through the ureter. There are various sources of partial retention known to pathologists which I cannot now stop to describe, but the consequences are always the same; the urine is formed a little faster than it escapes, and hence the pelvis of the kidney is gradually distended. In the next place the pyramids are pushed back, the calyces are distended, and the whole organ becomes a lobulated sac. In other words, it is gradually unraveled, so to speak, and made to retrace the steps by or through which it was developed, and we have as a result an enlarged model of the lobulated foetal kidney, or a pattern of the kidney of the lower mammals. Meantime the circulation is partially arrested by pressure, nutrition is impaired, and there follows fatty degeneration of the epithelial cells of the compressed and wasting tubuli, as a simple and necessary pathological sequence. Meantime, also, the renal vein being more easily compressed than the renal artery, we have mechanical congestion of the Malpighian tufts, and the consequent transudation of serum; hence, "dropsical" kidney. Now, if the fluid from a well-marked and uncomplicated case of hydronephrosis be examined, we shall find that it contains granular cells precisely like the ovarian cells; in fact, in Dr. Jackson's case their identity with the true ovarian cells was perfect. I am able to speak with confidence on this point because only a couple of days after receiving the kidney from Dr. Jackson I had an opportunity of examining a specimen of veritable ovarian fluid, and of comparing the genuine ovarian cells with those found in the dropsical kidney.

In estimating the diagnostic value of the ovarian cells, therefore, we must remember that similar cells are found in cystic kidneys, and that we must be on our guard against mistaking a distended kidney for ovarian dropsy. I know of no other organ likely to be mistaken for an ovary, or in that region of the body from which such cells could be derived, so that it is probably safe to say that the "granular ovarian cell" is certainly diagnostic of either a cystic kidney or a cystic ovary.

NOTES ON CONTRIBUTIONS TO THE ARMY MEDICAL MUSEUM BY CIVIL PRACTITIONERS.

BY GEORGE A. OTIS, M. D.,

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THE first official notice of the collections constituting the Army Medical Museum appears in Circular 2 of the War Department, Washington, May 21, 1862. Here medical officers of the army "are directed diligently to collect and to forward to the office of the surgeon-general all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable." On January 10, 1863, Surgeon J. H. Brinton, U. S. V., printed a catalogue compiled

by Assistant-Surgeon W. Moss, U. S. V.,¹ with brief descriptions of 985 surgical and 106 medical specimens. Soon after the conclusion of the war the collections for the museum had so greatly augmented that it became necessary to revise their classification. Instituted primarily for the collection and preservation of specimens illustrating the injuries and diseases that produce death or disability during war, and thus affording materials for precise methods of study of problems regarding the diminution of mortality and alleviation of suffering in armies, the museum had received contributions relating to collateral subjects. Many pathological specimens not specially pertaining to military medicine or surgery had been donated. Many preparations of human and comparative anatomy had been received, a cabinet of microscopical preparations had been accumulated, models and drawings of hospitals, medical and surgical instruments and appliances in great variety, and many objects of ethnological interest had been contributed. Hence the surgeon-general directed the subdivision into six sections: (1) surgical, (2) medical, (3) microscopical, (4) human anatomy, (5) comparative anatomy, (6) miscellaneous. In 1866 quarto printed catalogues were published of the surgical,² medical,³ and microscopical⁴ sections, and, in 1876, check lists were printed of the sections of comparative⁵ and human anatomy.⁶ At the date of the surgeon-general's last annual report, June 30, 1877, the museum contained 19,797 specimens. The medical section with 1376 specimens, microscopical with 7525, and comparative anatomy section with 1824 specimens were in charge of Surgeon J. J. Woodward, U. S. A., and the surgical section with 6776, anatomical with 1816, and miscellaneous with 480 specimens in charge of Assistant Surgeon G. A. Otis, U. S. A., curator.

Of late years surgeons in civil practice have largely contributed to the museum, and it is purposed to avail, from time to time, of the hospitable pages of the *JOURNAL* to illustrate by selections from their donations how gratefully they are received. This first installment shall comprise some important surgical observations:—

¹ Moss (W.), *Catalogue of the Army Medical Museum, Surgeon-General's Office*, January 1, 1863. Octavo, pp. 58. Washington: Government Printing Office.

² *Catalogue of the Surgical Section of the United States Army Medical Museum*. Prepared under the direction of the Surgeon-General U. S. Army by Alfred A. Woodhull, Assistant-Surgeon and Brevet-Major U. S. Army. Washington: Government Printing Office. 1866. 4to. Pp. 664, describing 4719 specimens.

