at all.

fact that in such a case the foreign body could have been readily removed by bronchoscopy. The surgeon said: "What is bronchoscopy?" In that town were two men competent to remove that bead quickly and safely.

There were three thoracotomies for bronchoscopically removable foreign bodies reported in 1908. They were published admittedly because the patient survived the operation. It is hoped that no one will misunderstand me. No criticism can attach to thoracotomy for the evacuation of an intrathoracic abscess following the lodgment of a foreign body that bronchoscopic methods have failed to remove. In the three cases mentioned the patients were never examined bronchoscopically, and there was no wait for abscess formation.

I have used the esophagoscope in forty-one cases for foreign bodies in the esophagus, in all but one of which the intruder was removed. In this one case, a child of 2

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years had a double-pointed, partially straightened tack, shaped like a fish-hook, in the esophagus. One point had perforated and the other point had almost disappeared. Slight traction on this one point was found ineffective, and strong traction was deemed unsafe; the tack disappeared from the esophagus and wandered into the pleural cavity. The case was fluoroscopically watched by Dr. John W. Boyce. After abscess formation around the tack at the bottom of the pleural cavity, and not until then, Dr. Boyce advised thoracotomy, which was skillfully done by Dr. James McFarlane, who resected a rib, evacuated the pus and removed the tack. The child made a good recovery, and now, six months later, is doing well, though the fistula which communicated with the esophagus is still discharging.

I have practiced tracheobronchoscopy on thirty-two patients with foreign bodies lodged in the air passages below the glottis. In twenty-eight of these cases the foreign body was removed, not removed in four. There were no deaths from any cause whatever within thirty days, which was as long as the cases were followed.



Fig. 4.—Correct position of the cervical spine for esophagoscopy and bronchoscopy. Radiograph by Dr. George C. Johnston.

By this I do not mean that there is no mortality from tube work. I have had two deaths from anesthesia for direct laryngoscopy. One patient, a child, died in convulsions three hours after the removal of papillomata from the larynx. Idiosyncrasy to cocaine was the cause. The other patient, a man of 46, died about one week after direct laryngoscopy for the removal of a laryngeal neoplasm. There was a gangrenous bronchitis due to delayed chloroform poisoning. He had an old bronchial history. Anesthesia was impossible, and the anesthetic was abandoned, the operation being finished without an anesthetic. In neither of these cases was there any instrumentation whatever below the larynx. They were for diseased conditions, not for foreign bodies, and they were the only fatalities in over 300 cases of tube work. They point clearly to the necessity of developing such a great degree of skill that little or no anesthesia is needed. If as much time were spent in acquiring skill in tube work as in golf or billiards, tube work would be about the least dangerous of all surgical procedures.

ANESTHESIA

For esophagoscopy in infants I now do not use any anesthetic, general or local. It is not necessary, if the

esophagoscope be very carefully and skilfully passed, and, most important of all, if the patient be held in the Boyce position by a trained assistant. In adults, the relaxation of a general anesthetic is advantageous, though not absolutely necessary, except in a few conditions. Foreign bodies in the esophagus are just as apt to cause dyspnea as those in the trachea.

In direct laryngoscopy the lessening of the cough reflex is usually necessary for careful work under direct inspection. The blades of the forceps must never be closed unless their closure is carefully guided by the eye. This necessitates a lessening, or, in some instances, the total abolition of the cough reflex. In children the sparing administration of chloroform is safer than the local use of cocaine in most cases, though, of course, the bronchoscope must be instantaneously introduced into the trachea and kept there, if there is any respiratory difficulty. The bronchoscope is a better breathing channel than a tracheal wound. Oxygen and amyl nitrite can be administered directly through the tube, in any idiosyncratic chloroform intoxication. Respiration is



Fig. 5.—Curved position of the cervical spine in the Roser position, rendering esophagoscopy and bronchoscopy difficult or impossible. The devious course of the pharynx, larynx and trachea are plainly visible. Radiograph by Dr. George C. Johnston.

more often arrested in the endoscopic removal of foreign bodies from the esophagus than in tracheo-bronchial cases, though laryngeally lodged cases are worse in this respect than any of the others.

