general anæsthesia, in the performance of this operation: The relative ease and deliberation with which the operation may be performed. The exclusion of all those risks, both immediate and remote, which attend every operation on the upper respiratory passages under general anæsthesia, and the avoidance of post-operative vomiting, with its exaggerated discomfort, for such a patient. The hæmorrhage is out of all proportion less and easier to control. It must further be remembered that in either case the chief discomfort the patient is called upon to endure is the dysphagia succeeding operation—a factor which the preceding anæsthesia has no power to influence.

General anæsthesia has, as far as the writer is aware, no counter-advantages to offer.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Held in Atlantic City, New Jersey, May 25-27, 1914.

(*Continued from p.* 442.)

Symposium.

Empyema of the Nasal Accessory Sinuses in Children.—Lewis A. Coffin (New York).—It is remarkable that although case after case of affection of the accessory sinuses in children has been recorded by rhinologists, no mention whatever is made of it in the text-books devoted to pædiatrics. As a consequence, many cases that have advanced to the suppurative stage might have been prevented and saved much suffering had an early diagnosis been made and proper treatment instituted. In acute conditions, when there is a copious discharge which may be washed out or otherwise cleared of secretions, if negative pressure is applied to the nostrils and more pus or mucus found, we may be quite sure that it comes from some of the accessory sinuses.

Children subjected to the test showed streptococci, staphylococci, and pneumococci.

The safest form of treatment is in the use of the post-nasal douche. The writer has found great satisfaction in treatment by negative pressure (suction) and the use of autogenous vaccines.

The Pathology of Acute Sinusitis of Children.—George B. Wood (Philadelphia).—The pathology of acute sinusitis is influenced by the severity of the infection and by the resistance of the patient, and upon these two factors depend the degree of inflammation. The characteristic changes found in the mucosa in the mild cases are: congestion and slight œdema of the connective tissue, increase in the number of

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beaker cells in the epithelium, and slight increase in the number of lymph cells in the superficial layers of the connective tissue. In the more severe cases the œdema is increased, the congestion is more severe, and the extravasation of the red blood cells into the connective tissue stroma becomes so intense that the condition resembles a subepithelial hæmorrhage. The leucocytic infiltration is marked, but still only involves the subepithelial layers of the connective tissue. Only in the very severe cases does the whole connective tissue layer become infiltrated so that the periosteum is attacked. Infiltration of the periosteum is very apt to be followed by bone changes. In diphtheria, sinus involvement is frequent, though the majority belong to the mild catarrhal group. In scarlet fever, sinusitis is less frequent, but more severe, so that bone involvement is quite common. Other infective diseases show nothing peculiar or characteristic.

The Surgical Treatment of Empyema of the Nasal Accessory Sinuses in Children.—C. G. Coakley (New York).—The writer is convinced that inflammation of the nasal accessory sinuses occurs as frequently in children as it does in adults. As the sinuses are undeveloped, there is a greater tendency to spontaneous cure.

General anæsthesia is necessary for examination, if under five years of age. Transillumination is valueless under ten years of age. In mild cases suction may be used to advantage. Cases requiring surgical treatment have either a swelling over the antrum or around the orbit. The antral cases are almost always associated with an osteomyelitis of the superior maxilla, and are operated through the canine fossa with a counter opening in the nose.

The orbital cases, if mild, are kept in bed with cold compresses and frequent instillation of a 1 per cent. solution of cocaine and a 1/20,000 solution of adrenalin. The severer type requires immediate operation of ethmoid and sphenoid exenteration through the external route.

A probe is passed into the frontal sinus, and the diseased membrane must be removed lest there be recurrence; the wound should be left open. There is no consequent deformity.

Harris P. Mosher: It is hard to get data on the development and the size of the accessory sinuses in children. Very few bodies of children find their way into the dissecting room, and children make poor subjects for X rays. Occasionally, however, we do get an X ray, or have a chance to investigate the sinuses at autopsy. In such instances I have usually been surprised at finding the sinuses larger than I anticipated. This is especially true of the sphenoidal sinus. In one case, a boy of twelve years, the sphenoid was of average adult dimensions. Most of us, therefore, have to go for our information to the men who have been fortunate enough to have material for making observations upon the sinuses in children. Onodi, who has published a book on the "Accessory Sinuses in Children," is our chief authority. I have roughly traced some of his plates and grouped and chartered his findings. They help to visualise his results. Also, I examined ten X rays taken of children's heads, in cases where there was a question of fracture of the skull. According to Onodi, less is accurately known about the maxillary sinus than about the others. Investigation seems to have been focussed upon the frontal sinus and the ethmoid cells. The antrum appears in the fourth month of fœtal life, and at birth is a *cul-de-sac* about the size and shape of half of a coffee bean. Tooth buds take possession of the body of the superior maxilla and give the antrum but little room until the second dentition.

