impossible to separate the slight from the extensive injury it behooves one to treat all cases as though they were serious until they have been proved to be otherwise.

All operations for rupture must be exploratory at the onset, and may then be either radical or conservative. Nephrectomy has, in the past, been employed quite extensively; but, from a theoretical point of view, from the experiments of Dolgoff,⁵ who found that severe laceration, even tearing the organ in halves, in dogs, did not result fatally; and from the clinical evidence, in the frequent, satisfactory recovery after conservative measures, it would seem that packing, draining or suture might be more frequently substituted for nephrectomy. Gauze packing or drainage is the most common method of conserving damaged kidney, being employed 115 times in 125 cases in which conservation was attempted. Primary suture has been performed on but few occasions, though it is the ideal method of dealing with such injuries. Watson was able to collect reports of eight cases, and Neilson added two that were treated in this manner. Since the report of the latter I have been able to find reports of three additional cases in the literature, which, with the case reported in this contribution, makes a total of fourteen. In these fourteen cases there was no death, and only two unsatisfactory results. In one (Delbet) a secondary nephrectomy was necessary, and in the second (Watson) a pseudo-hydronephrosis and fistula resulted.

In every case the sutures, when placed, caused satisfactory hemostasis. In one of Griffith's cases, that of a man aged 48, the mattress sutures pulled through the very friable organ, and the fibrofatty capsule was sutured enclosing the kidney as in a bag, with a satisfactory outcome. Dolgoff found that wounds of the kidney healed much more rapidly if the capsule was preserved, and especially if its cut edges were united. In my own case the capsule of the upper third of the organ could not be united, yet the result was entirely satisfactory. In this case the wound was closed with interrupted mattress stitches that passed deeply into the parenchyma, and the wound margins were then accurately coapted by over-and-over superficial stitches.

In Fredet's case the patient had a nephritis, and it was for this reason that nephrectomy was not done. As a consequence of the most encouraging result in this case Fredet, in his enthusiasm, says: "Nephrectomy is indicated as a late operation only where there is widespread infection."

REPORTS OF OTHER CASES

A synopsis of cases collected from the literature since Neilson's article is given below:

GRIFFITH: A man aged 22, while running, slipped and fell, striking the left side below the ribs against the sharp edge of a piece of coal. He was able to walk some distance and climb two ladders, felt generally bad, but had no particular pain in the side. Five minutes after the injury he urinated what seemed to be pure blood, after which he felt much worse and nearly fainted. On admission to hospital he complained of pain all over the abdomen but more especially in the left lumbar region. One and three quarter hours after admission, the kidney was delivered through an oblique lumbar incision and was found to be torn on its posterior aspect at about the middle, extending from the convex surface to the hilum. Suture of the wound with catgut was done, which controlled the hemorrhage; a gauze wick was inserted to the kidney and the lumbar wound closed. The patient was discharged, well, on the eighteenth day.

GRIFFITH: A man aged 48, was struck on the left loin by one end of a heavy timber. On admission to the hospital shortly after the injury the patient was in a kneeling posture, being unable to either sit or lie down because of the intense pain. The pulse was good, but there was vomiting of bile, tenderness and dulness in the region of the kidney, with hematuria. Exploration revealed the lower third of the kidney nearly detached, with a longitudinal tear extending along the mid-line of the convex surface of the upper portion. Mattress sutures were inserted to close the wounds, but many of them cut through the abnormally friable organ. The fibrofatty capsule was then sutured, enclosing the kidney as in a bag. The lumbar wound was closed with a tube drain reaching to the capsule. The patient was discharged, well, on the twenty-third day.

FREDET: A male was struck in the left flank by a heavy falling body; there was brief loss of consciousness, followed by severe pain in left side with a hematoma but no free fluid in the peritoneal cavity. Catheterization revealed hematuria. Exploration revealed lesions on the anterior and posterior surfaces of the kidney. Nephrectomy was thought to be indicated, but because of a nephritis, it was deemed safer to suture the tears in the organ. Recovery ensued.

CONCLUSIONS

1. Owing to the rapid recent increase in the number of reported cases, there is reason to believe that sub-parietal rupture of the kidney is more frequent than the literature would lead one to believe.
2. Shock, injury to other organs, and external evidence of trauma are frequently absent.
3. A history of an abdominal contusion, followed by rigidity and hematuria, is sufficient data to lead to an exposure of the organ.
4. Slight lesions, and complete rupture of the kidney, can not be differentiated by clinical signs or symptoms.
5. Proof that there is an absence of serious rupture is called for before instituting the so-called expectant treatment.
6. Nephrectomy should be reserved for very extensive disintegration of the organ.
7. Conservative treatment, preferably by suture, is indicated in the majority of cases.

