

TRANSACTIONS OF THE PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING HELD MAY 14, 1928

The President, DR. ASTLEY P. C. ASHHURST, in the Chair

CALVIN M. SMYTH, JR., M.D., Recorder

BONE RESECTION TO EQUALIZE LENGTH OF LEGS

DR. JAMES H. BALDWIN presented a man, aged fifty-two, who was admitted to the Methodist Hospital, November 13, 1925, with the history that while at work, a wire cable on a hoisting machine became looped around his right leg, pulling him up into the air and causing a comminuted fracture of the tibia and fibula. As the result of a fracture of the left femur eight years before, that leg had been shortened an inch and a half. Under the fluoroscope, the fragments were manipulated into satisfactory position, a plaster case applied and in a week the patient was permitted to go home. Shortly after going home, due to improper use of the leg, the case was broken. On returning to the hospital, the fragments were found to be in worse position than at the time of fracture. Open reduction was elected. Bearing in mind that the left lower extremity was one and one-half inches shorter than the right, it was decided to try and remedy this. Three-quarters of an inch was cut from the end of each of the four fragments. These could then be placed in perfect alignment. The fibula was sutured with kangaroo tendon and the



FIG. 1.—Fungating fibroma of shoulder.

tibia plated with a Sherman plate. Later the wound became infected and the plate was removed. There was a discharging sinus for several months but this finally healed. At present there is a fusion of the callus between the tibia and fibula. However there is no deformity, function is perfect, both extremities are the same length, there is no limp.

FIBROMA OF THE SHOULDER

DR. JAMES H. BALDWIN reported the case of a woman, age thirty-nine, who was admitted to the Methodist Hospital, July 26, 1927, with the following history: Three years before she had first noticed a small mass over

the left clavicle. She was then seen by the reporter, who at that time found a small freely movable painless mass about one inch in diameter. It was not

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tender, was single and was not adherent to the skin. Removal was advised but this was refused. The growth slowly increased in size and finally broke down, becoming a large foul smelling, sloughing mass, irregular in outline and from which there had been numerous more or less severe hæmorrhages. X-ray studies showed no metastases in the bones or mediastinum. There was no cervical or axillary involvement. The biopsy disclosed the mass to consist of fibrous tissue with no evidence of malignancy. At operation, August 14, 1927, the whole growth was found to be between the skin and the deep fascia and was easily shelled out in one mass. Repeated microscopic examinations failed to find any evidence of malignancy. The patient made an uneventful recovery and gained twenty-five pounds in weight.

PRIMARY EPITHELIOMA OF THE GASTRO-HEPATIC OMENTUM

DRS. H. M. RIGHTER and HENRY K. SEELAUS, by invitation, reported the case of a colored woman, aged thirty-seven, who was admitted to the Philadelphia General Hospital, July 21, 1927, with an abdominal tumor.

In September, 1923, she was subjected to a complete supravaginal hysterectomy at another hospital, for a fibroid uterus, cystic ovaries and parovarian cyst on the left side. The history of the present trouble dates back seven years when the patient noticed a small lump in the left hypochondrium. It has gradually increased in size and consistency until it measured 12 x 8 x 6 cm. There had been a loss in weight of twenty pounds in the last nine months. For the past two years the woman has experienced episodes of severe abdominal pain associated with attacks of vomiting; since the mass in the abdomen has been increasing in size the attacks of pain have become more severe.

At operation, July 29, 1927, by Doctor Righter a large nodular tumor was exposed, which was thought to be between the two layers of the lesser omentum and apparently not connected with any viscus. The superficial leaflet of the gastro-hepatic omentum was incised and the mass rather easily extirpated. Because it was thought that the growth was malignant, 21 radium seeds of 45 millicuries strength were implanted in the bed of the tumor. The gall-bladder showed evidence of chronic calculous cholecystitis, but because of the patient's general condition, nothing further was done. Convalescence was rather stormy for about a week, but after that her strength gradually returned and she was discharged from the surgical ward six weeks after operation. The patient returned in September, 1927, for post-operative X-ray therapy. Eight months after the operation, the patient is in excellent health attending to her household duties.