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At this time the antrum enlarges quickly. Another important observation in connection with the antrum in young children is that it is best approached from the nose through the middle meatus. There is but little space under the inferior turbinate, and the wall of the antrum there is much thicker than in adult life. The ethmoidal cells are present at birth, two or three posterior cells, and a like number of anterior cells. The posterior are the larger—a distinction which they retain throughout life. The ethmoidal cells increase rapidly in size, relatively much faster than the frontal sinus or the sphenoid. At the thirteenth year the ethmoidal labyrinth is of adult width, and the cells nearly, if not actually, of adult size. An X ray taken at this period is striking, because the ethmoid labyrinth is wide and apparently fully developed, whereas the frontal sinuses (in comparison) are small. There is no frontal sinus at birth; only a comma-like fossa at the summit of the unciform groove, which by upward growth is to make the sinus. By the third year the frontal sinus is peeping above the level of the cribriform plate; the sixth year the height and width may measure 10 and 10 mm. The frontals grow very unequally. Onodi figures one case of an eight-and-a-half-year-old child in which an adult sinus was present. From ten to fourteen years it is common to find what might be classed as a small adult sinus. I have tracings of a sinus at ten years, and of one at fourteen years, which illustrate this. The last accessory sinus is the sphenoid. At birth this sphenoidal sinus has a well-formed ostium and a small cavity. By comparison the frontal sinus at this time is far behind the sphenoidal in development. The order in which the sinuses enlarge seems to be roughly as follows: From birth to the third year the ethmoidal cells have the lead; then the sphenoid starts to enlarge actively; at the sixth year, or the period of second dentition, the antrum becomes active, takes the lead, and ever afterwards holds it. From the sixth year also the frontal sinus, the laggard of the sinuses, increases rapidly. The gist of the matter is, that from the third year there is an antrum large enough to permit of surgical treatment. The same is true of the ethmoid labyrinth from six years onwards, and of the frontal from the eighth year. From the third year a surgical sphenoid may be expected. Precocious development of the sinuses may make any or all of the sinuses of surgical size before the periods just mentioned.

Thomas Hubbard: I should like to speak of three or four types of cases which have come under my observation of acute sinusitis in children. First, a young child of six years of age with orbital abscess following measles; this case was seen some time after the initial attack, and there was a sinus which had ruptured through the orbit, and although the child was in good general condition, the parents refused operative interference, yet nevertheless the child recovered. The second is one of the fulminating types of scarlet fever in a girl exposed to cold after the initial symptoms of fever, and she suddenly developed acute general sinusitis. Within forty-eight hours there was coma, and death inside of three days. That was one of the cases which are absolutely inoperable. The third type is of scarlet fever of less malignant character, but the initial symptoms were otitis media; prompt paracentesis; the next day symptoms of marked pharyngitis, and following that the rash and typical symptoms of scarlet fever. Although this child was in the best of hygienic surroundings, with the best of nursing, the ear went on to a suppurative mastoiditis, and a mastoid operation was necessitated about the third week. General sinusitis on both sides was developing with gradually increasing severity; the symptoms were typical and worse on

