PLEURITIDES.

The most extensive investigations of the bacteria concerned in exudative pleuritis are those of Levy, Netter, Koplick, Jakouski, Prince Ludwig Ferdinand and Prudden. The results obtained by these bacteriologists and others have shown that there is no one species of bacteria constantly associated with this condition, but that any of the common pathogenic bacteria and others may be present. From the work of Prince Ludwig Ferdinand and of Prudden, it would appear that cases in which the micrococcus lanceolatus is found have a better prognosis than others.

Of 13 cases of fibrinous pleuritis accompanying acute lobar pneumonia the micrococcus lanceolatus was found in 12, in practically pure cultures in nearly every case, the contaminating organism being usually the bacillus coli communis. In the single negative case various unknown bacteria were present. In all of four cases of purulent pleuritis coincident with acute lobar pneumonia the micrococcus lanceolatus has been present, in two cases in company with the staphylococcus pyogenes aureus. Of three additional cases of fibrinous pleuritis, not accompanying acute lobar pneumonia, the micrococcus lanceolatus was found in two (in one along with the staphylococcus pyogenes aureus) and the streptococcus in the third case.

Also, in two out of three additional cases of purulent pleuritis, not associated with acute lobar pneumonia, the micrococcus lanceolatus was present, in one case with the streptococcus, and in the other with various unknown bacteria. In the third case the staphylococcus pyogenes aureus was found (culture taken a few hours before death). This was a case of purulent broncho-pneumonia and general infection with the staphylococcus pyogenes aureus.

ACUTE PERICARDITIS.

The bacteriological examinations of the exudate in acute pericarditis recorded in the literature are not numerous.

Weichselbaum has found the micrococcus lanceolatus in several cases; Bainti the same organism in two of three cases; Steinberg in one case; and Thue in four out of five cases. Barbacci in the examination of three cases found the staphylococcus pyogenes aureus in one and the micrococcus lanceolatus in two cases, while Foureur in one case found the streptococcus.

The occurrence of other bacteria in pericarditis have also been reported by Ernst (tubercular pericarditis), and by Paviot.

In seven out of 10 cases of acute pericarditis, seven of which accompanied acute lobar pneumonia, the micrococcus lanceolatus has been present. Of the three negative cases, in two only the bacillus coli communis was found, while the other case was sterile. In one additional case of acute pericarditis in which no culture was taken from the pericardial exudate, a streptococcus septicemia was demonstrated, so that it is fair to conclude that the pericarditis was due to that organism.

It may also be mentioned that a case of hemorrhagic pericarditis after abortion was negative for specific bacteria.

PURULENT LEPTO-MENINGITIS.

The extensive literature on the subject of the bacteria associated with purulent lepto-meningitis has recently been summarized by Flexner and Barker in

their interesting study of epidemic cerebro-spinal meningitis. According to these writers the micrococcus lanceolatus has been found in the great majority of the numerous cases recorded in the literature, while the streptococcus, the staphylococcus pyogenes aureus and other bacteria have been met with in but a small proportion of the cases.

This very frequent occurrence of the micrococcus lanceolatus in purulent inflammation of the pia mater has been observed in the cases examined by Flexner and Barker, as well as in those here reported.

In eight of 11 cases of purulent lepto-meningitis and in one case of the sub-acute form the micrococcus lanceolatus has been present. The staphylococcus pyogenes aureus accompanied the micrococcus lanceolatus in one of the eight cases of purulent meningitis.

Of the remaining three cases of purulent meningitis, in one the streptococcus was found and two were negative; but one of these negative cases was probably due also to a streptococcus infection proceeding from an otitis media, in the pus of which that organism was present.

Two of the micrococcus lanceolatus cases were secondary to fracture of the base of the skull, the fracture going through the petrous portion of the temporal bone, and thus, by presumably placing the brain cavity in communication with the pharynx, through the Eustachian tube, an infection-atrium for the micrococcus lanceolatus, so common an inhabitant of the throat, was provided. Acute lobar pneumonia was coincident in two of the micrococcus lanceolatus cases and in the negative case. Otitis media was also coincident in one of the same cases.