Pathological Report (Dr. F. J. Jodzis, from the Philadelphia General Hospital). "The specimen is an irregular, ovoid, encapsulated tumor measuring 11 x 7.5 x 5 cm., soft and fluctuating in some areas and firm in others and having smaller spheroidal nodules on its surface. Sections through the firm areas are grayish-white, homogenous, elastic and resembling fibrous tissue. Section of the softer areas shows gradations from reddish-brown to grayish-yellow gelatinous areas of myxomatous degeneration. Microscopic sections show the tumor mass to be encapsulated with a thick layer of dense fibrous tissue. Beneath this there are small and large nests of ovoid cells with a fairly deeply-staining, eccentrically-placed nucleus. The cells are uniform in size, the majority of them being arranged in an acinar formation and in some of the acini these cells take on a cuboidal or low columnar shape. They do not appear malignant, but resemble in some degrees the parietal cells of the stomach, also vaguely, the cells of the pancreas. Some areas show these cells in groups of two and three giving the impression that there is an invasion of the fibrous tissue. No mitotic figures were seen in any of the areas. Diagnosis: Adenoma of unknown origin."

Professor James Ewing of Cornell to whom sections were submitted, had this to say. "This is an epithelial alveolar tumor of very unusual structure. It is of glandular origin and malignant type. Its location suggests some relation to the pancreas and the structure is not inconsistent with that origin. It may arise from some aberrant island of gland tissue in this region where aberrant gland tissue is frequent."

Dr. B. L. Crawford, from the Jefferson Hospital, reported that sections from the tumor taken from different portions reveal slightly different pictures. In some areas there is extensive necrosis and in others there is considerable fibrous tissue with small clumps of cells scattered throughout, and in still others, the tumor is quite cellular, the tissue being composed of rather small, irregularly-shaped cells which are arranged to form indefinite acini and alveoli. The cells vary considerably in size and have large, deeply-staining nuclei. The cells forming the tumor are considered to be epithelial in origin and definitely glandular in type and while the cells somewhat resemble both liver and pancreatic tissue in places, it is thought that they probably more closely resemble the latter. However, there is nothing characteristic, such as epithelial-lined ducts or typical arrangement of the cells to identify the specific type of tissue. From the irregularity and variation in arrangement of the cells, the tumor is considered to be potentially malignant. Diagnosis: Epithelial tumor of aberrant gland tissue, probably undergoing malignant change."

A. Pearce Gould¹ at the beginning of the present century in his report of a "sarcomatous tumor of the gastro-hepatic omentum" was surprised that there were not more reports of primary tumors of the lesser omentum. At the present time, more than a quarter of a century later with the thousands upon thousands of laparotomies that have been performed, we can find the records of only two more.

Gould's patient was a man thirty-eight years of age who had a tumor removed from the lesser omentum. This tumor, weighed, when fresh, just over twenty-one pounds. The diagnosis, on microscopic section, was spindle-celled sarcoma. The patient made a good operative recovery and was free from recurrence more than four years later.

Murphy's² patient was a man of forty-nine who had a fibro-myo-myxoma telangiectatum which weighed thirty-four ounces. Clark³ reported a growth of the small omentum in a woman aged 60, but unfortunately no microscopic sections were made and there is no adequate description of the gross specimen.

In the previously reported instances of lesser omentum tumors there were found only connective tissue elements. The epithelial structures found in the growth reported in this paper very strongly favors, as suggested by Professor Ewing, an origin from an aberrant island of gland tissue, in all likelihood coming from either one of the primitive diverticula or evaginations which eventually become the adult liver and pancreas. Because the cells of this neoplasm bear a resemblance to the definitive pancreas, we incline to the view that it arose from one of the original ventral pancreatic diverticula, in spite of the fact that ducts were not found.

One of the striking things in connection with the symptomatology of these tumors is the tolerance that these patients show for the growing mass. Gould's patient had no severe local or general symptoms, except embarrass-

¹ Gould, A. Pearce: A Case of Sarcomatous Tumor of the Gastro-Hepatic Omentum. *Med. Chir. Gazette*, vol. lxxxiii, pp. 257-269, March, 1899-1900.

² Murphy, John B.: Fibroma of the Gastro-Hepatic Omentum. *Surgery, Gynecology and Obstetrics*, vol. i, pp. 315-319, October, 1905.

³ Clark, Jackson: Primary Tumor of the S. Omentum. *Trans. of the Path. Soc. of London*, vol. xliii, p. 60, 1892.

PRIMARY EPITHELIOMA OF THE GASTRO-HEPATIC OMENTUM

ment of respiration and circulation from the mere bulk of the mass below the diaphragm. Murphy's patient had noticed the tumor nine years before and at no time were there any symptoms associated with it. In his own words, "If I could not feel it, I would not know I had it." Owen's patient, reported by Clark, had observed the growth for four years and her only complaint was pain due to the adhesions. The patient whose report is chronicled here is the only one who had any marked symptoms referable to the tumor.