123 Main Street.

THE ADENOID AND TONSIL OPERATION *

JOHN EDWIN RHODES, M.D.
CHICAGO

The general practitioner first comes in contact with the child, and on him must largely rest the responsibility of recognizing the symptoms of these conditions as they appear in extreme cases. He should, moreover, appreciate the fact that there are remote and often less-pronounced symptoms connected with the adenoid and tonsil question that are as much a menace to the health as the others. It is not difficult to decide that a child who presents very large tonsils and adenoids and who breathes with open mouth, vacant expression, etc., should have an operation that removes the mechanical obstruction to a normal breath-way. But there are many cases in which the mere mechanical obstruction is the least important of the considerations involved, and the decision must often be based on symptoms not directly connected with the nose and throat, and which we are coming to recognize more and more fully as proper subjects for the operation, involving as much for the

5. Dolgoff: New York Med. Jour., 1900, lxxii, 871.

* Read at a meeting of the Southside Branch of the Chicago Medical Society, Dec. 13, 1910.

child's future as the other. In adults, too, we are now removing the tonsils frequently for far more important reasons than that they are large, and at times in cases in which, though very little tonsillar structure is visible on casual inspection, much is found to be imbedded in the tonsillar triangle.

I shall not attempt to speak extensively of the anatomic features of this subject. It must be recognized that tonsils when they are diseased form a culture medium for bacteria, and the pathogenic germs often enter the system. Rheumatic fever, myocarditis, endocarditis, nephritis, arthritis and arthritis deformans, adenitis and other conditions and infections are thus traced to the tonsil as the primary focus in many cases. The cicatrized tonsil, the result of chronic inflammation, often giving rise to peritonsillar abscess, should be mentioned in this connection.

The faucial tonsils and the pharyngeal tonsil are a part of the so-called Waldeyer's ring, draining into the secondary lymphatic ring; the faucial tonsil drains into those glands situate at the angle of the jaw, in front of the sternocleidomastoid muscle, and the hyoid; the pharyngeal tonsil drains directly into the retropharyngeal glands. These connections will explain very definitely the close relationship and frequent involvement of these glands in diseases of the lymphoid structures. It should be a routine practice to examine the glands at the angle of the jaw and along the border of the sternocleidomastoid in every case brought to us for treatment of the tonsils. It is surprising in what a large number of cases the infection has traveled that far, with a resulting enlargement of the glands. The manifest treatment should then be directed, of course, not to the gland primarily, but to the infecting tonsil, and yet in many cases the latter have not been the subject of concern by patient or friends. In these cases until the tonsils are removed other treatment is practically useless.

The pharyngeal tonsil is a mass of lymphoid tissue lying in the vault of the nasopharynx, and its upper, posterior wall; a mass somewhat lobulated longitudinally with a marked median recess, when markedly enlarged, and extending laterally into the fossæ of Rosenmüller. In addition to this there is sometimes found a mass of lymphoid tissue called the tubal tonsil on the posterior upper lip of the Eustachian cushion, and very often bands of tissue extend from this across the fossa. Scattered masses of lymphoid tissue are often seen also over the pharyngeal wall, extending down over the oropharynx. This condition of the pharynx is often indicative of the presence of adenoids, especially if the faucial tonsils are also enlarged. In some extreme cases, I have found masses of the lymphoid tissue extending down from the Eustachian eminence over the upper surface of the veil of the palate for a considerable distance. In such cases, manifestly, the curette could not complete an operation.

Rarely is it possible to make a satisfactory examination of the child's nasopharynx with the rhinoscope mirror. Occasionally a child, tractable and unafraid, will allow the tongue to be depressed and the small mirror to be carried to the pharyngeal wall, when a complete view of the nasopharynx is sometimes possible. Ordinarily, however, palpation is necessary and will give the information needed.

I prefer to have the child held on the lap of the nurse, arms and feet confined by the nurse, the head of the child against the shoulder and steadied by an assistant

standing behind. The examiner then seats himself in front of the child. A gag is inserted in the left side of the child's mouth and held by the examiner's right hand while the clean index-finger of the left, previously oiled, is carried up behind the palate into the vault.

The nasopharynx of very young children can be examined in this way, and one sometimes finds adenoids in children as young as three or six months which need an operation when interfering with the nourishment of the child.