(To be continued.)

HALLE AND THE AURAL CLINIC OF PROFESSOR SCHWARTZE.

BY GEORGE L. RICHARDS, M.D., BOSTON.

HAVING recently spent a semester with Prof. Hermann Schwartz at Halle, Germany, some account of his work and methods may be of interest. Halle is a manufacturing city on the river Saale in Saxony, not far from Leipzig. Outside of the university there is little of interest to Americans. The medical department is in the same inclosure with the hospital, beautifully situated on a hill away from the university proper, and with attractive grounds. Every department has its own building; and as the buildings are all new, the equipment of the medical department as a whole is as fine as any in Europe. Everything is wonderfully clean, and arranged on a thoroughly antiseptic basis, being in this respect in marked contrast with the Vienna clinics, where everything is theoretically antiseptic, but not practically so to nearly as great a degree.

There are few especially noted professors; and about the only branches foreign students can study to advantage are otology, ophthalmology and bacteriology. Behring, one of the discoverers of antitoxin, occupies the chair of hygiene, having recently succeeded Renk. Eberth, the discoverer of the bacillus of typhoid fever, teaches bacteriology; and von Hippel is professor of ophthalmology, a chair long held by von Graefe. The eye clinic is a large one, and lasts from quarter-past eight to twelve or one daily. There are usually from four to six operations. Seven thousand new out-

patient cases are yearly treated and there are seventy beds for in-patients. I saw the operation of discission of the lens for myopia of high degree several times performed, and always with good results, useful vision following the removal of the resulting cataract. Unlike Vienna, where a student can begin work almost any day, in any branch and continue as long as he pleases, paying the fees directly to the instructor, in Halle and many other German university towns every student must matriculate and arrange and pay for all courses in person at the office of the university. Private courses, as given in Vienna, are also unknown.

Matriculation is a matter of considerable red tape, and consumes much time. Foreign students must furnish a diploma from some recognized university or a certificate from some German or Austrian university. No courses can be begun or even arranged for until all matriculation formalities are finished. Then the student receives a card certifying that he is a member of the university, and from that time on is held by the same rules as all undergraduate students. Although taking only special courses and having no connection with the university proper, I was once fined five marks for failing to observe some petty ordinance of whose existence I was totally ignorant. The penalty for non-payment of the fine was confinement in the university prison for three days. The expense of living in Halle is very small, about half as much as in Vienna. It is also a good place in which to learn the German language, providing one knows something of it before, as absolutely no English will be heard.

Professor Schwartz's (clinic) occupies a portion of the same building with the eye clinic, and has some twenty-eight to thirty beds for in-patients. The out-patient clinic begins at eight A. M., and the ordinary treatment is done by assistants. Daylight is used for illumination except on very dark days. He holds a public clinic three times a week, lasting about one hour and a quarter, beginning with the examination and demonstration of cases by his students and ending with a lecture. An operation almost always follows, and students are detailed to assist. Operations are done on other days also; in fact, mastoid operations are of almost daily occurrence. It is as an operator on the mastoid that Schwartz is universally known, but before taking up that subject I will mention some points in otology, taken somewhat at random from my notes, which will illustrate the man and his methods. Everything which he does is very thoroughly done. Very complete clinical histories are taken of all house-patients, including always an examination of the nose and naso-pharynx and frequently of the fundus of the eye as well. Here, much more than in Vienna, is the intimate relation between affections of the ears, and the nose and naso-pharynx recognized, and treated accordingly. Adenoid vegetations and hypertrophied tonsils are always to be sought for, and, when found, removed. Suppuration of the middle ear cannot be healed while enlarged tonsils or adenoids are present. For the removal of adenoids, anesthesia is not used; but the antiseptic preparations are as elaborate as possible—gown, sterilized instruments and absolutely clean hands. Tonsils are removed with the Mathieu tonsillotome, and adenoids with Volkmann's sharp spoon. Any part remaining is removed with the finger-nail or Meyer's ring-knife through the nose. This method causes considerable bleeding, and did not seem to me to have any advantages over the use of a