³ *Catalogue of the Medical Section of the United States Army Medical Museum*. Prepared under the direction of the Surgeon-General U. S. Army, by Brevet-Lieutenant-Colonel J. J. Woodward, Assistant-Surgeon U. S. Army, in charge of the Medical and Microscopical Sections of the Museum. Washington: Government Printing Office. 1867. 4to. Pp. 136, describing 877 specimens.

⁴ *Catalogue of the Microscopical Section of the United States Army Medical Museum*. Prepared under the direction of the Surgeon-General U. S. Army, by Brevet-Major Edward Curtis. Washington: Government Printing Office. 1867. 4to. Pp. 161, describing 2120 specimens.

⁵ *List of the Skeletons and Crania in the Section of Comparative Anatomy of the United States Army Medical Museum*. By Dr. H. C. Yarrow. Washington, D. C. 1876. 8vo. Pp. 52.

⁶ *Check List of Preparations and Objects in the Section of Human Anatomy of the U. S. Army Medical Museum*. By Brevet-Lieutenant-Colonel G. A. Otis, Assistant-Surgeon U. S. Army. Washington. 1876. 8vo. Pp. 135.

CASE I.—*Excision of the Head and Upper Third of the Right Femur for Coxitis and Caries*, by HUNTER MCGUIRE, Professor of Surgery in the Medical College of Virginia. The pathological specimen represented in the adjacent wood-cut (Figure 1) was contributed to the Army Medical Museum by the operator, January 3, 1873, and is numbered 6217 of Section I., the surgical section of the museum. Dr. McGuire forwarded with the specimen memoranda including letters from the patient, giving a history of his ailment, and notes by the clinical clerk of the hospital. Benjamin L. Davis, a farmer, of Ashmoore Post-Office, Southampton County, Virginia, aged thirty-seven years, of large frame, and formerly of robust development, wrote to Dr. H. McGuire, October 1, 1872, as follows: "I have been afflicted with disease of my right hip and thigh nearly three years. I thought it was rheumatism. I have had several doctors to tend me, and none have done me more than little good. My leg has shrunk away considerably from the hip downwards. I have been unable to walk without crutches for nearly two years, and I have suffered great pain at times. In January, 1872, a rising made its appearance on the thigh, about three inches below the hip-joint, which has been discharging yellowish, watery matter, and sometimes hard lumps of matter streaked with blood and sometimes clotted like cold bruised blood. Several pieces of bone have been discharged through the opening below the hip-joint. The largest piece is about the size of the little finger, and nearly a quarter of an inch thick. The doctors tell me I ought to go to some hospital and have my leg split open and the bone scraped, and they think by these means I would get well. They say it ought to be done by a surgeon experienced in such cases, but I do not know what would be best, and hope that you will give me your best and kindest advice on the subject. I am certainly in great need of relief. Please answer this letter as soon as you get it, and remember I shall need mighty good attention, or I shall not be able to stand my suffering. Let me know if you can do me any good, and if you conclude to take the case, tell me the terms at your institution, with directions, so that I can find you."

(FIG. 1.) Excised upper extremity of necrosed right femur.

Early in November Mr. Davis arrived at the Infirmary, in Richmond, attached to the Medical College of Virginia. He was placed on a good regimen, and carefully prepared to undergo the operation of excision of the upper portion of the right femur. The clinical clerk notes: "On November 18th the patient was anesthetized by chloroform, and the head and seven inches of the upper extremity were excised by Professor Hunter McGuire. The operation lasted one and a half hours. The wound was dressed with dilute carbolic acid in olive oil, one part to forty, and oakum. It was impracticable to straighten the limb on account of the contraction of the knee and the intense pain induced by attempts at extension.

"The limb was placed and supported by small bran cushions. Reaction soon came on. The pain following the operation was intense and continuous, though allayed by sulphate of morphia in half-grain doses, administered by the stomach at first, but more effectually afterwards by the same drug injected hypodermically, the dose being increased to three fourths of a grain, which gave comparative ease for three or four hours, when the patient would sleep, and a repetition of the anodyne would be required. Whisky was administered every half hour at first, and then every hour, until it was ultimately rejected altogether.

