tissues and may arise in nearly any organ or structure of the body.

THE VARIETIES.

It is essentially malignant in character and tends to recur after removal. Metastasis occurs through the circulation. The degree of malignancy varies greatly. The small round cell and melanotic varieties are the most dangerous. The exact influence of sarcoma on metabolism is unknown, yet it is a well-established fact that sarcomatous growth is injurious to the general health, as is shown by the marked emaciation, anemia, leucocytosis and the sometimes existing irregular fever. The structure of sarcoma cells is round, cylindrical and spindle-shaped. The spindle-celled sarcomas are harder than the round cell. The round cell variety may be almost entirely composed of spherical cells, large or small in size. These enter into combinations in various ways and are modified by their combinations and the structure in which they are located.

Stengel, in discussing tumors of the kidneys, says that sarcoma is the most frequent malignant tumor. It may occur congenitally or in later life. The multiform character of sarcoma of the kidney suggests an embryonal origin and it is not unlikely that the primitive Wolffian bodies are the starting point of the disease.

The special variety of sarcoma to which the specimen from this case belongs is known as an angiosarcoma; or more correctly "hæmangio sarcoma." In this variety the sarcomatous proliferation begins in the adventitious coat of blood vessels. The tissue of the tumor in typical cases is almost wholly composed of a tangle of vessels whose walls are surrounded by heavy masses of cells which extend even as far as the endothelium. Such a tumor, therefore, is made up essentially of thick-walled cellular tubes which partly follow an independent course and partly unite with other tubes by an anastomosis which gives rise to a complicated mass of twisted and interwoven cords. However, it should be mentioned here that in both endothelium and angiosarcoma the alveolar and tubular structures may be wholly lost in places through the diffused manner in which proliferation takes place. Angiosarcoma occurs in the brain, kidney, testicles, lymphatic glands, breast, skin, bone, thyroid and liver, although it is a very rare occurrence in the two locations last mentioned.

THE RECOGNITION AND PROMPT REMOVAL OF POSTNASAL ADENOIDS IN CHILDREN.*

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PHILADELPHIA.

The importance of the consideration of our subject is evident when we observe the divergent views presented by different authors as to the instruments to be used in operations and the varying ideas as to anesthesia. That the subject is still uppermost in the mind of the specialist is evident from a consideration of this year's programs of the Section on Laryngology and Otology, where three papers out of a total of thirty-three are presented on the growths in the nasopharynx, and of this Section on Diseases of Children, in which three papers out of a total of thirty-nine are devoted to the same subject.

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Diseases of Children, and approved for publication by the Executive Committee: Drs. H. M. McClanahan, Edwin Rosenthal and Samuel W. Kelley.

FREQUENCY AND CAUSES.

As to its frequency, opinions of authors are much at variance. Ingals of Chicago reports but 2 per cent. out of ten thousand private chest, throat and nose patients, while Frankenberg reports 59 per cent. in the 158 inmates of the Deaf and Mute Institute at Prague. Some writers incline to believe that adenoid enlargements are not more common in deaf mutes than in the more normal members of the community, and that when they are present they have no causative effect on the deafness. Yet Arslan and others report cases where they have succeeded in restoring the hearing by proper removal of the growths followed by appropriate after-treatment.

We all know that children are peculiarly prone to these growths; that they are apt to arise in the second, third and fourth years; that occasionally they seem to be congenital; that in adults the tendency to proliferation and closure of the lymphoid tissues appears less often, and the disease is much more rare, but yet exists more frequently than is popularly supposed.

I believe that most authors agree that it occurs more often in boys than in girls. I can not say that this has been impressed on me, but I do know that it is a very frequent disease in children, and while I have not thoroughly analyzed my cases, I am sure that in my work I have observed it in over 10 per cent. of all the children I have treated in my private practice, and during one week of May, 1902, I removed adenoids from five children, while there is rarely a week that I do not remove one or more of these growths in my private work.