properly curved Gottstein's knife or the Læwenberg forceps. Schwartz does not approve of removing adenoids and tonsils at the same time, in private practice. He would remove the adenoids first, and then keep the child in bed for two or three days on liquid diet and away from other children. He thinks there is some danger from catching cold and from sepsis, as he has seen one death from infection, follow the operation. If all goes well after the removal of the adenoids, the tonsils can be removed a few days later. He thinks hemorrhage after tonsillotomy is more feared than the facts warrant. This may be so, but I once saw quite a degree of hemorrhage follow the removal of adult tonsils in London, with the Mackenzie instrument. In the case of a child, if the palate is dark blue and the crying violent, there may be some danger.

Politzer's method of inflation is but seldom used; and Schwartz lays down the rule that it is never to be used for one-sided affections. Inflation is almost always done through the catheter. Instead of the usual Politzer bag the double bag of Lucae is used. This consists of two rubber bulbs connected by a short piece of tubing, the second bulb being covered with netting. At the end of the second bulb is a piece of rubber tube, and attached to this a disinfecting capsule containing absorbent cotton. From the capsule extends more tubing, and at the end there is a small quill which fits into the catheter when in position. As the apparatus is a little heavy, a hook is attached to the tubing a short distance from the disinfecting capsule, so that the whole can be suspended from the lapel of one's coat. For use, the second bag is filled from the first and then compressed with the hand. The advantages claimed for this are more uniform air-pressure and greater cleanliness. The air introduced is absolutely clean; and as all air enters the bulb from the same place and always in the same direction, there can be no sucking back into the bag or into the catheter of secretions from the Eustachian tube, naso-pharynx or nose. The diagnosis tube is always used.

Chronic purulent catarrh of the middle ear with a perforation large enough to permit the free discharge of the secretions is treated by syringing through the catheter. Should the opening in the tympanic membrane be small, it may be advisable to enlarge it. Physiological salt solution (previously boiled), or sublimate (1-10,000), is used for this purpose; carbolic solution never, as any solution of carbolic acid strong enough to do any good would cause great pain. The catheter must be absolutely in the right place, and the fluid at about body temperature. The patient is told to breathe in and then hold the breath. During the period of rest, the syringing is done. This cleans out the attic and tympanic cavity more thoroughly than any other method. The syringing is continued until the fluid comes out of the external canal free from any secretion. Syringing through the catheter, while sometimes painful, is not usually so, providing the perforation is sufficiently large to permit the free escape of the introduced fluid.

Powders are not very much used in suppurative middle-ear cases, and always in small quantity, never sufficient to prevent the free outflow of secretion.

Aural polypi are removed with the Wilde snare, and the point of origin cauterized with nitrate of silver or chromic acid. Schwartz has no faith in the alcoholic treatment for polypi, and thinks they recur because they have not been completely removed.

He is not very enthusiastic over removal of the stapes for cure of noises, vertigo, or very great deafness. He thinks the operation should only be done when noises are very troublesome, both ears affected, the patient complaining very much, and with the understanding that the expected improvement is not at all certain. The operation has the possible danger of injury to the facial nerve with resulting paralysis, owing to the near relation of the canal of the facial to the foramen ovale. He removes the stapes only through a wound made from behind. The membranous external canal is separated from its bony attachments and drawn forward with the retractor, a portion of the bony canal and attic wall is cut away and the posterior border of the tympanic membrane cut through and laid forward. The stapes is much more readily reached and foot-plate and all removed. Schwartze regards this method as preferable to operating through the canal, where there is always danger of breaking the crura and leaving the foot-plate in position. Even by this method failure to remove the foot-plate sometimes happens.

Children suffering from foreign bodies in the external canal, should, if syringing fails to remove them, be anesthetized before using forceps or any forcible attempts at extraction; and this failing after reasonable time, extraction should be done from behind. After separating and drawing forward as much as possible the membranous from the bony external canal, and the body being still firmly impacted, sufficient bone should be chiseled away to allow removal. The after-treatment consists in preventing the closing up of the external canal, and is brought about by keeping it filled with plugs of gauze until the healing is complete.