In coming to a conclusion regarding the diagnosis, Gould considered retroperitoneal tumors, hydatid tumor, malignancy of the liver, splenic tumor or new growth of the kidney or adrenal. We would add to this list, malignancy of the stomach and pancreatic tumors. Pyelographic study and gastrointestinal X-ray would aid in excluding lesions of the stomach and kidneys. The long duration of the tumor with the absence of grave constitutional phenomena, such as vomiting, wasting, jaundice and ascites, would rule out malignancy of the liver. The more or less central position with the resonance to the left of the growth and the absence of constitutional symptoms, throws the diagnosis of tumor of the spleen into discard. The absence of fluctuation and the different outline are against hydatid tumor. The lateral mobility and the fact that it could not be separated from the liver would differentiate it from the retroperitoneal tumor. The long time the tumor was present, the absence of jaundice, digestive phenomena and the failure to lose weight, would invalidate the diagnosis of pancreatic tumor. The treatment is that which has been carried out in all of the reported instances, viz: Removal, and it might be worth while, as was done in this patient, to implant radium seeds into the bed of the tumor.

Dr. Righter remarked that it was in 1908 that Duane first suggested the burying of radium emanation directly in malignant growths, and that Janeway

used the method which consisted of implanting glass "seeds", each containing one-half to one millicurie, within the tumor. The seeds were spaced about one centimetre apart. Some good results were obtained with this technic, but only too frequently it was followed by considerable necrosis and subsequent sloughing. While this result is undesirable in surface lesions, it is prone to be followed by fatal results in tumors

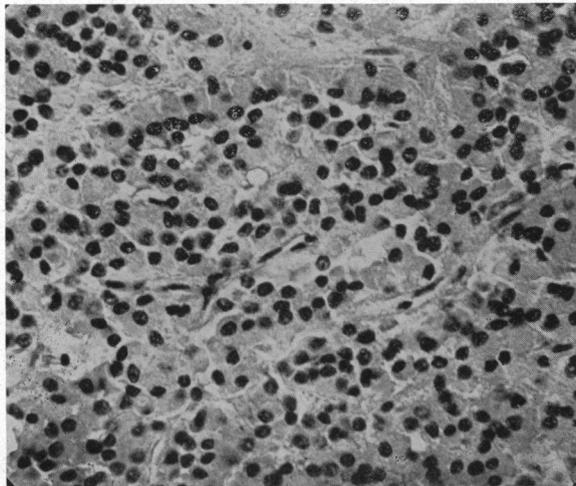


FIG. 1.—Photomicrograph of primary epithelioma of the gastro-hepatic omentum.

within the peritoneal cavity. Hence, irradiation therapy of abdominal neoplasms had been confined largely to external radiation. Lately, however, a new procedure has been introduced which promises better clinical results.

This improvement consists in the substitution of gold tubes for the bare

"seeds". By this means considerably larger doses can be concentrated within the limits of the tumor, and, on account of the greater screening effect of the gold, all but the most penetrating beta and gamma rays are removed, the tendency to necrosis and sloughing being very greatly reduced. From one to three millicuries may be used in these containers and the abdominal wound closed as soon as the implantation has been completed.

Levin in a paper published in the *J. A. M. A.* of January 28, 1928, reported four patients with carcinoma of the pylorus, one with carcinoma of the duodenum, one with carcinoma of the sigmoid and one with rectal carcinoma, all treated by the intra-neoplastic insertion of capillaries of radon plus the necessary palliative procedures, and, it is interesting to note that the insertion of the radon did not add to the hazard of the operation, and did cause a shrinkage of the tumor growth with a subsequent prolongation of life and comfort.

In the present case, twenty-one gold tubes, containing altogether 45 millicuries, were implanted in the bed of the tumor. This represents a dose of about six thousand millicurie hours. In addition a series of high voltage X-ray treatments were given at a later date. This latter treatment is now replaced, in some patients and in institutions having sufficient radium, by external irradiation with large radium packs containing from two to four grams of radium or its equivalent in emanation.

DR. GEORGE M. LAWS recalled a patient who had a tumor of the lower abdomen, which at operation was found to lie between the stomach and the transverse colon. The colon was pushed down in the pelvis and the omentum attached to the tumor. On enucleating, it was found to be quite friable and revealed cystic areas containing free fluid. The parietal peritoneum showed a great deal of irritation. This was a tumor of the gastro-colic omentum, separated from its attachments, enucleated and apparently no damage done to any important blood supply as the patient made a good recovery and was out of bed in two weeks. The pathological diagnosis of the tumor was fibrosarcoma.

