of costal cartilage two years later. In another patient in whom the testicle had been removed for tuberculosis, blood in the urine led to the suspicion of tuberculosis of the kidney. Operation was not submitted to and the man later had an attack of great pain, passing clots down the ureter. The bladder was opened by suprapubic incision by another surgeon, and in that case there was a question which kidney was involved, although the symptoms clearly pointed to the right side. Repeated attempts to catheterize the ureters failed. There was, therefore, nothing left to be done but to expose the kidneys. This was done, exposing the supposedly good kidney first. A small fluctuating area in this kidney was incised and a stream of tuberculous pus escaped. This little abscess had no connection with the urinary tract. The abscess was excised. The other kidney was removed. This has been five years ago, and, while the man may not be called well, he has never developed tuberculosis of the remaining kidney. The interesting feature about this case is that had they been able to catheterize the ureters they would not have learned of the presence of the abscess found in the supposedly good kidney, which was not indicated in any way. Both of these patients were physicians and both are now carrying on an active practice.

Stated Meeting held April 7, 1919

DR. GEORGE G. ROSS, Acting-President, in the Chair

CERVICAL MENINGOCELE

DR. JOHN STEWART RODMAN presented a case of cervical meningocele which had been relieved by plastic operation.

DR. JOHN B. ROBERTS called attention to the fact that the free flap which Doctor Rodman had used was a graft of fatty fascia from underneath the skin, containing also a portion of tendon of the frontalis above the nose. When the protrusion of cicatricial dura and scar tissue was removed, there was exposed a pit three-quarters of an inch deep with a cranial opening about one inch long and half an inch wide, with the long axis horizontal. Some time ago he took a bone plate out of the girl's tibia and planted it in her right thigh under the fascia lata. This he intends to use later to close the defect in the bone of the cranium, if the tendinous fatty graft recently stitched across the opening fails to prevent protrusion of the cerebral membranes. His idea is to use the fascia lata which was fastened by wire to the bone graft as a patch for the dura mater deficiency.

WAR WOUNDS TREATED WITH DICHLORAMINE-T

DR. PENN G. SKILLERN, JR., read a paper with the above title, for which see vol. lxix, p. 498.

DR. J. STEWART RODMAN said that he had had a rather unusual opportunity to watch the use of dichloramine-T at General Hospital No. 14 during

a term of service of some four months this last year. The use of dichloramine-T was under the supervision of Doctor Lee and in charge of Doctor Furness and, therefore, in the hands of experts. He did not feel that dichloramine-T would ever take the place of Dakin's solution, but that there was a definite field for both. The former did not cleanse the large pus cavities as did Dakin's solution because it has not the solvent action of Dakin's solution. The technic of using dichloramine-T is simpler than that necessary in Dakin's solution. Dichloramine-T was really more valuable in the small wounds than in any other place. In the larger wounds, comminuted infected fractures, etc., dichloramine-T certainly did not do the work that Dakin's solution did.

Dr. Morris Booth Miller said that he had used dichloramine-T throughout the period of our activity in the war. Since September of last year he had seen it used extensively on the wounded soldiers brought back from France. He was entirely convinced that there is no measure which is quite so satisfactory from several standpoints. It is small of bulk, it is easy to apply, it is economical of dressings, it is painless in application, and the quick healing which follows its use, together with these qualities, makes it of great value. Many cases have been brought aboard ship in the last stage of suppuration or of nearly sterile granulation, and they have healed promptly under the use of this measure. There seemed to be no irritation of the healthy skin. Under service conditions they could easily dress 100 cases in one and a half or two hours; the patients made no complaints, especially when it was used in the form of a spray; and the wounds closed with extraordinary rapidity. In the earlier treatment of wounds he thought the Dakin-Carrel solution to be of especial value, but in the terminal stages he knew of nothing to be compared with dichloramine-T.

Dr. John B. Roberts inquired which is better, the dichloramiue-T prepared with the eucalyptol, or with the chlorcozane. He had wondered if he did not get as good results in his face cases with tincture of iodine with equal parts of 95 per cent. alcohol, as with dichloramine-T. He tells his patients not to wash the face where the wounds are. In the past he believed much harm had been done by wetting the sutured wounds of aseptic operations. The circumstances are very different in already infected wounds.