Before doing paracentesis the external canal should be made antiseptic, the cartilage scrubbed, and the nose and naso-pharynx sprayed with antiseptic solution; no anesthesia. The usual paracentesis needle is employed and the opening if necessary further dilated with a blunt-pointed knife. If there is no marked swelling to indicate the point of operation it is done in the post-inferior quadrant as here there is no danger of injuring other structures. The cut should be large enough to allow of the free escape of secretion. The catheter is to be used afterward, the nose having been previously cleaned as indicated above. The after-treatment must be thoroughly antiseptic. Fill the ear with a pledget of iodoform gauze and dress as after more severe operations, and keep the patient in bed. Paracentesis in an out-patient clinic is disapproved of unless absolutely necessary, and then only under strict antiseptics.

Schwartz regards the operation of tenotomy of the tensor tympani muscle as having only temporary results in the way of improving the hearing and lessening the noises; at times the hearing becomes worse instead of better. The method of operation is that in general use. A cut is made one millimetre behind the handle of the malleus; a suitable curved tenotome is introduced through the cut with the point in the direction of the tegmen tympani; it is then turned forward at a right angle till the tendon of the tensor is reached and with a sawing motion this latter is cut through.

Tenotomy of the stapedius may be of use when the free movement of the stapes is hindered through retraction. The operation is done with a paracentesis needle or crescent-shaped knife, and is possible only when the tendon is visible.

The operation of dividing synechiæ of the membrana tympani is not regarded as of much worth, as they tend always to re-form. In cases of perforation, with adhesion of a portion of the border to the inner wall of the tympanum, closure of the perforation never takes place.

The malleus and incus are removed for chronic suppuration in the tympanum, or in the hope of improving the hearing and removing the subjective noises. The many cases which I saw done, and the two which I myself did, were all for chronic suppuration with a large perforation and more or less destruction of the tympanic membrane. I do not know that the method differs from that in use by other operators, except that after freeing the tympanic membrane from its marginal attachment and dividing the tensor tendon the Wilde snare is used to remove the malleus. It is sometimes quite difficult to snare the end of the handle after it is severed from its attachments and possible adhesions, and has the disadvantage that in case the whole of the malleus were not absolutely free from adhesions, pulling with the snare might separate the handle from the head. The incus is removed with Ludwig's hook, being first dislocated and then brought downward and forward into the field of vision or into the external canal when it may be removed with snare or forceps. The removal of the incus is often quite difficult. It may lodge in the opening leading to the antrum or in some fissure. Sometimes removal fails with instruments, and at another time it can be syringed out. As the incus is more often carious than the malleus, it is necessary always when the malleus is removed to remove the incus also. Nothing, however, should be done in the way of operations on the external canal except under good illumination and with all bleeding stopped. One should be able to see to the deepest point. The chorda tympani nerve is sometimes injured but no evil consequence results. Facial paralysis and dizziness may appear after this operation. It usually disappears in from six to eight weeks, at latest six months, though it has lasted longer.

Healing takes place in from eight to fourteen days, and where the operation is done on account of purulent or carious conditions the results are usually good. In cases of sclerosis and when done for noises or deafness or synechiæ, Schwartze regards results as very uncertain.

Before taking up the mastoid operation I will briefly describe Stacke's method of laying bare the attic, a procedure which enters into many of Schwartze's operations. The skin cut is made in the usual manner except that the cut is carried above the ear to the fascia temporalis, and the attollens aureus muscle is cut through. All bleeding vessels are tied; the cut then extended through the periosteum to the bone, and with the periosteotome the membranous portion of the canal is separated from the bony, and the whole cartilaginous ear drawn forward with a retractor, leaving the bony external canal bare. The tympanic membrane is divided on its upper and posterior border. One now chisels away the tegmen tympani at its posterior superior angle, and so much of the adjacent bony canal as may be necessary to lay the attic bare to the antrum, frequently probing so as not to go too far in any direction, especially upwards. The bones, if not already destroyed by caries, are then seen to lie free *in situ*, and after tenotomy of the tensor, and

freeing of the incus-stapes joint, if necessary, are easily removed. With the sharp spoon preferably, or further chiselling if necessary, all carious bone in this situation can now be removed. The membranous canal, having first been slit in a direction corresponding to the long axis of the external canal, is now laid back in such a way as to cover so far as possible the bony surface previously laid open, and the original incision stitched. A drainage-tube is placed in the external canal to prevent any stenosis during healing.