BILATERAL ACOUSTIC NEUROFIBROMATA

DR. THOMAS A. SHALLOW reported the history of a woman, age twenty-four years, who was admitted to the Jefferson Hospital, in the service of Prof. Edward A. Strecker, December 30, 1927, complaining of headache. Loss of hearing in both ears, associated with head noises. Loss of vision in left eye, almost complete loss of vision in the right eye. Inability to walk. In her family history there was no history of malignancy, tuberculosis, diabetes, nervous or mental diseases.

Six years ago, one year after the birth of a child, she frequently experienced dull pain in the neck, associated with attacks of vertigo. These symptoms were aggravated when she stooped and recurred at intervals for four years. In 1926, it was noticed that she had bulging of both eyes, more marked in the left eye. Associated with the bulging there was some loss of vision in both eyes. Since March, 1926, the vision has become progressively worse. About this time her family noticed that she had difficulty in hearing; and she complained of hearing bells in her head and also complained of a buzzing noise. These symptoms persisted until December of 1926, when

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there was some temporary improvement in her hearing, but since that time her hearing has become progressively worse. She did not complain of any headache until the latter part of 1926. Then she had attacks of severe frontal headache and vomiting. These spells would come on about once a month and would last from several hours to two days. Six months after their onset, these attacks abated and only recurred occasionally. At no time had she projectile vomiting.

Physical Examination.

—Vision. Right eye 22/100. Left eye no vision. Pupils 7 mm., react sluggishly to light; lateral nystagmus. Ophthalmic Examination.—O. D., media clear; disk very pale throughout; margins blurred; cup is obscured; veins tortuous throughout; arteries are contracted but fairly straight. O. S., media clear; disk intensely pale; disk is obscured; margins blurred. These conditions indicated optic atrophy bilateral, secondary to choked disk. There is very slight evidence of exophthalmos.

Head.—In the supraorbital region there were several small nodules the size of millet seeds. There were similar nodules on the scalp immediately above the hair line. There was a diminution of sensation in the left side of the face. Nose and Throat examination was negative except for pharyngitis. There was a slight enlargement of the thyroid gland. On the anterior surface of the chest there was a scar where a tumor had been removed one month before admission to the hospital. The nature of this tumor was not known. Heart and lungs did not show any evidence of pathology. There were no gastro-intestinal findings of importance. Menstruation was established at the age of twelve and had always been regular.

Extremities. Upper.—On the outer side of the index finger of the right hand were several nodules similar to those in the supraorbital region and on the scalp.

Neurological Examination.—Upper extremities. Superficial and deep reflexes present and normal. Grip and resistance good, no tremor present. No alteration in sensation of either hand. She is able to determine objects placed in her hands but there is slight delay in the right hand. Lower extremities. No ankle clonus or Babinski reaction present. Knee jerks present and normal. She swayed to the left when she attempted to walk,

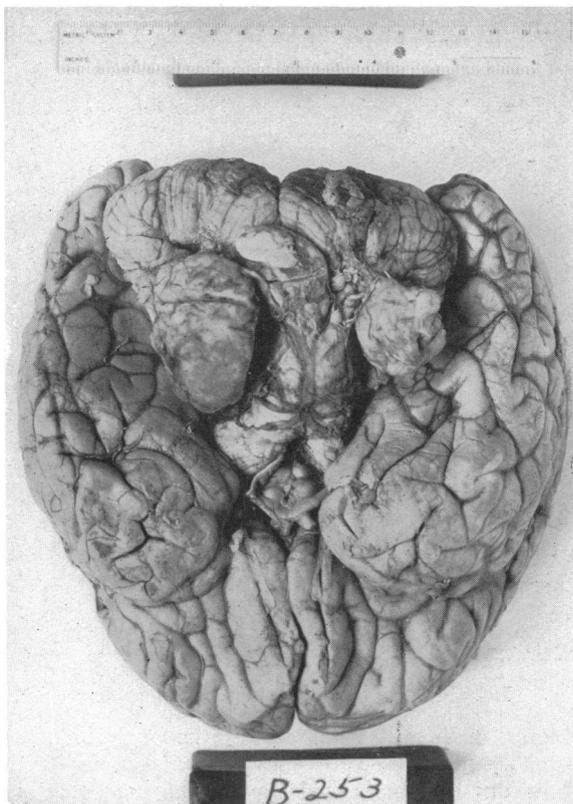


FIG. 1.—Showing multiple tumors arising from acoustic nerve of each side.

and was unable to stand on either foot unassisted. Diminished sensation of the right leg on the outer half from the knee to the ankle. Slight rigidity of the right leg. The Barany Test suggested a lesion centrally located, involving the pons, more on the left side. There also appeared to be some involvement of the vermis, possibly from pressure. Fork Test.—Right ear, slight bone conduction, no air conduction. Left ear, slight bone conduction, no air

conduction. Weber's Test.—Does not hear fork when placed on the vertex of the skull. Rinne's Test.—Negative in both ears. Inflammatory disease of the ear was not found and there was no evidence that it had existed in the past.