INSTRUMENTS

I have reduced my tubal armamentarium to four tubes and two slide speculums. It is impracticable to have one tube for adults and children, or the same tube for the esophagus and the bronchi. This means one bronchoscope for adults and one for children; one esophagoscope for adults and one for children. A good working set would be the following:

- 1 bronchoscope, 5 mm. by 30 cm. for children.
- 1 bronchoscope 7 mm. by 40 cm. for adults.
- 1 esophagoscope 10 mm. by 53 cm. for adults.
- 1 esophagoscope 7 mm. by 45 cm. for children.
- 1 adults' slide speculum.
- 1 child's slide speculum.
- 1 aspirator for the esophagoscopes.
- 1 specimen forceps, long and short (Fig. 1).
- 1 foreign-body forceps.
- 3 Coolidge sponge-holders.

1 Sajous cotton-holding laryngeal forceps, for cocaineizing the pharynx and upper laryngeal orifice.

1 double bronchoscopic battery.

No practical effort has yet been made to adapt the tallow candle or a kerosene lamp to endoscopy. We are compelled to use electric light of some kind. If the endoscopist is not of a sufficiently mechanical turn of mind to keep his electric lights burning he will not have the

to overillumination and burns out the lamps. Dr. In-galls (who is a leading authority on bronchoscopy) and I concur in the belief that all forms of rheostats devised for adapting commercial circuits to tube work are dangerous when attached to a tube which makes a moist contact with tissues so close to more or less of the course of the vagi.

TECHNIC

Direct Laryngoscopy.—The illustration (Fig. 2) is schematically correct, but is very misleading. It shows the head thrown too far back. This is the position into which the patient will throw his head if allowed so to do; but, if he is allowed, a very poor view of the larynx will be obtained, and the trachea will not be in line with the slide speculum. Further, nearly every one infers from this illustration that the upper teeth are used as a fulcrum; the chipping of the enamel from the teeth is evidence of an incorrect position. Nothing could be worse, and it is impossible to get a good view or to pass tubes easily in this position.

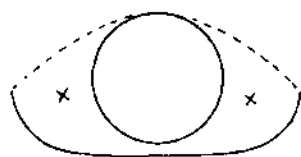


Figure 6.

Fig. 6.—Schema showing relation of the epiglottic cartilage (the circle) to the posterior hypopharyngeal wall, in the dorsally decubent patient, observer looking down the esophagus. The pyriform sinuses are at the position marked X.



Figure 7.

Fig. 7.—Thimble gag or bite block for bronchoscopy and esophagoscopy.

greatest success in foreign body work, for it is a question of mechanics from beginning to end. It does not require great brain power or high intellect, but in some cases mechanical ingenuity is taxed to the utmost to get out the foreign body without interfering with breathing and without traumatism to the tissues. If the surgeon is not a mechanical genius he should have a skilled instrument-maker in the operating-room, or, better still, a trained surgical assistant who has the necessary mechanical ability. The simplest, best and safest source of current is a double dry battery; that is, two sets of four cells each. Each set should have two binding posts and a rheostat. I find men working with all kinds of makeshift batteries, the current from which, with only a cell selector for control, jumps up from underillumination

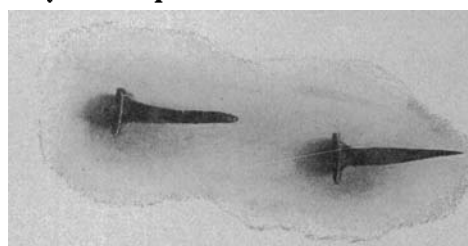


Fig. 9.—Tacks removed by bronchoscopy from posterior branch of right inferior lobe bronchus of a woman aged 41 years, referred by Dr. Lewis G. Cole.