The indications for the mastoid operation, as originally given by Professor Schwartze remain practically unchanged. Briefly these are:

(1) In acute primary and secondary inflammation of the mastoid, if after the use of antiphlogistic remedies, the edema and fever do not, in a few days, at most eight, disappear.

(2) In chronic inflammation with swelling, abscess formation, fistula in skin or secondary abscess in the neighborhood, even if at the time there appears to be no immediate danger to life.

(3) In chronic suppuration of the middle ear without signs of inflammation of the mastoid, as soon as any symptoms dangerous to life appear or seem at all probable, in consequence of pus-retention or the formation of cholesteatomata.

(4) In cases of otherwise incurable neuralgia of the mastoid.

(5) As a prophylactic measure in incurable fetid middle-ear inflammation, without inflammatory symptoms in the mastoid and without signs of pus-retention, as soon as it is demonstrated that the seat of pus-formation is not limited to the cavity of the tympanum.

Schwartze regards the operation as practically devoid of danger when properly done; even in those cases where no pus is found in the mastoid cells, but only inflammatory swelling of the pneumatic cells, the results seem oftentimes to be as good as in the cases where pus is found. On the other hand delaying to do the operation often costs the life of the patient. He thinks many lives are lost through too long delay or because conditions demanding operation are not recognized and acted upon.

Cholesteatomata in the middle ear and accessory cavities indicate themselves by the presence of symptoms of cerebral irritation, one-sided headache, dizziness, etc. In these cases the indication is always for the largest possible opening into the antrum from without. Should cholesteatomata be present without dangerous symptoms, the removal of the epidermal masses may be attempted with forceps, spoon, curette or syringing through Hartmann's canula, but healing is never brought about in this way. The moment more acute symptoms appear, as pain and fever, there is danger to life and the operation is urgently demanded.

Persistent incurable purulent discharge from the middle ear does not demand operation if limited to the tympanic cavity and its contents, and not involving the mastoid. In these cases removal of any carious parts through the external canal answers all the indications.

When the bone is much sclerosed and consequently very hard, the external signs of pus over the mastoid may be entirely absent and yet the mastoid cells much excavated and cholesteatomata or pus be present in large amount. In these cases of very thick bony wall there is frequently either a fistula in the external canal or a deficit in the posterior upper quadrant of

the tympanic membrane; sometimes, though much more seldom, a large carious depression through which one can go with a probe into the mastoid.

Schwartze regards the ophthalmoscopic examination of the fundus oculi as a valuable aid to diagnosis. Optic neuritis coincident with ear symptoms, in otherwise normal eyes, other causes for the eye symptoms being excluded, indicates intra-cranial complications such as increase in amount of subarachnoidal fluid, and urgently indicates operation. If the neuro-retinitis is very marked and apparently progressing, the prognosis is bad and an operation may be contraindicated. Hence the rule is laid down, though I cannot say that I saw it always carried out, that in cases of mastoid disease an ophthalmoscopic examination should be made. Advanced tuberculosis, great anemia, and albuminuria, a late stage of diabetes, and meningitis may be considered as among the affections which contraindicate operation; and yet the operation may be demanded even in the presence of these.

The two principal landmarks in the operation are the linea temporalis and the spina supra meatum. The greatest care must be exercised in the region of the former in order to avoid the possibility of opening into the middle fossa of the base of the skull and injuring the dura. The spina sometimes, though rarely, fails; and the skin over the mastoid, usually thin, may be as a result of pathological processes quite thick. Before operation the hair should be cut quite short, and a sufficiently large area around the site of operation shaved and then scrubbed with soap followed with ether and sublimate.