Dr. John H. Gibbon said that this war has taught surgery that the principal object in the treatment of gunshot wounds is their closure. Between 80 and 90 per cent. of all gunshot wounds, particularly if compound fractures are eliminated, can be closed if operated on within ten hours. Such results depend in turn upon the meticulous care with which this is done. The first operation is the most important step in preventing infection of the wound. If the débridement has been properly performed and for some reason the wound is left open, in a large proportion of cases no antiseptic is required. If infection has occurred some chemical agent

must be used. In his opinion there are two criteria by which the efficacy of any agent may be judged: (1) A demonstrated fall in the bacterial count; (2) ability to close that wound by retarded primary or secondary suture. There are thousands of cases that have been thoroughly tabulated showing what can be done with certain agents, particularly Dakin's solution. In the American Army this was used more extensively than any other. It is to be hoped that Doctor Skillern and Doctor Miller will give some figures in regard to primary and secondary sutures done on the bacterial count or on clinical observation. He knew that practically any wound that has been properly débrided, any wound that has been freed of all foreign material and all dead tissue, can be sterilized with the Carrel-Dakin treatment. Any pleural cavity in whch there is no foreign body can be sterilized with Carrel-Dakin solution and closed. If that can be done with dichloramine-T then it ought to be as good as the Carrel-Dakin solution. The care with which the primary operation is done will determine the ease with which the wound is sterilized afterwards if it becomes infected. In one evacuation hospital in the American Army of 500 consecutive wounds, 300 left the hospital with the wounds healed. This, of course, was done in a so-called "quiet period" and not possible in a big battle.

Dr. Moses Behrend: In an experience of nine months with dichloramine-T as a local antiseptic before operation the results have been better than with the application of iodine. In addition to fewer infections it has been shown experimentally that there are fewer adhesions in the abdomen following its use than after iodine. The use of this agent in abdominal work presents a further argument for the employment of this agent.

Dr. George G. Ross had had opportunity to use both dichloramine-T and the Dakin-Carrel solution. Unfortunately, he was not able to give an opinion of their comparative value because he used the Dakin-Carrel treatment at a period of great stress when it was impossible to learn anything of final result. He saw a great many cases in which the Dakin-Carrel solution dissolved out the slough as no other agent he had ever used would. At Brest there were many bad burns in which dichloramine-T was used for a while until obliged to discontinue it because of the intense pain. They then resumed the paraffine or ambrine treatment. In the infected wounds, dichloramine-T proved so satisfactory that they gave up the use of the more complicated method of Dakin-Carrel. It must be said, however, that the type of wounds and the character of the infections were very different from those seen as the result of battle wounds. There was no gas gangrene infection to contend with.

Dr. George M. Laws had an excellent opportunity of comparing dichloramine-T with Carrel-Dakin solution in the treatment of war wounds. During a period of six weeks they were receiving patients at Base Hospital 31 as soon as they could be evacuated after primary opera-

tion performed according to the usual custom, and they had a great many large infected wounds to sterilize preparatory to secondary closure. After using both these agents he was impressed with the superiority of the Carrel-Dakin solution in that type of wound. He agreed, however, with those who advocate the use of dichloramine-T in small wounds and various other types.

DOCTOR SKILLERN, closing, replying to Doctor Roberts, said the agent prepared with chlorocazone is what they had on shipboard. It was used by pouring the fluid in and not by spraying; no drain was put in. Referring to Doctor Gibbon's large experience in the Army as compared with the Navy experience, he said that with three or four hundred wounds in various parts of the body and thirty men and three or four surgeons on board, they could not take time to perform débridement, but had to content themselves with simply putting in the dichloramine-T and putting on sterile gauze. Even at the hospital the bacteriological cultures proved sterile. One case was that of compound fracture of the knee-joint and in it there was immediate healing. The fact of not having performed débridement is, I think, a further testimony to the value of this agent.