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the side of the involved ear. This boy was at that time seven years of age, and the right sinus seemed to reach the maximum of inflammatory disturbance, then gradually subsided. This gave me hopes that the left side would follow suit, but the general systemic disturbance necessitated a general operation upon the left sinus about three weeks after the mastoid operation. A complete radical operation was done, modified. The frontal sinus was involved only in its lower portion, and consequently there was no opening above the orbital ridge. Complete ethmoid exenteration. Probably the sphenoidal sinus was also opened, as was the maxillary antrum, which was thoroughly cleaned out. Three or four days of marked improvement followed, then a relapse with a gradual rise of temperature. Autogenous vaccine, made from the granulations taken from the ethmoidal cells, was given, with exacerbation of temperature for about forty-eight hours, then marked improvement and complete recovery. The patient was under observation for five years with several severe attacks of rhinitis, but only last winter did he again develop any symptom of pus in any of the sinuses, so that it was necessary to wash out the antrum for a few days. It then subsided. Another case is of the subacute type, in a child of six years, brought up on the floor of a basement; he had a succession of acute attacks of coryza, finally resulting in a general suppurative sinusitis involving all the cells on both sides. This boy was treated according to the method suggested by Dr. Coffin. It was impossible to irrigate the antrum more than about six times, for after that it produced such a nervous shock that it had to be discontinued. Negative pressure was undertaken every day, about three pounds, to withdraw the pus, which was considerable, and after each treatment he would be very comfortable for some hours. There was more or less purulent bronchitis in this boy. We were finally driven to operate, but his condition was so critical that I limited it to an opening from the maxillary antra into the nose. Within twelve hours after operation his temperature was 103·5° F., and he developed a broncho-pneumonia, and I am thoroughly convinced that a prolonged operation would have resulted in death. The antra have since remained comparatively clear, there now being natural drainage, yet eventually, as soon as his condition warrants it will be necessary to perform a complete exenteration of the ethmoids.

Emil Mayer: There seems to be another class of cases of this affection in children between the two types as mentioned by Dr. Coakley, of moderate inflammation and infiltration of the orbit, and of the severest type, and I have recorded such an instance and found to my surprise that all the other cases of a similar kind recovering had the same train of symptoms. All the patients were in the neighbourhood of from three to five years of age, and all had the following conditions: an opening or perforation directly under the eye about half an inch, an ectropion, and foul-smelling discharge. A probe dropped into the opening over the zygoma went into a cavity and turned toward the nose and was easily pushed into the nose. In my own case an external operation, consisting of linear excision, curetting, and drainage through the nose, was followed by complete cure.

William E. Casselberry: I wish to speak of a chronic type of case, particularly of a conservative operation which I have found feasible. They affect children anywhere from nine to fourteen years of age. It is the kind of case you see frequently even in older people—nasal polypi in the middle meatus, polypoid enlargement of the middle turbinate, and pus in the antrum and anterior ethmoidal cells, and sometimes in the posterior ethmoidal cells. These polypi, if removed one week, will be

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there again the next week, developing with extreme rapidity. If removed, however, together with the greater part of the middle turbinate, and at the same time you go a little higher and take the floor of the anterior ethmoidal cells, they do not return within the month, as before. This operation I have found feasible in a limited number of cases under cocaine anæsthetic. Occasionally I have had to give a general anæsthetic. I recall one which resulted in such an amount of recovery that it has required no further operative procedures. The subject was impressed upon me by a child upon whom I did not perform such an operation, and in whom I should have urged either an external or an internal operation under a general anæsthetic. She was a beautiful girl, in whom to propose any external procedure to the parents would have seemed like sacrilege. I removed, in the fighting child, polyps from time to time as best I could without middle turbinectomy. I cleansed the nose and washed the antrum. The thing went along for three or four years, when, as she was travelling on the Rhine, she became suddenly seized with a severe headache, was taken off the boat to a hotel, and put under the care of an English surgeon, who said she had meningitis, and she died within a few days. There is always this menace, even in children, and I believe it our duty to establish internal drainage. I do not believe it our duty to establish that drainage instead of doing an external operation if such seems necessary. But in many cases internal drainage will be quite sufficient.

Robert C. Myles: The fundamental principle of these chronic cases, in my opinion, is the securing of proper drainage, and this resolves itself into a surgical mechanical proposition. I think we have been a little conservative in not teaching more frequently these intra-nasal operations on the ethmoid and antrum of Highmore, in children under puberty. It is astonishing how a child can be trained to allow you to do it under cocaine. I have started by opening the ethmoidal cells, and before finishing have succeeded as well as though the patient were a grown person. I have used cocaine frequently hypodermically, and in this way it renders the operation quite painless if injection be made into the middle turbinal region. The exenteration of the bulla ethmoidalis and the anterior ethmoidals has frequently been most successful. I believe we will be able a little later to open the antrum more successfully by enlarging the hiatus semilunaris and enlarging the upper lobe and securing drainage in that way, doing no permanent harm, but effecting permanent drainage, and thus pave the way for the future irrigation if necessary. In a case of mucocele, if you make a permanent opening through the nose you will get the best results. In cases of chronic suppuration, those preceding atrophic rhinitis, it has been my custom to find the drainage fairly good. I have used in conjunction with other treatment a powder of aristol and boric acid, insufflating half a grain once a day into the nose, at night; and I do not know whether it is the iodine generated from the aristol or what it is, but it seems to me that the causal factor of suppurative rhinitis, which terminates in atrophic rhinitis, is sometimes completely arrested. In conjunction I use ichthyol as an ointment.