"November 19th, the patient suffered greatly with nausea, the stomach rejecting everything. Pulse 130. Morphia solution administered hypodermically, three quarters of a grain every four hours. Considerable bloody serum discharged from the wound. November 20th. Patient more comfortable. Half-grain doses of morphia every six hours. Nausea persistent; patient craves only ice-water. Outer dressings removed, wound cleansed, and dressings renewed. Discharge from wound diminishing. Had some good sleep during the previous night. Frequent liquid alvine evacuations were troublesome in the forenoon. Starch and laudanum injections were ineffectually administered, and in the afternoon dilute sulphuric acid with fluid extract of opium was given every four hours, and hypodermic injections of morphia were continued. November 21st. Patient improved; pulse 90; nausea less; diarrhoea. Took brandy at noon, and chicken soup. The anodynes were repeated when necessary. The local dressings were renewed. November 22d. Patient rested better; pulse 90; stomach retains food, including eggs, milk, and beefsteak. Diarrhoea still un-

checked, but less troublesome. Morphia, in half-grain doses, and brandy were administered thrice daily or oftener. November 24th. Patient improved. In the last forty-eight hours less irritable. Local and general treatment continued. November 25th. Pulse averages 90 in the forenoon, 100 in the evening. Appetite good; wound washed and dressed with carbolized lotions. Much excoriation of left buttock, to which applications of lime-water and lard were made. November 26th. Restless; anorexia; pulse 110. Increased the amount of anodyne medicine. November 27th. Great mental depression. At noon the pulse increased in rapidity, counting 150; whisky or brandy was given every two hours with milk. Glycerole of bismuth was applied to the left buttock. A pill of sulphate of iron and quinine and a draught with arsenite of potassa ordered every four hours. November 28th. Erysipelas invaded the wound. It is dressed with lime-water and lard. A bed-sore on the left buttock is dressed with bismuth. Great restlessness, and the morphia has to be repeated every two hours. Quinine and Fowler's solution were administered. Erysipelas dressed with white of egg, corrosive sublimate, and morphia. November 30th. For the last few days the patient was quiet only when under the influence of morphia. The mind was wandering, the abdomen tympanitic. There was copious expectoration of a dark mucous fluid. The patient sank, and died at six of the evening of November 30, 1872."

The specimen shows destruction of the articular cartilage and great erosion of the head of the femur. Evidences of grave osteitis extend far down the shaft. There was extreme rarefaction of the cancerous structure of the shaft, and it was so light that on maceration it even floated in pure sulphuric ether. The total weight of the excised portion of the bone was two ounces and eighty-six grains avoirdupois.

The next case has not been previously formally recorded, though I casually alluded to it in a foot-note at page 283 of Circular No. 3, S. G. O., 1871. In my report on Amputations at the Hip-Joint in Military Surgery, in 1867, I urged the propriety of classifying these operations into the four groups of primary, intermediary, and secondary operations, and reamputations. It was held that disarticulations at the hip succeeding prior amputations in the continuity of the thigh, or ablations of thigh stumps, differed widely in the risk attendant on them, and that the term reamputations, if awkward, was unlikely to be misunderstood. An analysis of Guthrie's Ciudad Rodrigo case, and of the seven reamputations at the hip practiced during the Crimean war, — six after amputations for shot fractures and one after a bayonet stab at the knee, — showed that the fatal results in four of the cases arose from generally avoidable causes, and that, in military surgery, a favorable result of reamputation at the hip might be usually anticipated, since the operation removed a source of irritation. After the reamputation at the hip in the case of Fabry, 4th U. S. artillery, in May, 1870, a pensioner who now enjoys robust health, Dr. Lincoln, who assisted me in that operation, concurred with me in the belief that the proceeding might have been less perilous if the exarticulation had been effected as in excision of the upper extremity of the femur, respecting the femoral and gluteal vessels. In Fabry's case, the huge involucrum, studded with massive osteophytes and enveloped with thickened periosteum, presented difficulties for such a proceeding, but it was thought that in most of the examples of necrosis of the femur following osteomyelitis the plan of enucleating the bone without disturbing the more vascular soft parts would be feasible.