DERMOID CYST IN RIGHT SUBMAXILLARY REGION

DR. T. TURNER THOMAS presented a girl, seventeen years of age, who about three months before coming under observation had experienced some pain in the right submaxillary region, especially on movement, and at this time it was observed that she had a swelling in that locality. Her mother states that at about eleven years of age after an attack of mumps it was noticed that there was a fulness under the chin suggesting double chin, and that this has been present ever since. He saw her first January 21, 1919. He found a non-inflammatory swelling extending downward slightly below the hyoid bone, forward almost to the median line, backward to the sternomastoid muscle and above to the lower border of the jaw. The most prominent portion protruded to about the level of the external surface of the lower jaw. It was not tender but caused a little pain on movement of the head. The skin was freely movable over it and normal in color and feel. On palpation there seemed to be a slight sense of fluctuation.

At University Hospital, January 23, 1919, under nitrous oxide anæsthesia, an aspirating needle withdrew a fluid which looked as though it might have purulent material in it, and an incision about three-quarters of an inch was made about an inch deep and just above the hyoid bone. A finger was then introduced and after it a closed hæmostat, but no pus escaped. The incision was then enlarged outward and upward to about three or four inches and about parallel to the lower border of the jaw. On exposure of the depth of the wound it was first thought we were dealing with a lipoma, but this proved to be the submaxillary gland stretched out over a mass underneath. The gland was separated and retracted

upward, exposing a mass which had a smooth, even surface and seemed cystic. An incision was made into it with the escape of a large quantity of yellowish bodies, suggesting something having the appearance of the so-called melon-seed bodies with the consistency of sebaceous or cheesy tuberculous material. It had very little fluid in it. Each little separate body was soft and easily crushed between the thumb and finger. The bodies varied in size from that of a pin head to an ordinary large bean. The total quantity could not be determined but it was probably between a half pint and a pint. The finger introduced into the cavity found it very deep and smoothly lined with no indication of inflammatory thickening. The surrounding tissues had a normal feel, *i.e.*, they were of normal softness and mobility. The tissue between the depth of the cavity and the pharynx must have been very thin, because it was at first thought the end of the finger was in the oropharynx and against the back of the tongue which could be distinctly felt. At this period of the operation the patient was vomiting and it was thought some of the cavity contents were coming from the mouth, but this was easily found to be not so. Neither did any vomitus appear in the wound.

As the diagnosis had not been made before operation the question of treatment now became very disturbing. It was evident that we were dealing with a cyst and that the contents represented the secretion of the cyst wall. The best treatment of these cysts is to remove the cyst wall, but this would have been a very formidable operation in view of the extent, depth and attachments of the cyst wall to the pharyngeal wall and in the region of the great blood-vessels and nerves inside of and under the jaw. Marsupialization in cysts of the pancreas has been very successful and he concluded to apply this method of operation in this case. The wound was closed to the lower angle by a subcutaneous catgut suture and the edges of the opening in the cyst were sutured to those of the skin at this lower angle. A rubber drainage tube was introduced about two and a half inches and fixed there by a skin suture, and a dressing and bandage were applied. Three days after operation the tube was removed about three-quarters of an inch and entirely in two weeks. The discharge gradually decreased, remained very slight for several weeks and disappeared entirely three weeks ago.

A small section of the cyst wall in the circumference of the opening in it was removed for histological examination together with several of the small caseous bodies found in the cyst. They were studied in the pathological laboratory of the University of Pennsylvania by Dr. F. D. Weidman, who reports as follows:

A section of the specimen of the cyst wall " shows a distinctly squamous lining underlaid by a dense fibrous tissue. The epithelium is of the type seen in skin rather than in the mucous membrane, the basal cells showing nuclei which extend perpendicularly to the basement membrane, the surface ones showing very sharply an arrangement into granular

and keratinous layers. The formation of papillæ is not given. The fibrous tissue below is arranged in collagenous bundles similarly to that seen in the skin, and very frequently bundles of involuntary muscle are met. The individual cells are swollen and degenerate. The feature that clinches the idea that this is skin consists in the presence of several rather large areas of highly vacuolated cells that are distinguishable with difficulty from fatty degeneration in the surface epithelium. Their occurrence, however, below the general level of the surface epithelium and the uniform grade of vacuolization in all of the individual nuclei determines that they are sebaceous. A further diagnostic feature consists in the discovery of two or three delicate (lanugo) hairs which lie within the dilated epithelial lined spaces, immediately adjacent to one of these sebaceous groups, and one of the hairs has a faint yellow tint which is so characteristic of this structure.