In regard to constitutional predisposition, most authors agree that there is an hereditary tendency; there are some who do not concur that the lymphatic or scrofulous diathesis has any bearing on the case. There is no question that they are more frequent in the weak, the poorly nourished; those who give evidence of the strumous diathesis. Children who are the victims of scrofula, syphilis, tuberculosis, anemia, chlorosis and chronic malnutrition are most prone to develop these tumors. In addition a very moist climate is a powerful agency in precipitating the condition. In my own experience I can not say that I have ever found these adenoid growths in a child that, to me, seemed the picture of health. It is, however, to be considered that in some few cases it may have originated from some local disorder in the nasopharynx, the resulting ill health being subsequent to the growth.

A factor in proving that the enlargement is usually not a local condition is that in nine cases out of ten the faucial tonsils also are enlarged and diseased. This fact has been noted by numerous writers, among others William Meyer, Morell Mackenzie, H. Lennox Browne and Joseph Gruber. There appears to be a tendency to disease in various other lymphoid structures.

DIAGNOSIS.

As to the method of making the diagnosis, the symptoms observed are usually sufficient—the difficulty of breathing, the mouth breathing, the open lips, the vacant countenance, the loss of memory, the stammering, the poor hearing, the dead, flat, muffled voice, the cough, the pinched wing and flattened bridge of the nose, the flat chest, the general lack of health and vitality, and the enuresis and indigestion, and numerous nervous reflexes, all go to make up a picture which when present can not be mistaken. When the diagnosis is a probable one, but not certain, it can be made fixed and definite by examining the rhinopharyngeal space by means of the index finger of the right hand inserted through the

mouth back of the soft palate. The nature of these growths is simply that of hypertrophies of the normal lymphoid tissue, and containing varying amounts of fibrous and connective tissue. The masses are sometimes single, lobulated, clustered or stalactitic; sometimes soft, again hard or tough; sometimes very friable, again encapsulated; sometimes occupying the vault only, again extending far over to the sides involving the entire rhinopharynx and completely occupying the fossæ of Rosenmüller as well as the eustachian tube orifices. These growths seem to predispose their subjects to numerous diseases. They are constantly troubled with catarrh, always taking cold in the head; they usually develop tonsillar and other throat diseases. They are peculiarly liable to hay fever, bronchitis and pneumonia. They almost always have some insufficiency in the heart's action. They often develop nervous affections, such as enuresis and asthma and even chorea and epilepsy; paroxysmal sneezing is most common. They are very liable to all the acute fevers, such as diphtheria, scarlet fever, measles, etc.

Diseases of the ear follow in many cases; acute inflammation of the middle ear and mastoid is by no means uncommon, and deafness is often present. Friederich explains this as follows:

Any and all diseases of the nose and post-nasal space which are followed by obstruction of the nasal passage lead to passive hyperemia in the mucous membrane, which in turn produces occlusion of the eustachian canal.

The obstructions may be situated in the post-nasal space, and may take the form of hypertrophied pharyngeal tonsils, tumors, syphilis, or tuberculosis occluding the posterior nares. Hence the recognition and removal of any obstacle to nasal respiration should constitute an integral part of every examination and treatment of the ears. There can be no hope of curing the ear affection before the causes which are responsible for the congestion of the mucous membrane have been removed and the permeability of the tube has been restored. If I have included hypertrophy of the pharyngeal tonsils or adenoid vegetations among the diseases which produce hyperemia and swelling of the mucous membrane, with occlusion of the tube by interfering with nasal respiration, it is because I believe the occlusion is due to a general "adenoid habit" of the nose and pharynx, rather than to the direct mechanical intrusion of the pharyngeal tonsil. The "adenoid habit" manifests itself in the rhinoscope image as a hyperplasia of the entire lymphatic ring of Waldeyer; the follicles in the posterior pharyngeal walls and in the longitudinal folds on each side of the pharynx are more numerous, and are intensely red and swollen. Hyperplasia of Rosenmüller's crypts and of the anterior fold of the tube may develop as the manifestation of a general hyperplasia of all the lymphatic elements entering into the formation of the so-called pharyngeal lymphatic ring; hyperplasia of these structures necessarily favors the occlusion of the tube by compressing the orifice.