The first incision should begin about one centimetre behind the insertion of the auricle, beginning one centimetre above the linea temporalis and following the line of insertion of the auricle, carried to the apex of the mastoid process. In cases of great edema or where the sides of the cut cannot be sufficiently separated, it may be necessary to lengthen the cut in both directions, or even to make an incision backwards at right angles, at about the level of the external canal. Following the first incision, which goes to the periosteum, sometimes to the bone, all bleeding vessels are tied until the field of operation is free from blood. With a dull periosteotome the bone is then laid bare, in front to the border of the external canal, above to the linea temporalis, below to the apex of the mastoid process, behind as far as needed; the prime essential at this stage being, to have a field for operation which is large enough and which is free from blood. The bone is now opened unless caries or perforation from pus has already made an opening and the amount and extent of the operation determined by the findings. Professor Schwartze never starts out to do any particular operation, but only to remove with the chisel and sharp curette all of the diseased bone. If to do this it becomes necessary to remove the whole posterior wall of the external canal or the outer attic wall, he always does so. If the mastoid wall is outwardly sound, then the point chosen to begin chiselling, will be that from which the antrum is easiest reached. This point is usually about five millimetres underneath the linea temporalis at about the level of the superior wall of the bony canal five to ten millimetres behind and on a level with the spina supra meatum. Normally at this point the bone shows a number of openings for nutrient foramina. The operation is to begin on the point of the mastoid only when there is

reason to think that the trouble is there, although in cases of extensive caries the whole apex may be chiselled away.

In cases of cholesteatomata the operation is very thorough. Here he removes the whole cortex over the involved area, and chisels away every bit of infected bone. As in cases of extensive general caries, with pus and granulations, throughout all the cells, the whole posterior and upper wall of the external canal is cut away, laying bare the cavity of the tympanum, and removing any portions of the small bones which are not destroyed. Before cutting away the wall between the antrum and the tympanic cavity a probe is always passed into the cavity from the antrum and the wall chiselled away over this probe as a guide. In all other cases, especially in sclerosis, it is superfluous to remove more than is necessary to make a way to the antrum. The depth of the antrum is usually twelve to eighteen millimetres. If the cortex is thickened or the whole mastoid sclerosed, as may come after long purulent processes, it is deeper. No absolute rule can be given as to how deep to go, owing to individual peculiarities. In general, it is not safe to go any deeper than the depth of the external canal or tympanic membrane, otherwise there is danger of wounding the facial nerve and labyrinth. Schwartzze exercises the greatest care whenever chiselling near the Fallopian canal. Exceptionally the facial nerve is met with at the depth of eighteen millimetres; at twenty millimetres the greatest care must be observed and twenty-five millimetres never exceeded.

I did not gather anything new from Professor Schwartzze as regards the pathology of cholesteatomata, but the measures he adopts to prevent recurrence are quite novel and unique. As is well known, cholesteatomata are often of very great extent, even encroaching at times on the dura. They have a great tendency to recur some months or years after removal. To prevent this Professor Schwartzze makes the opening in the mastoid as large as possible, and then lays therein a flap of skin. Before doing this, however, in all operations where the bony external canal has been chiselled away, the membranous portion previously held forward with a retractor is slit on a director from its attachments to the tegmen tympani as far as the pinna, and a smaller cut then made at right angles to the first at the outer end. The two free ends of the membranous wall are next stitched to the upper and lower border of the periosteal surface of the original incision over the mastoid. This throws the external canal and the cavity made by the operation into one. A skin flap from three-fourths of an inch above to one-half of an inch in width below and parallel with but longer than the first incision over the mastoid is now dissected off behind, being left attached above. This flap is brought forward and laid in the cavity from whence the cholesteatoma was removed. The resulting bare space is left to granulate and cover with new epithelium. The transplanted flap is held in place by one stitch in front and by a wad of sterilized gauze. The wound as in all operative cases is dressed with iodoform and sterilized gauze and the dressing unchanged for seven days.