"Some of the contents grossly submitted was stained by Soudan III, and even the granular parts assumed a deep orange color which indicates a fatty degeneration. Some was also stained with Van Giesen's stain in an extemporaneous wet specimen, the degenerated cells taking on a green color which changed to yellow when washed in water. This indicates their keratinous nature.

"It appears now very clear that this is a dermoid cyst. The presence of hairs clinches the diagnosis, assisted by the presence of the involuntary muscle which doubtless represents an arrectores pilæ. The sebaceous glands are only less valuable because such are known to occur normally in the mucous membrane of the mouth, and because exaggerations of such very frequently occur in the lips in the condition known as Fordyce's disease. Furthermore, the presence of the granular layer in the surface epithelium is useful because the writer belives that this never occurs in a mucous membrane. The failure of the keratinous papillæ is of no moment because this is usually the case in dermoid cysts. Of the two possible sources of this cyst the writer (Doctor Weidman), therefore, feels certain that it sprang from the skin rather than the mucous membrane and that the lesion belongs to the inclusion dermoids."

Dr. Penn G. Skillern, Jr., said that he could add something of definite interest to Doctor Thomas' case of dermoid cyst in that nine days ago he had almost exactly the same experience in a patient operated upon a year ago for a swelling of the neck. The left submaxillary, salivary and sublingual glands were removed. Five months afterward the swelling came back. There was sudden pain with the swelling. The jaw was not tender but there was present a sense of fluctuation upon pressure. The swelling was pointed up like a frog's belly. The history given by Doctor Thomas of sudden pain beneath the jaw followed by swelling suggested submaxillary salivary calculus.

Dr. Damon B. Pfeiffer said that he had seen pathologically and clinically several cases which correspond closely to the case reported by

Doctor Thomas. It seemed to him that the case can with perfect propriety be regarded as one of bronchial cyst. Such a cyst arises from the inclusion of a portion of an embryonic bronchial cleft and the type of lining epithelium found in one of these cysts is determined by the portion of the cleft which chances to be cut off. Thus, if the included portion of the cleft possesses an ectodermal lining, the resulting cyst will be similarly lined, as in the case under discussion. It is not improper to call this cyst a dermoid or, if you prefer, an epidermoidal cyst, but this does not exclude its bronchiogenic origin.

He recalled a case similar to the one under discussion in which the surgeon merely incised and drained under the impression that he was dealing with a cold abscess. It was necessary subsequently to remove the sac to cure the resulting sinus. It should be remembered that the contents of these cysts vary in character from a clear serous material to a thick grumous or cheesy substance like that found in sebaceous cysts. Of it may resemble very closely the contents of tuberculous abscesses. It is important to make the correct diagnosis at the time of operation since the cyst calls for complete excision and the wound may be closed without drainage. Naturally this rule may require modification in the presence of circumstances such as have just been reported or in the rare event that true infection has been implanted in the cyst.

Dr. Henry R. Wharton said that some years ago he reported before this society three cases of sublingual cyst. The tumors were large and extended down from the hyoid bone. Two occurred in children and one in a woman forty years of age. The microscopic examination showed them to be dermoids. He was surprised at the ease with which they were enucleated, one through an incision in the floor of the mouth beneath the tongue; the other two through an internal incision below the chin extending down to the hyoid bone.

RETROPERITONEAL APPENDIX

Doctor Thomas presented a young colored woman, who was operated on at the Philadelphia General Hospital, July 16, 1918, for appendicitis of mild character. McBurney incision. No adhesions. When the cæcum was pulled out of the abdominal wound and retracted inward, the appendix was seen embedded in the retroperitoneal tissue to the outer side of the cæcum and curled on itself. The peritoneum could be picked up by forceps and easily and freely pulled away from the appendix which continued to lie in its original position. It, therefore, had no mesentery and the overlying peritoneum could be made to slip backward and forward over it by a little pressure of the finger. The peritoneum was cut over the appendix between two forceps, its margins were retracted and the appendix brought into the peritoneal cavity through this opening. Some difficulty was experienced in isolating and grasping the appendicular vessels with hæmostatic forceps and also in ligating and dividing them. The

peritoneal opening was then closed by catgut sutures over the stump of the appendix which was then again in its original retroperitoneal position. Recovery was uninterrupted. Everything seemed to indicate that this was surely a retroperitoneal appendix.