Another method equally good is to have the child on the left side of the examiner sitting in the lap of the nurse, or in a chair; then the head, grasped with the open left hand, is held firmly against the left side of the examiner, the fingers are placed under the ramus of the jaw, the thumb pressed against the cheek, carrying it between the teeth, thus forcing open the mouth, and preventing the child from closing it on the examiner's fingers. The first finger of the right hand is then easily slipped behind the uvula and up into the nasopharynx. This can be done gently and quickly, but seldom without causing the child fright and some bleeding, as the lymphoid mass in young children is friable, soft, and easily injured. Cocainization of the nasopharynx is sometimes desirable, but usually unnecessary. In very young children it is better to use the little finger for palpation.

Hypertrophied faucial tonsils are easily recognized. Lying between the anterior pillar (the palatoglossus muscle) and the much thicker posterior pillar (the palatopharyngeus muscle) is the triangular tonsillar area. It is divided by the plica triangularis, a thin sheet of mucous membrane passing from the upper third of the anterior pillar downward and backward to the posterior pillar. This plica is the usual antero-inferior limitation of the lymphoid tissue of the tonsil and is adherent to the surface of the tonsil. In simple hypertrophy, in children especially, it is often fused in the tonsillar mass in which the enlarged tonsil occupies not only the space inclosed by the plica, and anterior and posterior pillar, but that below the plica—an inferior lobe—reaching at times the border of the base of the tongue. In projecting tonsils the enlargement may be inward, a large mass extending quite to the median line of either side, or the mass may be broadened from before backward and above downward but projecting very little.

Another variety, often encountered in practice, is the imbedded form. The tonsil is generally confined to the supratonsillar fossa, or it may include almost the entire triangular area. Such tonsils do not project into the throat on casual examination, but have enlarged outward, tonsils of considerable size being sometimes completely imbedded in the tissues of the lateral wall and soft palate. By palpation, a method that should always be employed, it is often found as a distinct mass as large as a filbert, or larger, entirely hidden in these tissues. Such tonsils can be recognized often by causing the patient to retch, when the muscular action projects them into the fauces. At other times a blunt hook can be used to pull forward and press outward the anterior pillar, when they are brought plainly into view. This is the variety that is frequently found in the toxic conditions spoken of, and when they are removed there may often be expressed from the crypts numerous masses of white, cheesy exudate.

These are the tonsils also overlooked by the practitioner until the infective results of their diseased condition have already been brought about. These are the

tonsils, too, on which so many inadequate operations are done, leaving much of the lymphoid masses still in the fossæ to continue their ravages on distant structures through systemic absorption. This may be partly explained by the fact that the tonsils are considered an operative field by the most inexperienced, and to this fact nothing has contributed more than that remarkably ingenious instrument, the tonsillotome, so easily manipulated that it appeals at once to every tyro.

The tonsillotome is not an instrument for every case, and indeed a very limited number only are suitable for its use. In the somewhat pedunculated tonsils, projecting into the fauces and easily engaged in the fenestrum of the instrument, a good operation can sometimes be done easily and swiftly. In other cases the instrument is an excellent one to cut off an enucleated tonsil which has been grasped and drawn inward by suitable vulsellum forceps. The ease of manipulation of the instrument and the idea once prevalent that a tonsillotomy was an all-sufficient operation in any case, has led to the universal use of the instrument. Our ideas, as specialists, have changed, and the instrument has been relegated to its proper position, for carefully selected cases only. It is not possible where the major portion of an imbedded tonsil lies submerged in the triangular fossa to do a proper enucleation with a tonsillotome alone, and to attempt to do it with this instrument is poor surgery, and not for the best interest of our patients. I condemn the practice because of these facts, and because it is possible to do an operation, in nearly every case, that is adequate and surgically right.

Let me preface my remarks on the method I follow with the statement that I have no particular instrumentarium to recommend for the use of others. Every operator has one to which he is accustomed. Every man should work with the tools he likes best, but I should insist that, if the operation is indicated, one should be satisfied with nothing less than the complete excision of the tonsil with its underlying capsule and the removal of every vestige of the adenoids in the nasopharynx, as far as possible. However, the matter of whether tonsillotomy is or is not advisable in some cases is one on which there has been, and is now, much debate, and one in which I should not care to be arbiter. It seems to me, however, that if the removal of the tonsils is indicated for any other reason than that they are a mechanical obstruction, the operation should include the crypts of the mass, which usually reach the underlying capsule, and therefore there should be a complete enucleation.

TECHNIC

The child should be in the hospital, if possible, the night before the operation, in order that it may become accustomed to the surroundings, and have the advantage of a night's rest.