Figure 3 gives a more correct idea of the procedure. The head of the patient is drawn forward by the forward pull of the tip of the slide speculum placed on the epiglottis. The hyoid bone and all its attachments as well as the base of the tongue are drawn forward. The axis

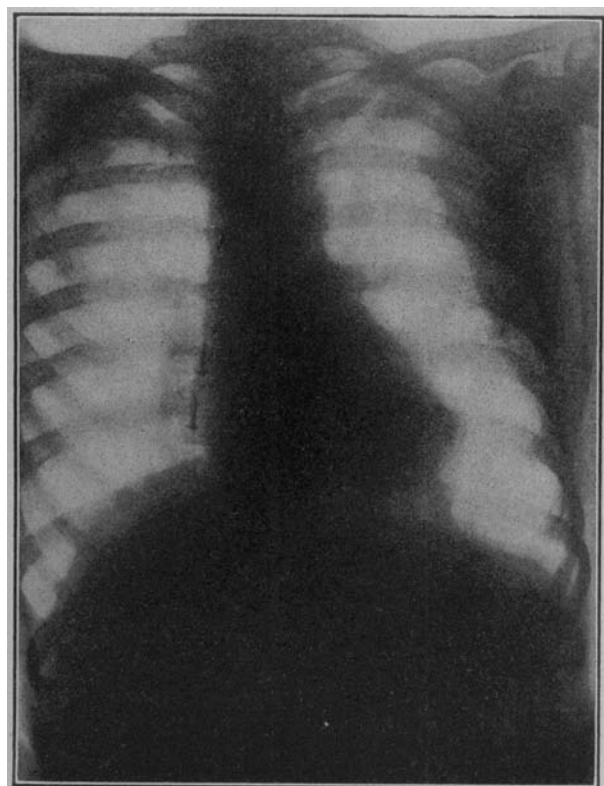


Fig. 8.—Radiograph by Dr. Lewis G. Cole, showing 2 tacks in a posterior branch of the right inferior lobe bronchus. Tacks removed by bronchoscopy through the mouth.

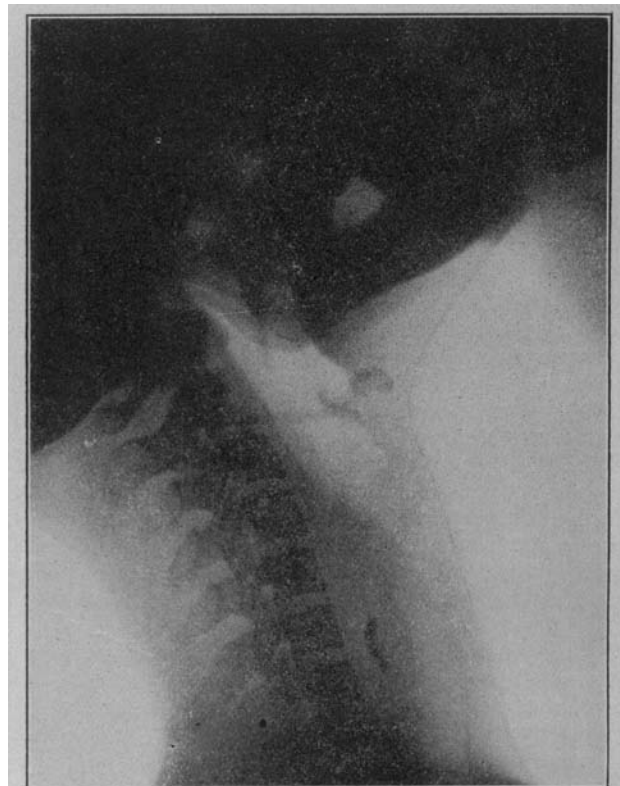


Fig. 10.—Radiograph by Dr. George C. Johnston, showing bone in the esophagus. Note the swelling of the esophageal walls and the clear outline of the air passages.

of the slide speculum corresponds to the axis of the trachea and this axis is not vertical, but leans forward toward the operator, about 20 degrees from the vertical. This exposure of the larynx is the whole art of introducing the bronchoscope. Until it is so mastered that the larynx can be exposed and held exposed to view indefinitely, no one should attempt bronchoscopy.