X-ray Report of Dr. Leon Solis-Cohen.—“Study of stereoscopic image of the right side of the skull leads us to conclude that there is definite increase in intracranial tension as the stereoscopic films bring forth the greater prominence of the convolution markings of the skull. From these views also the sella turcica, while within normal limits, might still be con-

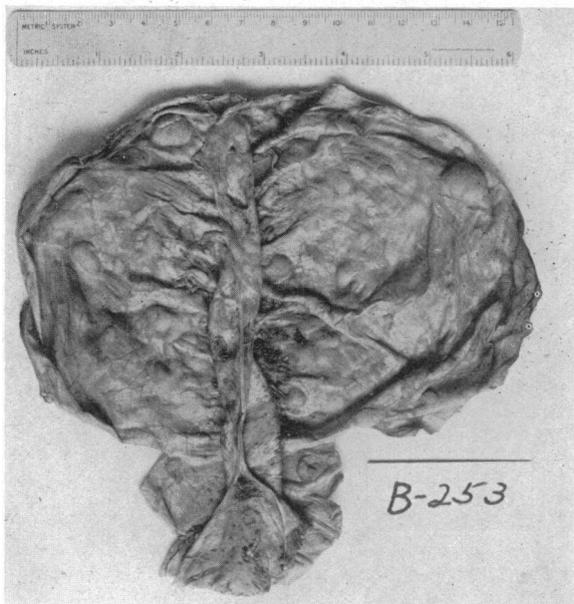


FIG. 2.—Showing the multiple tumors of the dura.

sidered deep. There is definite calcification in the mid-parietal region, presumably near the ventricles, presenting an irregular ear-shaped appearance, about one inch and a half by half an inch, that suggests the presence of calcification. The convolution markings are more prominent on the right side than on the left.”

The diagnosis made in Professor Strecker's clinic was BRAIN TUMOR involving the eighth nerve.

Doctor DaCosta presented this case to his clinic on January 25, 1928. He stated, because of the bilateral absence of hearing he strongly suspected a multiple lesion, that is a lesion of both acoustic nerves instead of a single eighth nerve tumor. He diagnosed this case as a bilateral acoustic tumor and multiple neuro-fibromatosis. Doctor Shallow removed a small tumor from the scalp for examination. The laboratory examination showed that it was a neuro-fibroma.

A cerebellar decompression was done by the reporter on February 4, 1928, with the hope of saving the moderate vision which still remained. The patient died suddenly forty-eight hours after the operation.

Autopsy.—In the scalp and in the subcutaneous tissue over the trunk a number of small, firm, circumscribed nodules can be felt. These do not appear to have any distribution that follow in the course of the main nerves.

The dura is thickened and adherent to the piaarachnoid. On the inner surface of the dura there are innumerable small circumscribed, slightly elevated, firm gray nodules which protrude from the inner surface. These

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nodules vary in size from a pin head to the largest measuring $1\frac{1}{2}$ cm. in its greatest dimensions. Several of these large nodules form definite depressions in the brain substance but are not adherent to the piaarachnoid. No nodules are observed in the piaarachnoid over the cortex of the brain.

The brain weighed 1360 Gms.; a number of definite nodules were observed at its base, two of the largest of these are in the cerebello-pontile angle, one on each side. Each one of these causes a depression, both on the pons anteriorly and on each lobe of the cerebellum posteriorly. The left tumor mass measures $4\frac{1}{2} \times 3\frac{1}{2} \times 3\frac{1}{4}$ cm. The right tumor mass measures $3 \times 2\frac{1}{2} \times 2$ cm. These tumors are quite similar. Both are adherent to the meninges and originated in the eighth nerve trunks.

On the third cranial nerve on the left side there is a small tumor mass about 3 mm. in diameter, definitely adherent to the trunk. In the Gasserian ganglion of the right side there is a small tumor.