I think it is not essential to precede the operation with any local treatments by antiseptics, although a mouth-wash and a nasal douche in the morning may be used.

Ether is the anesthetic for which no adequate substitute has been found. Since the investigation of Dr. Hinkle, given in a paper before the American Laryngological Association a few years ago, and of other writers, many specialists in this country have given up the use of chloroform and rely entirely on ether. I have used some of the shorter anesthetics, but have not been pleased with them, and prefer ether, as a rule.

Nitrous oxid with oxygen is safe, and can be prolonged almost indefinitely, but, since administration is so much interfered with by the operation itself and the profuse bleeding, it cannot be satisfactorily administered continuously and in these cases the period of unconsciousness is of too short duration, while relaxation is not as complete as with ether. The final stages of the operation, therefore, are apt to be performed on a struggling, semiconscious child, even when employed for adenoids alone. The same may be said of ethyl chlorid and ethyl bromid, although the effects of these are rather more prolonged. The child should be quite profoundly anesthetized, so that the subsequent operation need not be too much delayed by further use of the anesthetic.

There is no better point than this at which to insist that an adequate tonsil operation is often by no means an easy task. It should be done under a general anesthetic, in children up to 15 years of age, certainly; and in certain circumstances in adults. In adults, however, I prefer local anesthesia—of which I shall speak presently—if the patient has a little courage and can control the reflexes of the tongue and pharynx sufficiently not to interfere with the necessary surgical manipulation.

For illumination I use the Jansen photophore (an electric head-lamp), and therefore prefer to operate in a darkened room. I have the child placed in a partially prone position on the operating table, the left arm drawn backward under the body, the right shoulder being pulled backward by the assistant, to whom is entrusted the holding of the gag, which is placed in the right side of the mouth. I prefer the Allingham gag. The child's face is brought to the edge of the table, and underneath the head a Kelly pad may be placed, all pillows being removed. The gag is very apt to slip out of position unless held firmly, and the assistant should be cautioned regarding it. In this position there is no danger of blood reaching the larynx and trachea, and there need be no change of position in removing both tonsils and adenoids.

It seems to me that one of the most important steps in the operation is the adequate enucleation of the tonsil. To accomplish this a sharp knife, bent on the flat, is placed behind the anterior pillar, cutting from above downward, through the mucous membrane reflected from the tonsil to the posterior surface of the pillar or severing adhesions when they exist. In children, always, and sometimes in adults, as a rule I cut through the plica triangularis, severing it from the attachment to the pillar. In adults it is sometimes possible to save this sheet of mucous membrane by passing the knife from above downward and backward between it and the tonsil, the under surface of which it covers. Then the velar lobe may be freed from its attachment to the posterior pillar in the upper angle, in the same way. The latter is not often necessary in a child. A hook knife may be necessary, too, for freeing the very upper angle, the tonsil being seized with a vulsellum forceps and drawn inward. This is seldom needed. After these attachments have been properly freed, a surgically clean finger is passed around the tonsillar mass, firmly, enucleating it still more from before backwards by lifting the mass with its underlying capsule from its bed on the superior constrictor muscle, as far as possible. Some force is sometimes needed in passing the finger between the anterior pillar and the tonsil and underneath the tonsil. I believe that this complete enucleation is a most important part of the operation, as was

well emphasized by Shurly in the last meeting of the A. M. A. at St. Louis.

The tonsil is then seized with an Ingals tonsil forceps and drawn inward with slight force. It is often seen almost completely everted. Over the handles of the forceps a wire loop is then carried, and over the head of the instrument to its base, and the loop is then tightened. Great care should be taken here not to include the uvula in the loop of the snare. I cut the tonsil off rapidly with this cold wire snare in children, as it is quite friable. In older children and adults the loop is closed slowly as it crushes through the tonsil. In adults it is so fibrous that the milled wheel of the snare will have to be used to sever it. Indeed, a larger wire than a No. 5 piano wire, which I ordinarily use, may be needed and a more powerful instrument than the one I generally employ (the Bosworth snare, modified).

The lower tonsil, the left, is removed first, then the right. The Rhodes punch forceps may be needed, if small masses of lymphoid tissue remain in the triangle, and these are easily recognized and can be carefully picked out. The space can be well exposed with a small, long-stem double tenaculum and thorough examination made.

Bleeding should always be controlled before the adenoids are removed. Usually pressure with small sponges attached to uterine hemostatic forceps is all that is necessary. I always have ready a pair of Jackson hemostatic forceps and a Mikulicz clamp. In some cases a ligature may be passed over the Jackson forceps and the bleeding vessel ligated. Seldom is this necessary.