The foregoing description is of the technic in the upright position. In the dorsally recumbent position, the relation of the parts is the same, but an assistant must be trained to place the parts in the same position by raising the head, at the same time that it is squarely extended on the occipito-atlantal joint, not on the cervical spine. The shoulders slightly overhang the head end of the table, so that the head and neck are free to move under the control of the assistant who holds the head. This position not only brings the air passages in line, but the esophagoscope may be inserted with perfect ease and safety. The effort to use other and unsuited positions like the Roser and the lateral positions have led to accidents, and are especially dangerous in

center line the tube mouth will hook over one or both the arytenoids and the voice will be damaged if force be used, but the chief obstruction is the posterior half of the cricoid cartilage. Nearly every one, on meeting this obstruction, uses force; this is a serious and often fatal blunder. If the esophagoscope is inserted in the pyriform sinus the tube will glide down like a pencil in a pocket. The position of the pyriform sinus is on either side of the cricoid cartilage, as shown schematically in Figure 6, which is drawn to show as if the operator were

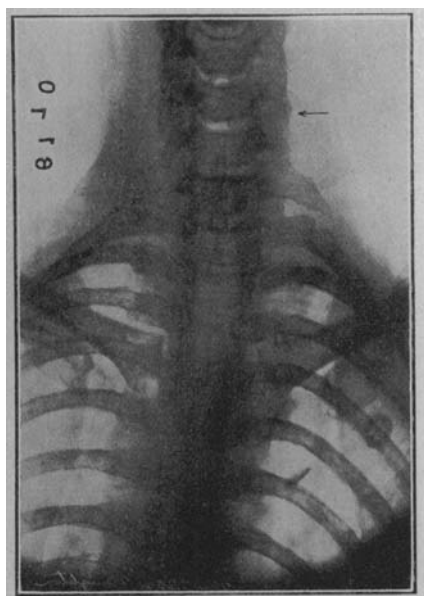


Fig. 11.—Radiograph of same patient. The piece of bone, though present at the level of the dart, does not show. An example of the misleading negative radiograph, and an indication for lateral as well as antero-posterior radiography.

inexperienced hands. I have with the greatest ease slipped a tube down a patient on whom esophagoscopy and bronchoscopy was after trial by others said to be impossible.

This was in no case due to any superiority in skill, but simply to the head and neck being held in the Boyce position.

Esophagoscopy.—The esophagoscope is pointed as a billiard cue, the operator having a mental picture of the course of esophagus beneath the bared neck. If the head is held in the Boyce position the cervical vertebræ are parallel to the esophagoscope, so that they are (in the recumbent position) in the horizontal plane (Fig. 4). If the head is held in the dangerous (for this work) position of Roser, the cervical vertebræ are curved (Fig. 5) and the esophagoscope strikes almost vertically on the convexity and can not be introduced into the introitus esophagi. If the attempt be made to pass the esophagoscope in the middle line it encounters at once the cricoid cartilage which is pressing firmly on the posterior hypopharyngeal wall. Very often, too, in the

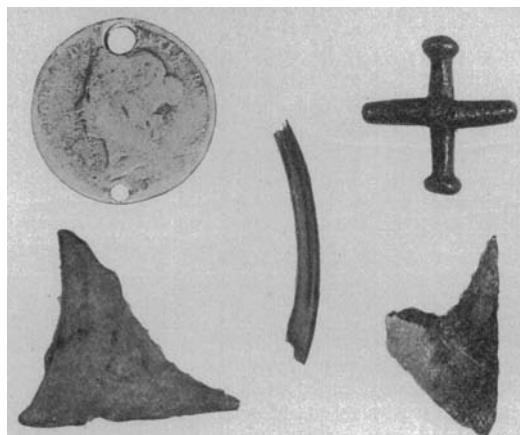


Fig. 12.—Foreign bodies removed from the esophagus by esophagoscopy at the Eye and Ear Hospital, Pittsburg, Pa. Six coins also removed are not shown because illustration of United States coins is forbidden by law.

looking down the esophagus of a dorsally decumbent patient. The circle represents the cricoid cartilage resting on the posterior hypopharyngeal wall. The cross shows the pyriform sinuses, one on each side of the median line. These are the normal food passages, but it is through the right one that is most convenient for esophagoscopy.