G. Ross Skillern: It is astonishing how few cases have really come under observation and been diagnosed as such. I do not mean the acute cases, which we see in conjunction with the acute conditions, but the truly chronic cases. In the pædiatric department of the hospital with which I am connected, there are a great many cases of children's diseases, and very frequently the laryngological department is called upon to examine patients for sinus trouble, and in the last year I do not know of more than

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one or two well-marked cases of sinus trouble which we have been able to diagnose. This may be due to the fact that in the sinuses in children the mucosa and the underlying bone are so intimately associated and connected that we do not seem to have the same condition as shown in the text-books pertaining to the adult, yet it seems that the cases are fulminating in type. In the operations we have done, mostly by the internal method, the bones are softened and broken down, showing a condition of infection of the entire wall of the nasal cavity of one or both sides. In some of these bad eye cases it is absolutely necessary to go into the ethmoidals, but in the majority of patients we should try the intra-nasal method first, and the conservative methods, because at the best we are working under very disagreeable circumstances.

HANAU W. LOEB: The most unsatisfactory class of case of any type that can come under our observation is that of bilateral suppuration, which, without definite proof, seems to come largely from the accessory sinuses in children. The nostril is exceedingly small, so that it is almost impossible to get a satisfactory view, the nose being really a duct, and for that reason not sufficiently developed to take care of the situation.

VIRGINIUS DABNEY (Washington): I would first refer to the symptoms in the acute cases. First, there is the high temperature, frequently 104° F., quite unassociated with influenza or bronchial trouble. This, I think, is remarkable when we remember the cause is an open empyema. Secondly, with regard to the prolonged convalescence. I have under observation a case which has been irrigated six times a day for ten days, with an immense amount of discharge. The case was not easily diagnosed; it was seen on the third day with an internist, but t was only by exclusion that we arrived at the diagnosis. Pressure on the canine fossa was painful, and also pressure over the supra-orbital ridge. There was high temperature and all the train of symptoms which are recorded as typical, after three weeks of apparent cure. Under irrigation in these cases the temperature comes down to 99° F. for ten days or so, then there is an exacerbation from a reaccumulation of pus. I would cite one case of a boy who went wading two weeks ago in a public fountain; no bronchitis; temperature suddenly shot up to 104° F. The pædiatrist said he had colitis, etc. What he had was a pure infection of the antrum of Highmore, and this cleared up under irrigation.

JOHN F. BARNHILL: I believe that we should do more than we have done heretofore in enlightening the general practitioner and surgeon as to the exact cause and number of cases that may arise from sinus disease. If we attempt to find out how frequently meningitis results from these sinuses, we are greatly handicapped. I have had an opportunity of seeing a number of cases in which there was lack of fever, pain, and distress; the thing we did find being the great exophthalmos, with swelling of the lid and discharge of pus into the nose. Recently I had a child of thirteen years, in which there were no symptoms except this great exophthalmos and discharging fistula at the external angle of the eye. At operation I found the entire anterior and lower wall of the sinus necrosed, and it had to be taken away. Dr. Coakley spoke of doing a secondary operation; leaving an external drain in the cases operated on by the semi-Killian method. It seems to me that we should do this at one operation, by making the drain large enough into the nose.