Disorders of the digestive apparatus are quite the rule; the condition is precipitated by the usually profuse discharge which flows down the posterior wall of the pharynx, most of which finds its way, with children, into the stomach, where it sets up irritation through the processes of fermentation. Another factor seems to be the lack of the usual quantity and even the healthy quality of the buccal saliva. In addition such children are apt to bolt their food because of the lack of nasal breathing preventing thorough and comfortable mastication.

The rhinopharyngeal region is subject to much variation. The bones at the base of the skull which serve as the roof of this space vary much in their growth and development; in some the space is narrow and high, again it may be shallow and broad, or it may be flat or well

rounded in either of these cases. Its usual appearance is somewhat like a section of a long cone, the apex of the cone being above and arched. Were this invariably so instrumental operations would be much simplified, and would be followed by more uniformly good results. As a matter of fact we never strike two of these cases exactly alike; there are constant variations.

The most serious and the most frequent of these variations is where you find the sides of the rhinopharyngeal walls separated from the central or posterior wall by hard, bony ridges, which in some cases extend up into the extreme upper and anterior terminus of the pharyngeal vault. I should say that in children this peculiarity is observable in perhaps two out of every ten cases, and its presence is a serious interference to instrumental operations, whether by the forceps or the curette, but especially to the former. Not infrequently do we find cases which have been thus operated on where parts of these bony ridges have been torn away, and yet where part of the growth lying down in the hollow between these ridges has not been removed; in other words, necrosis was going on simultaneously with enlargement of the adenoid growth after the operation had been performed and pronounced completed.

These bony ridges are apt to start just above the level of the soft palate and extend usually into the vault, dividing the bony walls into a central and two lateral sections. In other words, there are three sections of a cone arched above.

METHOD OF TREATMENT.

The old, passive, medicinal treatment is nowadays very rarely attempted, but in some measure, of course, it comes into play in every case in the preparation of the patient for operation. The use of cleansing alkaline, antiseptic and astringent washes, and the use of drying and astringent powders, as well as protective or medicinal oils and salves, are all necessary for this purpose, and they may in addition be useful in allaying the symptoms as well as in restoring any lack of confidence the little patient may have in his doctor. It gives each an opportunity to study the other. Such treatment may perhaps occasionally cure a case, but usually it will only improve the symptoms.

Formerly some advised that the only necessity in these cases was to keep the parts clean and give the growth a chance to atrophy and disappear. Now this dependence on faith and cleanliness is not to be advised. It is a relic pure and simple and has no place in present-day treatment. The only condition to be reached is to remove the growth at the earliest period practicable, and to do it thoroughly, and to avoid exposing the little patient to any unnecessary risk.

The removal of these growths by electricity has been advised by a number of writers, Burnett and others advising the cautery points, Sajous using the cautery loops or snare, on account of the supposed painlessness and convenience, as well as the almost uniform results. These methods, however, have not been followed by good results and are rarely used.

It is now understood that whatever method is employed it must give assurance of the entire removal of the growth and a reasonable certainty of its non-return.

ANESTHETICS.

Before considering the operations proper, which conform in the main to the foregoing proposition, we should consider for a moment the subject of anesthetics, local and general.

Local anesthetics, such as cocain, holocain and eucain, can be used by application through the nose and throat, and will do much to dull the sensibility of the parts if you can only have the child held perfectly steady; no doubt all the necessary operative procedures could be done without any very serious difficulties. Even the Meyer ring curette or the Gottstein curette, the guillotine, or any of the numerous forceps could be employed without subjecting the child to serious pain if nervous apprehension and fear were not a factor.

As a matter of fact, however, children can not hold well for such serious and menacing operations, and it is because of this lack of control on the part of the child that most of the operators have been driven to use general anesthesia. Now the operators in this field are by no means agreed as to the best and least dangerous anesthetic to use. Many advise chloroform, and as many condemn it. Numerous deaths among these cases have been reported from its use. Ether is advised and used by many, and then once in a while one of our little people takes the long sleep. Bishop uses bromid of ethyl; others find it dangerous. Nitrous oxid and nitrous oxid administered with oxygen is used, but while it is apparently the safest (13 deaths in a record of 750,000 administrations) it has the disadvantages that doctors can not readily administer it, and its effects are so evanescent. The A. C. E. mixture has been employed. It also has numbered its victims in our adenoid operations.