A gag, properly so-called, should never be used. Some form of bite-block to prevent the patient biting the tube is necessary. The best and simplest is the thimble-gag of Boyce (Fig. 7). The slide speculum requires nothing, as it is of heavy metal that can not be damaged by biting. A widely spread gag may render bronchoscopy and esophagoscopy utterly impossible by jamming the lower jaw down on the hyoid bone.

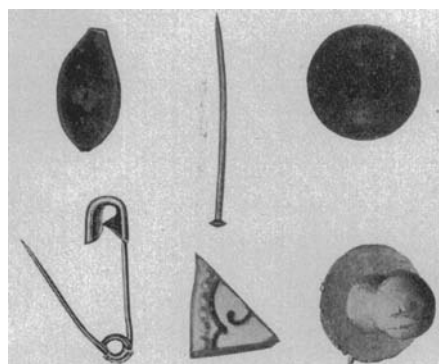


Fig. 13.—Foreign bodies removed from the bronchi by bronchoscopy bloodlessly through the mouth, at the Eye and Ear Hospital, Pittsburg, Pa. In addition 3 coins were removed.

In esophagoscopy for foreign bodies it is always better to introduce the esophagoscope without a mandrin, lest the foreign body should be located high up and be overridden. Every millimeter of the way down must be inspected, beginning with the pyriform sinuses. If even a start be given to the tube before the ocular watch be-

gins, a very large foreign body may be overridden and sometimes the foreign body will crowd the trachea and impede respiration.

Space forbids the illustration of all the radiographs and foreign bodies.

Westinghouse Building.

ABSTRACT OF DISCUSSION

DR. R. H. JOHNSTON, Baltimore: Nothing was said about direct laryngoscopy in the flexed position. Mosher of Boston, in an article in the *Boston Medical and Surgical Journal* advocates the left lateral position, which is as follows: the patient is placed on the table with the head slightly flexed on the chest; the head is turned to the left until the cheek almost touches the table. The mouth is opened and his special instrument introduced until the epiglottis comes into view when it and the base of the tongue are pulled upward, using the left upper bicuspid teeth as a fulcrum. So far as I know, he has used it only under general anesthesia. Last summer I had a case of papillomata in a child of 4 years and tried in vain to use Mosher's instrument. I flexed the head of the child on the chest, introduced Dr. Jackson's child speculum, pulled the epiglottis and the base of the tongue up, and obtained a splendid view of the larynx. In my next case, a child of 6 years, with dyspnea, I placed the child on the table, had her head, arms and legs held and succeeded in getting a good view of the larynx. In this procedure little force is used, because the tissues in a child's throat yield easily to slight pressure. With the smaller speculum there is no danger of loosening or breaking the incisor teeth. This method in my opinion will prove of more value to most of us than the method in extension. It is very simple and it will be found preferable to the other method. The great trouble I find in extension is that the operator is in a cramped position and the muscles of the neck are so tense that it is difficult to get a clear view. In the few cases in adults in whom laryngeal tumors can not be removed by the extension method, the flexed position again comes into use. An assistant pushes the thyroid cartilage back and brings the anterior part of the larynx into view. I have used this method in a number of cases in the last twelve months in children from 14 months to 6 years and have never failed to get a good view of the larynx. For diagnostic purposes it is ideal and for operative procedures superior to the extension position. In a little child seen some months ago the diagnosis could not be made with the mirror; the patient was placed on the table without anesthesia and the obstruction found to be in the subglottic space. To those who have used extension without success I would recommend this simple procedure.