GREENFIELD SLUDER: The sphenoidal sinus develops very early; specimens showed that by the completion of the second year of life the extension of the sphenoid, although scanty from antero-posterior measure-

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ments, was as far as the foramen rotundum laterally, and at the sixth year it had reached the Vidian canal. Both the Vidian and the second division of the fifth nerves come closely associated with the wall of the sphenoid, and I believe this fact offers the explanation for the recurring headaches in children which are sometimes seen as early as the tenth year; and I feel more convinced than I did last year, because during the interval I have seen the sphenoid put out an eye, and paralyse the third division, where the picture showed a polypoid swelling over the olfactory fossa, completely filling it, and bathed in pus from above. In the course of twenty-four hours that polyp disappeared under shrinkage, and the last vestige of pus with it. Under constant watching no further pus was found. In that particular case the second division of the fifth nerve and the Vidian nerve took part in the pain. The treatment was satisfactory, the third division came back into almost complete function, although there is still a difference of two diopters prism. That case lost its malignant type as soon as the shrinkage took place. It was not operated upon.

Harris P. Mosher: Among the cases which have come to my attention, there have been two which I could not miss; in each there was a fistula under the eye which when investigated led to the antrum or nose. Dr. Coakley's remarks regarding the slow pulse in acute ethmoiditis interested me. This suggests to me some cranial pressure, and I would like to know if that is his explanation.

Lewis A. Coffin (in closing): I selected the eye department of our hospital as the one in which to try out my method. I took an old aspirating apparatus with a vacuum in a big bottle, and cut off the tip of a rubber ink dropper and stuck the little end into the tube. By putting this into the patient's nose we found the dropper filling up at once. With regard to the type of case cited by Dr. Mayer, there is such a type. I have a different feeling from him on the matter. I find that it is pathognomonic of an osteomyelitis and involvement of the alveoli, and the alveoli are diseased, and if probed it will bend toward the nose and will be easily pushed in. Very possibly the antrum is diseased also. The next case any one of you have I would suggest that you make a very careful examination of the alveoli. In regard to the treatment of children intranasally, in taking out polyps, ethmoids, etc., we must differ very much in the class of children we treat. I could not do it in my patients under seven years of age; I do not own or know of sufficiently small instruments for this work. In regard to the size of the sphenoid, there is a difference in Dr. Wood's and Dr. Mosher's statements. I have had some experience and believe that Dr. Mosher, who stated that the ostium was well developed with quite a cavity back of it at birth, is correct.

George B. Wood (in closing): I would add just a word regarding the development of the sphenoid. In my own experience I have never seen a sphenoidal cavity under one year of age which I could recognise. I have cut sphenoids in children six months of age without the slightest sign of a cavity. Others state that it becomes of surgical importance from four to six years of age, and may be recognised occasionally as a dimple on the anterior edge of the sphenoid body during the first year.

Cornelius G. Coakley (in closing): In the radiography of children there is certainly a frontal sinus well above the orbital ridge in children three years of age. One explanation may be that these children with discharge and diseased frontal sinuses may have abnormal development. As regards the instruments for intranasal work referred to by Dr. Coffin, I would state that Pfau is now making instruments identical with those

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for the adult. As to the size of the sphenoid, I had occasion to operate on a child with orbital cellulitis about a year and a half old, and there was a sphenoidal cavity the size of a hazel-nut. The child died of laryngeal diphtheria three weeks later, and we proved the size of this sphenoid at autopsy. Infection is more likely to come from the frontal sinus, but in the clinic cases I have seen it has come through an orbital cellulitis. The frontal sinus has not been involved particularly, and I think that an orbital cellulitis secondary to sinus disease is the thing which is very liable to extend into the brain. With regard to the low pulse, I would say that in two cases I have examined the spinal fluid and there has been no infection, and in twenty-four hours after, through opening of the abscess, the pulse has come up and run very high, showing that the slowness of the previous rate was probably due to compression. The bone in all these cases has been of peculiar leathery consistency, requiring a forceps to get it out. I can agree entirely with Dr. Coffin in his explanation of Dr. Mayer's case. Such are due either to necrosis of the superior maxilla or ethmoid, which has ruptured spontaneously, and such cases go to the eye surgeon. These cases, so far as I have been able to determine, have usually been streptococcic. The reason I leave the wound open is because I would do so with a streptococcic infection in the mastoid, and I believe in the type of cases I am speaking of, tense, shiny glaze of the orbit, if you close the wound you are in danger of keeping up the cellulitis and producing an extension into the cerebral cavity. You frequently get no more scar following drainage, although it may be wider and redder for the first four or five months, yet at the end of the year you cannot tell whether it has been closed primarily or healed by secondary closure. I got this idea of leaving the wound open in such cases from Killian.