INTUSSUSCEPTION OF HEAD OF CÆCUM WITHOUT INVOLVEMENT OF ILEOCÆCAL VALVE

Doctor Thomas presented, also, a boy, thirteen years old, strong and healthy until present trouble began. Referred by Dr. Geo. E. Shaffer. Admitted to Northeastern Hospital July 10, 1918. On the day before admission he was seized with an abdominal pain and vomiting. The bowels had not moved for two days when on the morning of admission he had a movement which contained macroscopic blood. There was then marked rigidity of the entire abdominal wall with tenderness in the appendiceal region and a diffuse pain around it. Doctor Shaffer had found on palpation a lump between the last rib and McBurney's point. The interne failed to find it, but when the patient was under ether it was again detected. A diagnosis of appendicitis had been made because of the fever and increased pulse, the severe tenderness and abdominal rigidity, the preceding two days constipation, and a possible mass in the appendiceal region. Operation was done soon after admission. McBurney incision. The appendix was located after some difficulty and only in part, the basal portion being concealed in an ill defined mass which exhibited much induration but no adhesions to surrounding tissues. It had little mobility and could not be brought into the wound and the appendix could not be released from its imprisoned position. The ileocæcal junction was not involved in the mass. A higher incision was made along the outer margin of the rectus muscle, extending upward to about two inches of the costal margin. It was still difficult to outline and determine the character of the mass, and, while it was being manipulated, suddenly the appendix was released and the cæcum took its normal form. It now seemed evident that we were dealing with an invagination of the end of the cæcum which had carried in with it that portion to which the appendix was attached. The cæcal wall was much thickened by œdema which also involved the appendix to such a degree that it protruded rigidly through the lower incision. The whole involved portion of intestine including the appendix had a bluish discoloration indicating the probable threatening of a gangrenous process. This rapidly disappeared after the correction of the invagination. The appendix was removed, both wounds closed and healing was uninterrupted.

In the sixth volume of Keen's " System of Surgery," John B. Murphy calls attention to Moschowitz's detailed report of intussusception of the appendix, and refers to six more recent cases. He felt satisfied that in this case the intussusception of the appendix was only a part of that of the cæcum. If this condition had continued to progress it could only

have done so by the development of an ordinary ileocæcal intussusception. This case, therefore, may have been only the earliest stage of this common variety of intussusception.

STRANGULATED OBTURATOR HERNIA

DR. EDWARD J. KLOPP reported the case of a female, age eighty-eight, referred by Doctor Broadbelt, admitted to the Jefferson Hospital January 28, 1919. Four days before admission she was seized suddenly with general abdominal pain. The bowels did not move but had moved on the previous day. The following day she vomited from fifteen to twenty times, the vomitus was dark in color and had a very foul odor. Vomiting continued up to the time of operation. Laxatives and enemas were used freely without effect. On examination the patient presented nothing noteworthy except a mitral systolic murmur and marked arteriosclerosis. The abdomen was moderately distended, no engorgement of the superficial veins, tympanitic and soft throughout, tenderness over both lower quadrants and no abnormal masses palpated. No evidence of hernia in the inguinal, femoral, or umbilical regions. Vaginal and rectal examinations revealed nothing of importance. Temperature, normal; pulse, 100; respiration, 24. Diagnosis: Intestinal obstruction, cause unknown.

The patient was operated upon immediately under nitrous oxide and oxygen anæsthesia. The abdomen was opened through a median incision below the umbilicus. A portion of distended small bowel came into view, it was engorged, œdematous, and dark red in color. After following this bowel in the direction of most congestion the obstruction was found in the right obturator foramen. By gentle traction the strangulated loop was drawn out, which comprised an inch and a half of bowel. The hernial sac was removed and the ring closed with chromicized catgut sutures. The abdomen was closed without drainage.