It is a matter of common knowledge that our adenoid tumor patients are peculiarly susceptible in the cardiac region; they are more liable to syncope and death without premonition. It is unfortunately true that while some of these cases are reported, and they are now not an inconsiderable number, yet by far the majority of these results are never put into print, and we have no means of knowing just how serious is the problem that confronts us. I venture to say that if accurate statistics could be obtained general anesthesia in these cases would be almost discarded. Henry Gradle says:

Narcosis makes the operation more formidable and necessitates more assistance. It does not in any way permit a more thorough operation, as most of the relapses which the writer has seen had been operated previously by others, and by himself under anesthesia. The pain in well-arranged operations is not sufficient to necessitate the superfluous risk of an anesthetic. It is only in cases of unruly children from whom active resistance must be expected that narcosis becomes necessary. Narcosis is also preferable when the faucial tonsils are to be excised at the same sitting, as this triple operation is usually too severe a tax on a child's endurance.

METHODS OF OPERATION.

Coming now to consider the various methods of removing these growths, we have first the method of William Meyer, who worked through the nostril with a ring curette while the index finger of the other hand was in the rhinopharyngeal space, the jaws being kept apart by a gag. This has the advantage of an exploring finger constantly present during the operation, the disadvantage being the employment of a general anesthetic.

The operations by the various curettes, such as the Gottstein, Hartman, Beckman and numerous others, are performed under an anesthetic and have the disadvantage that you do not know exactly what you are doing and what you are not doing. You may take away too much or too little; you usually can not completely clean out the fossæ of Rosenmüller, nor can you easily clean out the vault; and again, you may damage the bone and soft structures, especially should the case be one of the anomalous formation of bony longitudinal lateral ridges.

The Gottstein and other curettes are not infrequently broken in these cases. In the *Laryngoscope* (May, 1901) two such cases are reported in the personal work of C. R. Holmes and H. S. Garlick. Unless the parts are examined by the finger after this operation a surgeon can not be certain of having finished the work.

Guillotines, such as those of Schutz and Gradle, have the same disadvantages, except they are not so apt to cause injury, but in most cases they are as ineffective as the curettes, or more so.

Forceps, such as Loewenberg's lateral, or Schutz's anteroposterior, and their numerous modifications, have, in the main, the same objection as the pharyngeal curettes. They, however, have the decided advantage that one can rarely cause quite as much damage with the former. The amount of power which can be, and often is applied to these parts by means of the curette is practically limitless. As above observed, numerous cases are constantly occurring where the curette is broken during the operation. Outside of this advantage all the other disadvantages encountered with the curette pertain in using the various forceps.

THE FINGER NAIL METHOD.

There is another method of which I want to speak more at length; a method which can be used in connection with general anesthesia, or, as I prefer, with local anesthesia. Numerous operators, such as Dalby, Capart, Bezold, Lennox Browne, Guye, Kyle, Newcomb, J. L. Gibson, Beverly Robinson, Pritchard, Baber and others, have used and advised the finger nail, or modification of it, by attaching a sharp steel piece to the index finger, the nail or metal acting in each case as a curette. This method has, of course, the advantage that the operator knows all the time just what he is doing; he can explore all the recesses and remove all the enlarged tissues without injuring any of the normal structures. It has the additional advantage that there is no necessity for the administration of a general anesthetic, and thus the needless jeopardizing of human life is avoided.

According to Sir William Dalby, "The diagnosis of adenoid vegetations can only be made with certainty by digital examination, as this alone gives absolute certainty as to their localization, size, extent, form and resistance." As opposed to this I quote Emil Mayer: "Why should you put your finger up there and simply hurt the child for no reason whatever?" I take it as a self-evident truth that when we have a means of being certain of the presence of such growths and can so readily learn their exact location and their nature, it is wrong to neglect this knowledge and to operate with cutting instruments in the dark, where we can not see what we are doing, and using them with perhaps enough force to do positive damage.