The Relation of the Tonsil to Thyroid Disease.—Burt R. Shurly (Detroit).—For some mysterious reason there exists in the State of Michigan an area in which there is an increased percentage of cases exhibiting disturbances of thyroid secretion. It is obvious that the physiology of the thyroid and other ductless glands is profoundly affected by toxic disturbances in general, and particularly those that enter by the lymphoid ring. The author has noted beneficial results after a tonsillectomy in patients who had incipient Graves' disease, thus adding another definite indication to surgical procedure. When the routine examination of the nose, throat, and ears includes the cervical and postcervical glands, thyroid and thymus, it may be possible to abort an incipient Graves' disease or pulmonary tuberculosis.

In moderate or severe thyroid insufficiency you may find a dry mouth and throat, with dyspnœa on exertion. Voice husky or thick, defect or change in speech. Mucous membrane of upper air passages may be swollen or dry. Laryngeal muscles may show insufficiency. There may be perversion of taste. Later in the disease hæmorrhages from the nose, throat, or lungs are common. Treatment of the thyroid condition is indicated, but if improvement does not follow upon medical treatment, operative interference should not be postponed. In all cases of thyroidism an examination of the nose, throat, and ears is essential.

Greenfield Sluder: I have started observations in the Children's Hospital in St. Louis, and a considerable number of children have been studied as well as adults, by me, in which there seems a clinical relationship between the lymphoid ring and the thyroid gland. The development of this district is by no means clear in the minds of anatomists. Just exactly what parts the various sections of the lymphoid ring develop

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is not settled. That the lingual tonsil develops from the same bronchial arch of the thyroid is a fact, and in early fœtal life there exists the thyroglossal duct, which is closed before birth. It is sometimes found in the dissecting room. I have many times sought for this duct in the living, but have not found it. Dr. Shurly reports a singular betterment by the removal of the faucial tonsils. My observations have been relative to the lingual tonsil, and in one case in which I did a perfect tonsillectomy some years ago I found a goitre this winter. The treatment in that child with a lingual tonsil resulted in marked shrinkage of the goitre, which was a simple hypertrophy. I have a considerable number of adults under observation, one young man of probably twenty-five, with an enormous adenoma in his neck that in the course of three months has shrunk some three-quarters of an inch in circumference. The gland is softened, and the sense of comfort is greatly increased. That is the type of simple hypertrophy. Of hyperthyroidism I have had five cases. In four there was marked improvement by applications to the lingual tonsil. One was a case of long standing, operated on once or twice, in a woman by no means intact otherwise, who has so far not been improved. In another case of high grade, striking exophthalmos, and moderate adenoma, with a sense of impotency and general nervousness and tremor to such an extent that the patient was unable a short time since to feed herself, the first application to the thyroid gland was followed by a sense of betterment which she described as less tension. In the other cases under observation the thyroid has softened and shrunk, and in one very distinct and another less distinct has the exophthalmos receded. In one case in a child I saw the thyroid swell over night as the result of laryngeal tonsillitis; the tonsillitis got well, and in a few days the thyroid returned to normal size. With regard to the application, it is silver in varying strengths up to a saturated solution, and salicylic acid in alcohol in saturated solution.

George B. Wood: The relation of tonsillar infection to the production of hyperthyroidism was first called to my attention by Dr. Musser, with whom I saw a number of cases. One case in particular was that of a trained nurse who had recurring tonsillitis and exophthalmic goitre and hyperthyroidism following tonsillitis. The removal of her tonsils stopped the attacks for six months, and her goitre began to go down and the exophthalmos disappeared. At that time she had slight sore throat, followed by a less severe attack of hyperthyroidism, and after this attack I found on examination that at the operation I had not completely removed the faucial tonsils, there still being a piece in the upper part, removal of which has cured her, and she has had no more attacks. I have seen a few other cases. The thought in my mind was not of the relation of the lymphoid ring directly with the thyroid gland, but rather that we had an infective process originating in the ring which upset the metabolism of the body so as to produce goitre and hyperthyroidism, and that was also the view Dr. Musser held, and he believed that almost all goitres and all cases of exophthalmos with goitre were more or less associated with some form of cryptogenic infection, and that if such infections could be located and removed, the results would be good.