DR. B. R. SHURLEY, Detroit: I would like to make a plea for more extensive digital exploration of the larynx in very young children prior to the use of the bronchoscope. In three cases in which I have had the instrument prepared for further investigation of these regions I have been surprised to find how far down I was able to reach with my finger. Having taken an x-ray picture in three instances in which a coin was lodged there the foreign body was located and I was able to dislodge it easily with the finger. The digital exploration of the larynx, if you are blessed with a long index finger, has many advantages.

DR. R. P. SCHOLZ, St. Louis: I believe that endoscopy is used too seldom; particularly is this true of the esophagoscope. I have observed that the esophagus has little or no pain and pressure sense and that even extremely large foreign bodies, lodged in the esophagus, produced mild or no subjective symptoms. One of my patients scarcely complained, with a piece of hog's vertebra 2.6x2.8x0.8 centimeters in size, lodged in the esophagus 17 centimeters from the cutting edge of the upper incisors. This patient claimed to have a feeling of pressure over the superior notch of the thyroid cartilage. Dr. Jackson, while in St. Louis recently, told me that his patient, with a plate of artificial teeth in the esophagus, had only very mild if any subjective symptoms. This I believe indicates how readily foreign bodies in the esophagus may go undiscovered. I wish to cite a case which came to my notice

while in the Pathological Institute in Vienna. A man, while eating fish, swallowed several bones. Esophagoscopy was performed and three large fish vertebrae were removed. Some time later when signs of mediastinal infection developed, it was attributed to the traumatism produced by the bone removed. The postmortem examination revealed a fourth vertebra lodged about 1 cm. below the lowest point of the esophagus explored. This case illustrates, I believe, how careful one should be to explore the esophagus thoroughly, and not be satisfied with the removal of a foreign body.

DR. J. R. FLETCHER, Chicago: I wish to emphasize the fact that more foreign bodies enter the bronchi than are now suspected. I had the pleasure of visiting Professor Killian's clinic in Freiburg some time ago. He told me that more foreign bodies were removed there than in all other parts of Germany together. He attributes this to the alertness of the physicians in the neighborhood. Because it was known that they were doing a great deal of this work patients are sent to them whenever foreign bodies are suspected. He showed me a patient under treatment who six years before had swallowed an upholsterer's tack.

CLINICAL MANIFESTATIONS OF ADENOIDS IN ADULTS *

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When we think of adenoids, a picture appears of a childish face, devoid of expression, dull eyes, thick lips and open mouth. This familiar face is so constantly before us that we almost recognize the listless type across the street. We are liable, however, to fail to recognize the disease when it occurs in a well-developed, apparently healthy adult, of age anywhere up to 50, giving a history like this: Catarrh was present during childhood, accompanied by the well-known symptoms of nasal obstruction. Perhaps there was also an attack of scarlet fever with a prolonged recovery. With the change from adolescence to maturity the symptoms of obstruction gradually lessened and troubles of a different type were noticed, for which the patient now seeks relief.

In order to make the clinical course clear I will diverge into the pathology. The reason that these patients frequently date the disease to an old severe attack of scarlet fever or measles is that bacterial invasions have more effect in enlarging and causing hypertrophy in the lymphoid structures of children than in adults. Again, the fauces and nares rapidly enlarge as the child grows older; hence the same amount of tissue would cause less and less obstruction and yet would retain its power of doing other damage. One would naturally suppose that the size of the vegetations would diminish as the individual advanced in life; this is probably true in nearly all cases.

Inspection in these patients shows the usual highly arched palate with the "adenoid fringe," or its remnants and the fauces and pharynx covered with a slimy sticky mucus. There is an enlargement of the lingual papillae and there are nodules on the posterior wall—"granular pharyngitis." In my limited experience I have never encountered a case that did not exhibit this nodular condition on inspection high up on the posterior wall, and I have begun to believe that it will always be found as a complication in all adenoid patients over 15. The tonsils are usually sclerotic, burnt embers of the spent fires of the repeated attacks of acute or the slow destruction of chronic inflammation. The epipharyngeal mirror or the examining finger reveals the disease to be

* Read before the Fremont County Medical Society, July 26, 1909.