How easy it is, on making this digital examination and learning the condition of this region, to at once, as soon as the pathologic condition is ascertained, to remove the enlarged thickened tissues.

Whenever I suspect the presence of these growths, and have obtained the confidence of my little patient sufficiently, I ask the child to open its mouth, saying that I want to feel something inside, and then, without any display of curettes, forceps, etc., I enter the index finger of the right hand with the nail hardened by dipping it into alcohol or reinforced by my jointed artificial finger nail into the child's mouth and feel the condition of the parts in the nasopharynx and remove at once all diseased and enlarged structures, in many cases finishing the entire operation at once.

METHOD OF OPERATION BY ARTIFICIAL OR NATURAL FINGER NAIL.

In order to indicate to you how quickly and yet how thorough the entire procedure is, I will try and detail to you the various steps in the treatment, examination and operation. Being suspicious of the presence of the thickened adenoid tissues I examine the nares and throat thoroughly but gently, and cleanse both cavities thoroughly with sprays, washes, gargles, etc. When these are thoroughly cleansed I seat the child in a revolving arm chair with a spittoon on patient's left hand, and having thoroughly cleansed my right index finger, and having dipped it in alcohol, I put two or three turns of a one-inch adhesive plaster over the first phalanx of my right index finger, and still further protect it by putting over it two or three turns of a doubled two-inch roller bandage, the end of which is secured by making one turn about the wrist, and as you are about to make a second turn pass the free end under the turn already in position. Standing on the right of the patient I lightly put my left arm about the child's head, holding his head against the lower part of my chest; tilting his head a little forward, I insert the right index finger on the right side of the jaw as far back as possible—not using any gag to keep the jaws apart—and quickly carry it back of the soft palate up into the nasopharyngeal cavity, clearing out all the thickened and overgrown tissues at the vault and posteriorly, in the fossæ of Rosenmüller and at the eustachian tube entrances. While doing this the left arm clasps the child's head more and more firmly while bending it forward over the spittoon. All the thickened tissues found are scraped out until the surfaces feel smooth and natural. In the eustachian region I especially press on the tissues in order to overcome any infiltration or congestion. I do not leave the cavity until I am convinced that all the diseased tissue has been removed, or I am convinced that my own finger nail is not strong enough to cope with the form of tissue present, or there is evidence that the blood and detritus are interfering markedly with the child's breathing—these two latter conditions are very unusual in their occurrence, and should they occur it means that either the same day or the next, if possible, I will again enter the cavity and, if necessary, with a steel finger nail remove every bit of diseased tissue discoverable. The entire operation rarely takes more than a minute, and is usually followed by very little hemorrhage.

AFTER-TREATMENT.

After the operation I clean out the throat and nose carefully, use some soothing ointment in the nose, and advise that liquid albolene or mentholized oil be used in the nose and throat at home. In a few days I examine the region, when, if healing has been perfect, the nasopharynx will feel smooth and soft, and there will be little or no danger of recurrence, and if everything is well I may, perhaps, re-examine after a further period of three or four days, if urged to do so by the parents or the physician, but I do not think this necessary unless there be untoward symptoms.

This operation avoids all dangerous procedures, it causes very little pain and it is done without the dangers of general anesthesia; it requires no gag and no display of instruments. While it is simple it is thorough; it is scientific, inasmuch as we verify each step of our proceedings; it is done with the usual antiseptic precautions, and it does not leave the irregular roughened edges usually present after most operations by other

methods. In other words, it removes all the pieces and does not allow shreds to remain here and there.

As for a recurrence, it is comparatively rare when the method has been thoroughly carried out, as it more effectively removes the last vestige of affected tissues than can be done in any other way.

Personally, I have many times performed the operation by the above method where previously one of the other methods had been tried with general anesthetic, and in not a few have found considerable cicatricial obstructive tissue around the eustachian orifices and occasionally exposed bone, and often remnants of the lymphoid growth.