Henry L. Swain (New Haven): I have long associated the connection between the hyperthyroidism and the tonsillar ring, but I had only put them as occurring in the same individual, and that any infectious process in a patient with Graves' disease would exaggerate the symptoms. I have known this to occur with antrum disease, with lingual tonsils, and inflammation of the lateral columns of the pharynx. This I say, in

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spite of the fact that there are numberless cases which must have occurred to all of us in which the relation was established in this way, that in patients for lingual tonsil affections we find that they cannot wear a tight collar where there is an acute exacerbation of the lingual tonsils. I had not thought they were directly connected, and that any phenomenon of internal secretion could exist between the two conditions.

GEORGE E. SHAMBAUGH: Dr. Shurly's paper brings out a point of great importance—the necessity of associating ourselves in our work with other fields of medicine, especially with the internist and his work. We too often isolate ourselves. We have been interested in these problems of Dr. Shurly's in the Presbyterian Hospital for a number of years, and our view has been along the line suggested by Dr. Wood, that there is a focus of infection in the throat which causes it. The whole phenomenon of thyroid disease has been that developed from an infection; it may be a bad tooth, an alveolar abscess, but usually it is an infection gaining entrance through the faucial tonsils. The recognition of a chronically infected tonsil is very often overlooked. With the history of recurring attacks of sore throat, etc., anyone may recognise the possible relationship, but to find the chronic infection of the faucial tonsil is more important when there is no history of such disturbance. Sometimes the history is of an attack several years previously, and in such cases a pus pocket may be found which has given no symptoms. I have often been asked to remove the tonsils where the patient was suffering from systemic infection, since this was considered to be the source of entry; careful examination of the tonsils will probably show nothing externally to lead you to believe they are responsible, but after removal frequently an abscess will be found at their base.

BURT R. SHURLY (in closing): I would like again to call attention to the great interest these cases should have for throat surgeons, and how frequently they are missed. Almost all the patients are of neurotic tendency, and such have an awful life to lead, and if we can find some few of them exhibiting these disturbances of the thyroid, it will be of great benefit to put these people on the right track.

Laryngitis Submucosa Subglottica Acuta.—Charles W. Richardson (Washington, D.C.).—The writer gave a brief history of the condition, and why he preferred the name given to any other designation of the condition. His attention was first called to this disturbance during the early days of his extensive intubation practice. The disease is most frequent in child life, though no age is exempt. The condition is apt to be implanted upon a severe laryngitis—a sequela of the infective diseases—or produced by foreign body or other sources of local irritation.

There may be more or less general inflammation of the larynx, but this is not always markedly present. The characteristic inflammation of the submucosa manifests itself in the subglottic portion of the larynx. The symptoms are slight hoarseness (often absent), stridulous breathing, and bellowing cough. There is no marked evidence of interference with aeration of the blood, as in diphtheritic stridor. The development of the embarrassment to respiration is more gradual than in laryngeal diphtheria. Inspection demonstrates two bright red bands located immediately below the vocal bands, nearly or quite meeting in the middle line. This condition was differentiated from laryngeal diphtheria by the author. The treatment indicated is quiet in bed, depleting by the skin and bowels, local use of ice externally, and silver nitrate in 1 per cent. solution

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(if possible), and ammonia bromide, carbonate, and tincture of aconite internally. Intubation becomes necessary if the respiration is seriously embarrassed.

THOMAS H. HALSTED: As I understand it, there is palsy of the vocal cords in the subglottic region and deposition of lymphoid tissue, which becomes actively inflamed and hypertrophied at times, just as do the tonsils in the upper part of the throat, and I have always felt in these cases that we have an acute inflammation of that tissue. And, therefore, it has seemed to me that in the cases which I have seen most commonly they were in children with enlarged tonsils and adenoids—that is, the children would have recurring attacks. These cases are always, especially when severe, anxious ones, because there always comes up the question of possible diphtheria, and the general practitioner usually makes a diagnosis of diphtheria in the more serious cases, and it is a serious matter for us very often to oppose that diagnosis.