The right and left of the seventh nerve both show a small tumor nodule attached to the nerve trunk. The right eighth nerve is included in a large tumor which extends into the internal auditory canal. The right ninth, tenth and eleventh nerves are included in the tumor mass, which extends into the right jugular foramen. There is slight destruction of the surrounding bone. All the ventricles are markedly distended with clear fluid. The specimen was preserved intact.

Histological Examination.—The tumor nodules in the dura and the base

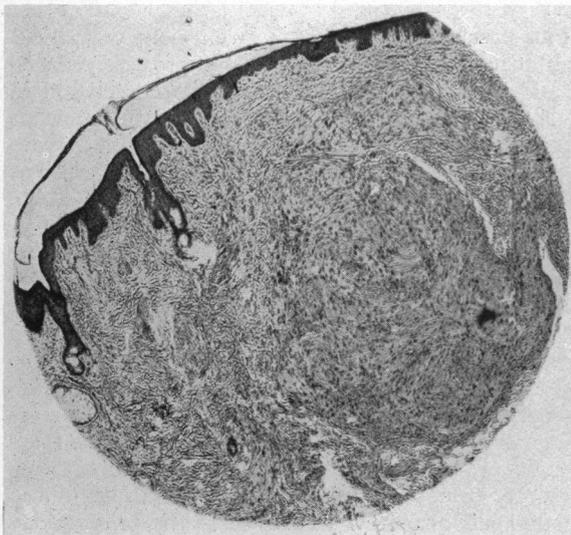


FIG. 4.—Microphotograph of the subcutaneous nodule removed before operation.

of the brain are similar in histological structure. They are composed of rather cellular tissue, the fibres of which show definite whorls. In some

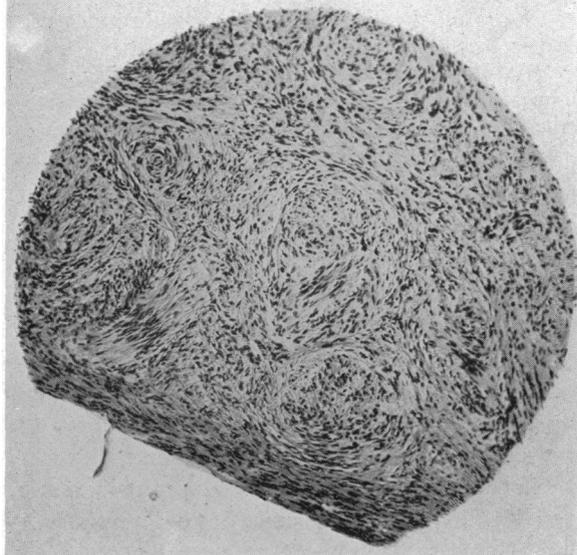


FIG. 3.—Microphotograph of the section of the tumor removed from the eighth nerve.

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areas the tissue is composed largely of spindle whorls while in other areas nerve fibres predominate. In some areas of the tumor spindle cells predominate. Some of the smaller nodules seem to arise from the nerve trunks in the meninges.

Anatomical Diagnosis.—Neuro-fibromatosis involving the subcutaneous tissues, the dura and the cranial nerves.

Histological Diagnosis.—Neuro-fibromatosis of the meninges and cranial nerves. Histologically the cranial tumors are similar in structure to the subcutaneous nodules which were removed before the cranial operation.

DR. FRANCIS C. GRANT said that he had seen three cases of von Recklinghausen's disease in the Frazier service at the University Hospital, one of which had bilateral tumors of the eighth nerve but no other cranial nerve involvement. The literature shows definitely that the eighth is the most common intracranial nerve involved in this condition. There appears to be no explanation for it. The second case had eighth nerve involvement, and operation was followed by recurrence on the opposite side two and one-half years later. Neither case had any peripheral manifestations of von Recklinghausen's disease. The third case did however and it came to necropsy which showed a condition similar to Doctor Shallow's case, only not so extensive. It showed single tumor of the acoustic nerve, entirely unsuspected, and von Recklinghausen's disease of the periphery. The operative difficulties in this case must have been extremely great as far as exposure of the growth was concerned. Even if the acoustic tumor could have been removed the others would have developed and the outcome would have been the same.