There were two spontaneous bowel movements within twelve hours after the operation, and one or more movements every day thereafter. She vomited on the seventh day following the administration of a Seidlitz powder. She was out of bed on the tenth day. Everything seemed to go well until the night of the eleventh day when there was sudden collapse, and death in two hours. No autopsy was done, but we had no reason to think that obstruction had recurred.

SARCOMA OF SCIATIC NERVE

DR. EDWARD J. KLOPP reported the case of a male, age eighteen, who was admitted to Doctor Stewart's service, Jefferson Hospital, May 31, 1917. He complained of a painful swelling on the posterior aspect of the thigh. No acute illness since childhood except typhoid fever at ten; no venereal disease and no history of injury. Two months before admission he began to have pain in the left thigh posteriorly radiating down the leg, especially noticed on walking and at times on sitting down. Later the pain became so severe that it was almost impossible for him to walk. About

two weeks after the onset of pain he noticed a swelling on the posterior surface of the thigh. Appetite and digestion fair, bowels constipated. The patient is rather a poorly developed and poorly nourished adult male. General examination is negative. On the left thigh posteriorly, six inches below the gluteal fold, is a hard, irregular, tender mass about three by four inches. It is distinctly outlined, can be moved laterally but not vertically.

On June 1, 1917, under general anæsthesia, an incision was made over the mass in the long axis of the thigh. The long head of the biceps was adherent to or perhaps involved by the growth, hence a portion of the muscle was cross cut above and below, about an inch beyond the growth. After exposing the sciatic nerve it seemed to tunnel the growth. Separation was impossible, therefore the sheath, with probably one-half of the nerve cord, was excised for a distance of two inches. The adductor magnus and the semitendinosus were apparently free. A small wick of gauze was inserted for drainage. He left the hospital eight days after the operation with the wound healed.

Dr. E. D. Funk made the following laboratory report:

" Specimen weighs 180 gms. and measures 13 by 5 by 5 cm. The principal portion is composed of dark red muscle, œdematous and somewhat flabby. Attached to it and surrounded by a grayish, œdematous membrane is an oval mass measuring 5.5 by 4 cm. This tissue is quite resistant, yellowish-gray and incised with resistance. The outer portions of the incised surfaces are porous, somewhat brittle and resemble cartilage. The rest of the tissue is grayish in color, tough and resistant.

" Fixation in Zenker's solution; staining by usual laboratory methods."

Diagnosis.—Osteosarcoma.

Histology.—The section shows only tumor structure which consists of immature bone. The lamellæ stain lightly and contain many osteoblastic cells. The cells within the lacunæ and canaliculi are large and oval or spindle-shaped. Between the strands of immature bone are many irregularly shaped cells, loosely arranged and very vascular.

A month after operation he had pain again. Shortly after this a mass appeared in the region of the scar. He was readmitted to the hospital and on Angust 6, 1917, the growth was removed. The sciatic nerve seemed to be involved as before, the growth was approximately the same size as that of the former operation. The growth, with attached muscle, and the nerve for a distance of four inches, were excised. The wound was closed with silkworm-gut drainage.

On August 11, he received one-fourth minim of Coley's fluid. He had twenty-eight injections representing a total of seventy minims, the maximum dose being four and one-half minims. The injections were given at intervals varying from one to four days.

He received six X-ray treatments under the direction of Doctor Manges.

Dr. E. D. Funk made the following laboratory report: "Specimen is a tumor removed from the left thigh measuring 9.5 by 7 by 4 cm. and weighing 148 gms. Tissue is dark red in color and very firm, having muscle attached. The main tumor mass measures 3.5 cm. in diameter and is the consistency of bone. A small mass attached to one end is of cartilaginous consistency and yellow in color."

Fixation.—Zenker's solution. Usual laboratory staining.

Histology.—Fibrosis is marked, the nerve sheath is thickened. Many of the fibrous cells are embryonic in character. In the intervening tissue are many thick-walled blood-vessels.

Diagnosis.—Fibro-neuroma.

We believe this to have been a case of sarcoma of the sheath of the sciatic nerve, because of the clinical appearance and laboratory findings and because of the prompt recurrence before the nerve was excised.

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