BURT R. SHURLY: Ordinarily, I think practitioners differentiate between acute laryngitis and membranous laryngitis, and this particular difficulty is not one that is ordinarily differentiated. Those of us that have done intubation work realise the peculiar conditions found in the subglottic region of the larynx, and the loss of voice in these cases is apparently the thing which attracts our attention to this variety of laryngitis, and one which would put us on our guard as to the proper differentiation. Of course, the cases for the most part are those which are met in the homes of patients, and the difficulties of examination and actually observing the swollen ring is quite apparent, and usually we have been called to these cases to do an intubation or some operative interference for a case of membranous laryngitis. The danger of not differentiating is a very great one, because by far the high mortality would come on the side of the membranous form of inflammation. I have intubated a number of these cases that were decidedly urgent, and where this was the only thing to do to save the life of the child, and practically all these cases got well with intubation. The point of doing a sufficiently early intubation is well taken, from the fact that a child suffering from long continued dyspnœa is in great danger of developing a pneumonia or some pulmonary condition. Of course, the differentiation from a foreign body is also a thing which should be prominently in mind.

EMIL MAYER: There is one condition that has not been brought out, which is exemplified in a case under my care. A nurse in the Mt. Sinai Hospital had a good deal of dyspnœa, and it was suspected she had diphtheria, although the cultures were negative. She was placed at once in isolation, where I saw her. Examination of the larynx showed the swelling Dr. Richardson has mentioned, and I felt it might show itself to be a case of subglottic infiltration. Nevertheless, I took the swab of the ordinary diphtheria culture outfit, bent it at right angles, and introduced it below the cords into the trachea, and got the cultures of Klebs-Loeffler bacilli there. There was nothing high up in the larynx, but it was in the trachea. She went through a most terrible time, but eventually recovered. In regard to the treatment, I do not recall that Dr. Richardson brought out the great benefit from small doses of adrenalin applied directly to the parts, and when the acute inflammation had subsided, the advantage that iron applications produce in the healing of these conditions as the patient improves.

WILLIAM E. CASSELBERRY: I am certain that this disease is deserving of a name of its own, and that it should be described as an entity. It is not always a false croup, or non-diphtheritic croup, or spasmodic laryn-

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gitis; the distinction which he makes is as to the progression of the dyspnœa—the constancy is the best clinical distinction between the entity of subglottic laryngitis and the other forms just named. In subglottic laryngitis there is often that swelling beneath the cord, but when the condition is not at its worst the child breathes freely, especially in the daytime, and the attacks are paroxysmal. In the membranous form you cannot be so certain, because the membrane covers the subglottic portion, but on the wane and in the beginning I have seen the subglottic inflammation. The disease is by no means limited to children, even in those instances in which they may be taken for angio-neurotic œdema. I have seen several well-pronounced cases with fair voice and continuous dyspnœa in adults. I remember a woman who came to me with the history that she was subject to croup which would last about a week and she would feel that she must suffocate. She had been intubated on more than one occasion. The mirror showed a typical picture of subglottic laryngitis.

HENRY L. SWAIN: Thirty years ago, when I first yearned to look into a larynx, there were certain cases known as chorditis hypertrophica inferior; they went through acute exacerbations. Since then I have seen these cases in adults where they have the history of attacks of choking, I always thought them acute exacerbations for which there seemed no very good remedy. In two cases I remember using almost full strength nitrate of silver, and in one the galvanocautery, but I reduced the chronic hypertrophy only very slowly.

THOMAS HUBBARD: This condition is more common than is usually supposed. I have three cases in mind which I labelled subglottic œdema in children. Two were treated in the routine way, as though diphtheritic; the antitoxin made no difference, but in two cases in particular there was a copious flow of serum immediately upon the introduction of the tube, and there was such a quantity that there was no mistaking it. Diagnosis with the mirror I have also made, and I would take issue with the method of treatment as stated by Dr. Richardson. I think the proper line of treatment should be copious diaphoresis; if we could establish this when sure of the diagnosis, it is the best remedy. In one case where the diagnosis was made with the mirror, this treatment was very promptly successful.

CHARLES W. RICHARDSON: I wish first to endorse what Dr. Casselberry has said. He suggests passing the mirror into the pharynx and raising the epiglottis in order to get a rapid view. Although Dr. Hubbard thinks his treatment differs from mine, he agrees most thoroughly, because my method of treatment also produces diaphoresis.

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(*Continued from p.* 447.)

Symposium: Aural Complications of the Exanthemata.

(*a*) *Ætiology, Diagnosis, and Treatment.*—CHARLES R. C. BORDEN (Boston): The present communication is practically a continuation of a

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