Whatever the operation employed, it is absolutely necessary in every case to know the exact condition of the rhinopharynx after the operation. I fear that too often this is neglected, and this is responsible for many of the cases that recur early after the operation. This digital examination should never be neglected.

The after-treatment of these cases is simply that of the catarrhal conditions invariably present plus the treatment of the open wound of the nasopharyngeal vault. Mentholized oil and camphor preparations with alkaline washes and antiseptics are the most important.

CONSTITUTIONAL TREATMENT.

As to the constitutional measures to be employed, it is my opinion that their use is never to be neglected. If syphilis, tuberculosis, scrofula, chlorosis, anemia or digestive or nervous disturbances exist in connection with this growth they must receive appropriate and constant attention.

Cod-liver oil and syrup of the iodid of iron will, on the whole, be most frequently employed. In rachitis and some other cases, phosphorus will be of special advantage, while the hypophosphites and arsenic and the chlorid of iron will frequently come into play. Many of our patients will need saline, alkaline and lithia waters. They will all require plenty of exercise and fresh dry air and sunshine. Their skin clothing should be pure wool but light in weight, the weight and thickness of the outer garments being regulated according to the weather. They should have frequent baths, warm or cold, or both, as the exigencies of the case require. The avoidance of all heart sedatives, such as coffee and tea, is a necessity. The food should be plain and nutritious and should be ample in quantity.

CONCLUSIONS.

Summing up the conclusions which we have reached we find:

1. That the disease is a very frequent one, especially among children.
2. That it is relatively much more common among the poorly nourished and those suffering from constitutional and nutritive disturbances, and is rarely observed among the apparently well.
3. That it is usually found in connection with enlarged pharyngeal tonsils.
4. That it is most frequent among deaf mutes.
5. That its presence is usually determined by the symptoms, but digital examination is both easy and certain.
6. That its presence causes most serious local and general derangements.
7. That its presence predisposes to numerous diseases.
8. That the treatment must be operative.
9. That the operation should be done without general anesthesia.

10. That the finger-nail operation is the most thorough, as well as the most safe.

11. That the rhinopharynx must be examined after every operation.

12. That the finger-nail operation is less likely to be followed by recurrence than the more serious operations.

13. That constitutional treatment must be thoroughly instituted in all these cases in order to overcome the predisposing cause of the growth.

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DISCUSSION.

DR. W. C. HOLLOPETER, Philadelphia—I have always felt this was a subject which had been slighted by the pediatricist. The operation appears to be a cardinal necessity, especially when the sense of hearing is disturbed and the child sleeps with his mouth open, also when swallowing is followed by rapid and inefficient mastication. The author has covered the ground very admirably, and has simplified the surgical treatment. I think the majority of those following this special line of work are inclined to believe that the operation is more satisfactorily done without anesthesia and with the natural or artificial finger nail. The artificial finger nail exhibited by the author seems to me rather large; indeed, it is often rather difficult to introduce one's own finger. I should like to have an expression of opinion concerning the use of bromid of ethyl, as Dr. Bishop uses it, as an anesthetic in these cases.

DR. S. W. KELLEY, Cleveland—I have been pleased with the terse statements of this paper. What has been said by him about the number of instruments being indicative of an operation being either very easy or rather difficult applies also to the question of posture during operation and the use of anesthetics. In one case you may choose one posture for the patient; in another, another. But posture may vary according to the fancy or the habit of the operator, or be determined by the question of anesthetics. You may find it convenient to have the patient held in the lap of an assistant, while another holds the head and, perhaps, the gag. You may lay the patient down, with the head hanging over the end of the table. You may take his head under your left arm, or you may simply stand him up against the wall, and so on, according to the case you have to deal with. With some patients a local anesthetic can be used, and there is no trouble, while others can be operated on easily without any anesthetic. In some cases it seems to be impossible to do this operation without general anesthesia, because of the temperament or lack of training of the child. He may be too unruly, or he may be too timid. In some cases a general anesthetic would be contra-indicated. As a rule I do not like to use cocain in children. And, notwithstanding all that has been taught about the safety of chloroform in childhood, I have on four occasions met alarming symptoms from its use (not for this operation). So that I do not resort to chloroform unnecessarily. I prefer to do this operation when possible without an anesthetic.