I was able to follow such a case for some weeks after the operation. The skin flap lived and became attached in its new situation and the place from whence it was removed was covered over with new skin. The cavity in the bone being entirely covered

with healthy skin and granulations, there is no chance for the cholesteatoma to again form. Schwartzze has now followed this plan for many years and finds that there are practically no recurrences. While there is a large cavity which always remains open behind the ear, that must be protected from the entrance of water and dust and from the cold in winter, yet these persons are able to work and become practically sound as far as the ear is concerned. I saw such a case four years after removal of a cholesteatoma with healing of the skin flap in hole. There was a little black stuff in the hole but no symptoms had appeared in the meantime.

In this connection it may be said that cosmetic effects are not considered in Germany to anywhere near the extent they are in this country, where no larger permanent hole will be left behind the ear than is absolutely necessary, and where as a general thing granulation from the bottom and final filling up and obliteration of the cavity is allowed and favored. On the other hand, in Schwartzze's clinic, in cases of cholesteatomata the hole is always kept open, being touched with nitrate of silver from time to time to prevent the filling up with granulations; while in Professor Lucae's clinic in Berlin, nearly all the mastoid cases had large permanent holes behind the ear occupying the site of antrum and aditus.

The possible dangers in the operation are venous bleeding; injury to the facial nerve and semicircular canals and opening the middle fossa of the base of the skull. Venous bleeding can come from large veins in the bone which communicate with the jugular or its branches. I once saw quite a degree of hemorrhage come through the floor of the external canal from the jugular, necessitating stopping the operation, which, however, was practically completed. Injury to the lateral sinus causes profuse bleeding, easily controlled by tampons of iodoform gauze. The operation, if not completed, must be postponed some eight days or so until the resulting thrombus is fully organized. No ill results follow.

Much more common than troublesome hemorrhage is injury to the facial nerve, and, moreover, not only in that portion of the Fallopian canal which is above and behind the round window and on the lateral wall of the antrum, but also farther under and outward on towards the stylomastoid foramen, a portion of the canal that shows in its course many variations. In most cases the paralysis disappears after several weeks or months. Only when the nerve is completely cut through is it complete and lasting. The paralysis may not appear until some time after the operation. It is then the result of a perineuritis extending from point of injury, caused probably by pressure from blood exudation in the canal. Whenever during an operation the region of the Fallopian canal or the round window is reached, the greatest care is exercised and an assistant told to watch for the slightest sign of involuntary swallowing so as to avoid if possible any injury to the nerve; still it sometimes happens.

Injury of the labyrinth may follow the use of the chisel as well as the drill, and death can result from purulent inflammation. Loss of hearing, dizziness, and disturbance of gait always follow injury to the labyrinth.

If by accident the dura is laid bare or even opened, no danger is likely to follow if the operation is as nearly aseptic as possible, and has no more unpleasant

results than does laying bare the lateral sinus. In fact the dura is often laid bare in operations where the caries is very extensive. One precaution must be taken, namely, that the edges of bone have no sharp points which can by any possibility injure the dura. The change of dressings should be made with great care so as to avoid any injury to the granulating surface.

Schwartzte sutures the skin wound and allows it to heal by first intention only in those cases where with the exception of the antrum the bone is quite sound, or where one can be certain that every bit of diseased tissue has been removed. In all other cases the wound must be kept open until all evidences of pus in the tympanic cavity or antrum have disappeared and the whole wound has granulated at least on the bottom. The first dressing is changed only when stained through.

For instruments, chisels with straight and concave cutting edges varying from two to eight millimetres in width and eleven centimetres long; two large chisels with concave cutting edges eighteen centimetres long, and ten and eight millimetres wide are used. They are used with great care, and I never saw a false cut made. As a caution to be observed he directs that, in order not to injure the lateral sinus, the chisel should never be directed backward. The chisel must never be held at right angles to the plane of operation, but always slanting as nearly horizontal as possible. The chisel must always be directed from the linea temporalis, never towards it. The sharp curette of various sizes is very much used in exploring and removing soft bone, fungoid granulations, and cheesy pus, followed by the chisel if, as is usually the case, the curette does not completely remove the diseased tissues. Retractors of several sizes, right and left tenotomes, and incus hooks, several knives, a number of artery forceps and a mallet complete the necessary instruments. Chloroform is used for anesthesia as in most of the German clinics. With all its advantages it is dangerous, and I have several times—not only in Schwartzte's but in other clinics, seen the course of an operation suddenly interrupted because the patient had ceased to breathe properly and the pulse had almost stopped. Artificial respiration is commenced, the windows opened, and when the breathing and the circulation again becomes natural the operation is resumed.