MUSCULO-SPIRAL INJURY COMPLICATING FRACTURE OF HUMERUS

DR. BERNARD H. NEUBAUER presented a man, age twenty-six, who September 16, 1926, sustained an injury to the left arm. There was marked deformity of the upper arm and a paralysis of the muscles of extension in the arm, forearm and wrist. X-ray showed a spiral fracture of the humerus through the musculo-spiral groove with displacement of the fractured fragments. September 17, 1926, an unsuccessful attempt at closed reduction was made. The wrist and hand were placed in a cock-up splint. October 5, 1926, open reduction was done; both ends of fractured fragments were isolated. The musculo-spiral nerve was lying directly in this path. The sheath of the nerve and several of the nerve bundles had been cut by the sharp point of the fragments. The nerve was isolated, the sharp pointed ends of the bones were removed and the fragments placed in apposition and secured with two wire nails. The soft fibrous tissue that had formed in the open area of the nerve sheath and nerve bundles was excised, and the nerve united by two catgut stitches placed in the sheath. The patient was placed in a plaster body and arm case with the wrist and hand held in extended position. The fracture united satisfactorily, the nails being removed thirty days after operation. Four months after the injury, the musculo-spiral nerve showed beginning return to function. This function has gradually improved to the present day now approximating 90 per cent. normal.

CRANIOPLASTY FOR CLOSURE OF DEFECT

DR. BERNARD B. NEUBAUER presented a man, age fifty-four, who was injured May 19, 1926. While he was using a wrench to drop the hopper on

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a coal car, the wrench slipped, whirling around and striking the patient on the right side of his head. He was knocked unconscious and taken to a hospital. There he remained four and one-half weeks—following an operation for decompression.

Five weeks after the accident when first seen by the reporter he complained of a feeling of emptiness in the open side of his head. He had headache, dizziness and nausea but did not vomit. Coughing caused the same sensations as the bending forward and both, seemed to the patient, to push the brain further out from the head.

Riding in street cars, especially when crossing car tracks, caused pain and discomfort. At times he complained of throbbing in the head. Lying in bed, with his head at a low level, gave him the feeling that his brain was pushing out, and he had an associated nausea. The patient was afraid that wearing his hat would injure his brain because his head felt so large when his hat was worn.

The physical examination showed a large defect in the calvarium of the right fronto-parietal area, 8 cm. in length and 6.5 cm. in width, of oval shape. The brain tissue was protruding and showed pulsation. There was no facial paralysis and there was no paralysis of the extremities on either side. The eye grounds and color fields were normal. The reflexes were equal on both sides.

The day following his first examination, the spinal pressure reading was 26 mm. of mercury. During the following six weeks the patient was given one 45 c.c. intravenous injection of 15 per cent. hypertonic saline each week; and one dram of magnesium sulphate was given before breakfast each day. By August 24, the hernia cerebri had receded to within the normal limit. The spinal pressure reading was 12 mm. of mercury.

August 26, a piece of cardboard was placed over the open space in the skull and adhesive used to hold it in place. A head bandage was applied. This procedure was adopted to ascertain what symptoms, if any, might develop from closing the defect. The patient reported that he felt better with the opening covered—and after a six weeks trial, it was decided to make a permanent closure.

October 12, Cranioplasty was undertaken. A large horseshoe incision was made, to include, both the defect and the area from which a graft was to be removed. Considerable difficulty was experienced in separating the scalp from the underlying dura, especially at the several points where the brain tissue had protruded through the dura. All openings in the dura were sutured. The eburnated bone formed about the opening was removed. A pattern of gauze, of the required dimension, was placed upon the exposed area from which the graft was to be cut. When about one-third of the graft had been chiseled free, the anæsthetist was advised that patient's condition had been gradually becoming worse and that pulse was about 140. The operation was discontinued and the flap sutured. The patient was returned to bed and treated for shock.

November 23, the second stage of the operation was undertaken. This time a horseshoe flap incision was made over the defect only. The scalp was very easily separated from the underlying dura which was found entirely closed. The edges of the bone were curetted.

Having decided to use a transplant from the tibia an osteo-periosteal graft was removed from its internal surface. The graft was in three parts, each 10 cm. long by 2.5 cm. wide. The three strips were placed with their lengthwise edges together and the ends resting upon the edge of the defect. The excess graft was removed to conform with the contour of the opening.

The periosteum was sutured to periosteum both in the graft area and to the periosteum covering the skull. The skin flap was closed without drainage.

Two and one-half weeks later, the graft area felt solid to the touch. The subsequent X-rays show a gradual increase in density of the grafted area to the present point of solidification.

DR. J. S. RODMAN said that the König-Mueller technic of using the outer table of the skull in the closure of cranial defects has always resulted in more or less severe shock in his experience. One patient, a child, died of shock. The use of a graft from the tibia as done by Doctor Neubauer in this case, seems much less likely to result in shock in that the necessary hammering and chiseling that goes on in order to raise such a flap from the skull is obviated. It is this repeated trauma to the head which results in the severe shock which it is so usual to see when the flap is taken from the outer table of the skull. An additional advantage is that time is saved because the assistant can raise the flap at the same time that the defect in the skull is being prepared to receive it.