The curette with a handle is a powerful instrument, and I believe a great deal of harm is occasionally done with it. Some operators proceed to use this powerful instrument as if they were about to remove plaster from a wall. Whenever possible I use my finger, and I find it a great deal better than the use of an instrument. Of course there are growths that will yield only to a sharp edge. It is just like the question of using the finger or the curette when it becomes necessary to remove the secundines in a case of miscarriage. I like the artificial finger nail exhibited, but I think the steel blade is too long and must interfere with the turning of the instrument. I prefer to use a narrow artificial finger nail, which slips under the natural finger nail and is guided by the palmar surface of the finger. Any of these instruments will occasionally pull off the finger; hence, I feel safer when a turn of bandage is taken through the last ring of the instrument and is then wrapped a few times around the finger or hand. This also has the advantage of preventing the child from biting the operator's finger.

DR. H. L. K. SHAW, Albany, N. Y.—I am in favor of general anesthesia for the adenoid operation, and I have witnessed the

bloody operations done in England and some other places, to which reference has been made. I also believe that one can do very much better with the curette than with the finger nail. I use ether as often as chloroform, and just as soon as the operation has been done the head of the patient is held downward to allow of the escape of blood.

DR. H. J. ROCK, Aberdeen, S. D.—Is it not a general principle that chloroform is the least objectionable anesthetic, particularly in the case of children? In a fairly extensive experience I have used chloroform, taking plenty of time to secure anesthesia by this means, and I have seen no harm from its use in this way. As soon as the operation is done the child is turned on the side, with the head low.

DR. J. F. KLINEDINST, York, Pa.—My work is limited to the treatment of eye, ear, nose and throat diseases, and, hence, I do many of these operations. When the child is so unruly that an anesthetic must be used, I prefer chloroform. My experience has been that of many others, i. e., that chloroform is more dangerous in this operation than in others, though we know, of course, that children stand chloroform well. I have not had any fatal cases, but in some the symptoms have been very alarming, so that I do not like to use it. I have used frequently a combination of cocain and adrenalin chlorid, and it seems to be a good one, because adrenalin is known to be a powerful heart stimulant and will counteract, to a great extent, the depressing action of the cocain. Moreover, the adrenalin, by its astringent hemostatic action, lessens the amount of hemorrhage. Why chloroform is dangerous I can not say, unless it may be that the chloroform is not given to the extent of abolishing all reflexes.

CYCLIC VOMITING IN CHILDREN,

WITH REPORT OF CASES.

THOMAS C. ELY, M.D.

PHILADELPHIA.

All neuroses necessitate an exclusion of organic disease, a most difficult task, and an appreciation of an unusual excitability of the nervous system. Of all the various gastric neuroses, secretory, sensory and motor, with their protean manifestations, none are subjects of greater interest than the motor and, though perhaps of less frequent occurrence, none of the motor of more interest than cyclic vomiting.

MECHANISM.

The mechanism of vomiting includes a vomiting center, situated in the medulla near the respiratory center, from which impulses are sent to the diaphragm by the phrenic nerves, to the stomach and esophagus by the pneumogastric and the abdominal muscles by the intercostal nerves. The complex act consists in an inspiration, the glottis closing, the diaphragm contracting the longitudinal fibers of the stomach opening its cardiac orifice, when contraction of the abdominal muscles completes the act, forcing out the stomach contents. The muscles of the diaphragm, of the abdominal walls of the stomach itself, require simultaneous contraction and must be co-ordinated by a relatively strong nerve center. The process is almost physiologic. Act of the will quite controls eructation, or belching of gas from the stomach and, in some instances, regurgitation or bringing up liquid or solid food from the stomach. Individuals have been able to vomit at will.¹

In the condition known as merycism or rumination swallowed food is returned and chewed over again. Poorly masticated food may be returned and even enjoyed at will, says one writer.²

With these strange exceptions, however, unlike a physiologic process, the nervous and vascular systems are always reduced in power, probably not only by the act, but by the morbid process which produces the condition