In the removal of the adenoids I find the Lowenberg forceps the most satisfactory, as the finger of the left hand may be held in the nasopharynx and the tissue removed can be controlled absolutely. I usually reinforce this by passing a Gottstein curette to remove small vestiges of lymphoid tissue on the upper and posterior wall. I have at hand also Freer's pernasal forceps to remove small masses in the fossæ of Rosenmüller or other portions of the vault. Bleeding is of course very free at this time, but ceases in a very short time. Sometimes it may be necessary to carry a sponge into the vault with a finger of the left hand and use pressure for a brief time.

The child is then placed in bed for a few hours, a light diet is recommended for four days, and the patient kept in the house for a week. Twenty-four hours in the hospital is usually sufficient. A gargle of 1 per cent. solution of phenol may be used every hour for two or three days, and less frequently for a week. Iodole may be insufflated through the nose three or four times a day.

I have found the method described one that is adequate for every kind and size of tonsil, and is radical. I believe, too, that there is much less danger of hemorrhage in the snare operation, although bleeding sometimes takes place, whatever method is used, and one must always be prepared for such an emergency.

Local anesthesia may be used for adults, but one cannot promise absolute freedom from pain and discomfort, although I have sometimes removed the tonsils with scarcely any. If it were perfectly safe to use injections of cocain and adrenalin this would be quite ideal. I have used the method a good many times. Reports of cases of death following such injections were made at the last session of the American Medical Association at St. Louis, and I should hesitate to recom-

mend it as a routine practice. On the other hand, the use of adrenalin (1/1000) swabbed over the surface of the tonsil and pillars, followed by the local application of a 10 per cent. solution of cocain freely, or the powdered crystals of cocain have had no fatalities so far as I know. When injections are made, a 1 or 2 per cent. solution of cocain is made, to a dram of which 5 to 10 minims of a 1/1000 solution of epinephrin, adrenalin or suprarenalin (fresh) may be added. The injection should be carried deeply into the base of the tonsil along the line of the anterior pillar, about 1/2 inch from the border of the pillar, using 10 to 15 minims of the solution for each tonsil. I now use local applications, usually of cocain crystals alone.

The instruments employed are a tonsil separator, curved tonsil knives, for each tonsil, a hook-shaped knife for the disengaging of the velar lobe, vulsellum forceps (Casselberry's), tongue depressor, sponges, etc. I favor seizing the tonsil with the vulsellum forceps first and then dissecting. A Freer right-angle knife is passed deeply into the tissues between the anterior pillar and the tonsil and brought down along the posterior edge of the upper posterior surface of the plica triangularis, saving this intact, which can be done in many instances. I believe, however, we will get better results usually if this plica is removed also. The same procedure is carried through with the separation of the posterior pillar and the tonsil, care being taken not to cut into either pillar. While the assistant depresses the tongue, traction is made on the partially separated tonsil and the hook-knife is carried over the top of the tonsil, almost at right-angles to it at first and separation of the tonsil from above downward, with the underlying portion of the capsule, is begun. As soon as the velar lobe is free, the remainder of the separation can be done with the Freer flat knives, care and discretion being used so as not to remove any of the underlying muscular tissue of the superior constrictor, on which the tonsil lies. The cutting should then be done downward and inward toward the fauces. The operation is often comparatively painless, with moderate hemorrhage. This same operation may be done equally satisfactorily under ether.

In this article I have given the details, as briefly as possible, of a method that has proved very satisfactory in a large number of cases. While the technic is rather difficult, at first, it can be acquired, and the results are usually so good that the painstaking care is justified. It enables one to deal with every form of tonsil, and leaves the throat in a surgically satisfactory condition.

Peoples Gas Building.

Elbow Sign of Scarlet Fever.—C. Pastia, in the *Tribune Médicale*, states that he found the characteristic sign he describes in 94 out of 100 scarlet fever patients in Groszovici's service at Bucharest and in all of twenty-three scarlet fever children examined in Paris. The sign is an exanthematous, linear, continuous eruption, localized in the bend of the elbow and very intense. At first the eruption is pink, then it turns a deep red or "dregs-of-wine" color or may resemble ecchymosis. The linear eruption is generally single but there may be several lines in some cases; between them the eruption resembles that of the ordinary scarlatinal exanthem. This linear exanthem develops early, he says, and persists to the end of the general eruption, leaving a pigmented line as it subsides. It is often useful for differentiation of the disease when the general exanthem is too faint to be positively recognized or is already past. He has never found it in any other eruptive diseases.