CANCER OF THE TONGUE AND FLOOR OF THE MOUTH

DR. GEORGE M. DORRANCE and DR. JAMES K. MCSHANE (by invitation) read a paper with the above title for which see page 1007. To illustrate their paper, the essayists presented three patients, as follows:

CASE I.—A man, age sixty-seven, was admitted to the Philadelphia General Hospital, September 16, 1926, with a growth involving the left floor of the mouth. There was no demonstrable adenopathy in the neck at that time. Biopsy resulted in the diagnosis of prickle-cell cancer. He received four series of neck radiations; the local condition was treated at first with bare tubes and later with gold tubes. He is in good health today and free from all evidence of cancer.

CASE II.—A man, age seventy-four, was admitted to the Philadelphia General Hospital, January 21, 1926, with a lesion involving the under surface of the tongue and floor of the mouth. Biopsy showed prickle-cell cancer. There were four palpable glands in the right side of the neck beneath the sternomastoid muscle. The neck was treated by radium packs and the local lesion by 25 bare tubes in the tongue area for a total of 1830 mc. hours. Two years and four months after his first treatment he is free from all evidence of cancer.

CASE III.—A man, age seventy-three, was first seen by Doctor Dorrance June 25, 1923, at which time he had a squamous-cell carcinoma, which extensively involved the floor of the mouth, frenum of the tongue and mucosa of the lower jaw. His treatment which was commenced in June, 1923, and continued until June, 1926, consisted in all, of sixteen of bare tubes in the lesion. For all he had 61503 mc. hours radiation. At present he is free from all evidence of cancer.

The charts showing the total radiation and saturation curves for the above patients are included in the body of the paper.

DR. DAMON B. PFEIFFER asked whether Doctor Dorrance had given up bloc dissection of the neck in metastatic involvement. Not one of these cases was cured by radium; might they not have been helped by bloc dissection?

DR. A. P. C. ASHHURST said that some years ago Doctor Bloodgood pointed out that the only patients with cancer of the tongue or floor of the mouth whom he had been able to cure had been those whose disease was so far

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advanced when first seen that it was necessary to dissect the neck, the floor of the mouth, and the glands in one piece. In later years Doctor Bloodgood has announced that no case with metastases in the neck is worth operating on at all; since they all die. Doctor Ashhurst desired to ask Doctor Dorrance which view he thinks to be correct. Doctor Ashhurst also desired to know, when Doctor Dorrance speaks of ligation of the external carotid, whether he means merely ligation or whether he really means excision, in Dawbarn's sense. Doctor Ashhurst had found mere ligation of little effect in checking the blood supply because the collateral circulation is very free. However, if one doubly ligates the external carotid at the bifurcation and then doubly ligates the superior thyroid, the lingual, facial, posterior auricular, occipital, internal maxillary, and temporal arteries, and excises the trunk of the external carotid thus set free from all its branches, very little collateral circulation can develop, and if this operation is done on both sides of the neck simultaneously, or at intervals of a few days only, then the malignant growth is really starved; œdema will subside, and the patient will be temporarily relieved. If the growth invades the upper part of the neck it may be impossible, of course, to expose the external carotid as high up as its division into internal maxillary and temporal arteries. Under such circumstances Doctor Ashhurst had excised the lower part of the external carotid and ligated the main trunk as high as possible, and then doubly ligated and divided the temporal artery above the zygoma. He had observed in a few of his earlier cases, that where simple ligation of the external carotid had been done on one side of the neck, only, pulsation returned across the scalp by way of the temporals in a couple of days.

DR. GEORGE M. DORRANCE said that as the collateral circulation is so rapidly established after ligation, he now excises a portion of the artery. In cases with involvement of the glands of the neck, the speaker has never effected a cure by radiation or excision. Bloc dissection carries such a high operative mortality that it is rarely justified, in view of the unsatisfactory results. Regarding the results with radium, the speaker added that some cases are radium sensitive; some give good results in treatment and some do not. He believes that he gets better results from the introduction of radium than from surgery; the primary mortality is less and the time in the hospital is less. The best results were in cases where a positive biopsy was not obtained. It is remarkable the number of patients that are sent to the clinic with the diagnosis of cancer in whom biopsy reveals a benign lesion.

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DR. ALBERT E. BOTHE, by invitation, read a paper with the above title, for which see page 1028.