During some ten weeks attendance on Professor Schwartzte's clinic I saw but one death, and that a case of tuberculous caries of both mastoids in a child of five years, after removal by operation of nearly the whole mastoid and the laying bare of a large area of the dura on each side. I do not think the operation hastened death, which occurred some three weeks after from exhaustion; the lungs were also tuberculous.

In general Schwartzte's operations impress one by their thoroughness, the careful attention to every detail, the absolute antisepsis, both as regards operation and operator, the extreme care used, and the entire absence of hurry; mastoid operations lasting frequently an hour and even longer. I was there in the summer semester, and most of the operations were on account of caries or cholesteatomata, that is, chronic cases, though there were some acute mastoid cases. The wards were usually full of operative cases. As soon as convalescence after mastoid operation is established and healing well along, a metal spring one-half

inch wide, provided at one end with an ear-shaped expansion and passing from one auricle over the head to the wound, is employed to hold the dressing in place.

While the basis of the preceding article consists of my notes, I have, in addition, availed myself of the section on Operations in Schwartzte's "*Handbuch der Ohrenheilkunde*," where an exhaustive account of the present state of operative otology may be found.

Clinical Department.

A CASE OF PANCREATIC CYST TREATED BY DRAINAGE; RECOVERY.¹

BY MAURICE H. RICHARDSON, M.D.,
Surgeon to the Massachusetts General Hospital; Assistant Professor of Anatomy, Harvard Medical School.

N. D., an Italian laborer of twenty-six, I saw at the State Almshouse on November 22, 1894, with Dr. Howard. He had always been well and strong up to his present illness. He first noticed a painless swelling in the pit of the stomach six weeks before operation. This swelling gradually grew larger, and became so painful that he could not sleep at night. There was no interference with digestion or bowels. The appetite was good. The pulse and temperature were normal, the urine contained nothing abnormal. There had been some loss of flesh. The general appearance was poor, and the face cachectic. I found a non-resonant, fluctuating tumor, as large as an adult head, in the epigastrium, a little to the left of the median line. The tumor was so large as to interfere seriously with his comfort, embarrassing respiration and distending tensely the upper half of the abdomen. I made a diagnosis of cyst of the pancreas, from the position of the tumor and from the history of the case. Immediate operation was decided upon; for though the patient's condition was not serious, it clearly indicated the necessity of interference.

A cut was made between the umbilicus and the ensiform cartilage. The stomach and transverse colon presented themselves on opening the peritoneum. The omentum having been carefully separated, the tumor was brought into view, and its contents aspirated. "The fluid was viscid and of a dirty-gray color. The reaction was alkaline, and the specific gravity 1.008. There was about one per cent. of albumin, and a considerable amount of mucin. There was a little sediment which showed an occasional fatty degenerated cell. The fluid did not emulsify fat, and had no diastatic action. It had no digestive properties." [Report of Dr. W. F. Whitney.]

About two pints of fluid were withdrawn by aspiration. The parts about the exposed portion of the tumor were then walled off with gauze, and a free opening was made by which about two quarts of fluid escaped. Exploration with the finger showed a large cavity situated in the retro-peritoneal space usually occupied by the tail of the pancreas. The bodies of the lumbar vertebræ could be felt, as well as the pulsations of the abdominal aorta. No stone could be detected.

Separation of the tumor was attempted; but, on getting into the deeper parts, the adherence to the surrounding structures was so intimate, and the blood vessels were so numerous, that no further efforts at

Read before the Boston Society for Medical Improvement, December 17, 1894.