CASE II. — Amputation at the Right Hip-Joint after Prior Amputation at Mid-Thigh for Shot Fracture of the Femur, by DR. N. S. LINCOLN, of Washington. Private W. Cotter, of Co. E, Ninth New Hampshire Volunteers, aged twenty-seven, was wounded at Petersburg, July 30, 1864. Surgeon J. Harris, Seventh Rhode Island, recorded a shot fracture of the lower third of the right thigh, for which primary amputation was performed. The patient was removed the next day to the field hospital at City Point, and thence, on August 3d, to

Douglas Hospital, at Washington. Assistant-Surgeon W. F. Norris, U. S. A., noted the supervention of osteomyelitis, which resulted in the formation of a cylindrical sequestrum nearly six inches long, numbered 252 Army Medical Museum, and indicated in the left-hand figure of the three specimens shown in the wood-cut (Figure 2). This was removed on November 29th. A large involucrum remained, and a persistent fistula which refused to be entirely closed. On November 2, 1865, the patient was transferred to Harewood Hospital, and subsequently to the Washington Post Hospital, where, on June 6, 1866, Assistant-Surgeon W. Thomson, U. S. A., finding it impossible to close the sinuses leading to the hyperostosed

(Fig. 2.) Patient after reamputation at the right hip.

extremity of the femur, resected two inches of the bone (Specimen 4954, Army Medical Museum) the right of the three specimens shown in the wood-cut. The wound healed kindly, but with the same interminable fistulous track. On October 15, 1866, the probe still led to necrosed bone at the extremity of the femur, and the patient was discharged and pensioned. The following year the patient was stationed for a time at Bellevue Hospital, New York, where he stated that Dr. H. B. Sands and Dr. F. H. Hamilton at different times removed portions of necrosed bone. On October 5, 1871, the pensioner Cotter entered the Providence Hospital, Washington, and on October 15, 1871, Dr. N. S. Lincoln exarticulated the head, neck, and trochanters, with what remained of the shaft of the femur, represented in the middle of the specimens shown in the wood-cut. The femoral vessels were respected, so that the disarticulation might be said to have resembled an excision rather than a reamputation. The patient was able to be about in a short time, and, on April 22, 1872, he visited the Army Medical Museum, and a photograph was made of the stump, which is copied in the adjoining wood-cut drawing (Fig. 2). Subsequently, the pensioner entered the National Military Asylum at Elizabeth City, Virginia. Examiner McDermott certified that there were occasional abscesses about the cicatrix, impairing his health by the constant irritation and drain upon the system. Cotter died at Queenstown, Ireland, January 21, 1874, while on a furlough from the asylum, nearly ten years after the reception of his injury.

There are thirty-two recorded examples of reamputations at the hip, with eighteen recoveries and fourteen deaths, or a mortality-rate of 43.7. Sixteen may be classified as disarticulations for traumatic and sixteen for pathological causes.

Eleven cases belong to military surgery; of these, nine succeeded amputations in the thigh for shot fracture, namely, Guthrie's, 1812, G. Buck's, 1864, Haszenberg's, 1864, and Whitcomb's, 1866, fatal cases, and Packard's, 1865, Fauntleroy's, 1865, T. G. Morton's, 1866, Otis's, 1870, and Lincoln's, 1871, recoveries. Two disarticulations at the hip succeeded amputation for stabs in the knee-joint, — A. Mott's, 1864, successful, Fayrer's, 1867, fatal.¹ Five exarticulations followed amputations for bad fractures of the femur, namely: Syme's, 1848, Roux's, 1859, recoveries; Heyfelder's, 1861, fatal; Fayrer's, 1864, recovery; Fayrer's, 1865, fatal.² There were eight exarticulations following amputations for ostitis, osteomyelitis, caries or necrosis, the causes of the original mutilation being sometimes undefined, namely: A. Cooper's, 1824, Bradbury's, 1851, Beck's, 1856, and Roser's, 1857, successful; and Textor's, 1851. Chelius's, 1853, Heyfelder's, 1854, and Hancock's, 1860, fatal.³ There were also eight exarticulations following amputations for malignant or heterogeneous growths, namely, Mayo's, 1835, Boisseau's, 1841, W. S. Cox's, 1844, Van Buren's, 1850, Gros Clark's, 1866, recoveries; and Chelius's, 1845, Volkmann's, 1868, Lister's, 1872, fatal cases.⁴

The formation of vesical calculi about gunshot projectiles that have lodged in the bladder is a rare complication that has been noticed since early times. Dionis, Cheselden, and others, have recorded examples of such concretions removed by lithotomy. Perhaps the earliest instance is recorded by Covillard, and dates from 1633. In 1850, Mr. J. Dixon (*London Med.-Chir. Trans.*, vol. xxxiii., p. 199) was able to enumerate sixteen cases of vesical calculi removed by lithotomy, and three in which they were found in the bladder after death. In vol. ii. of part ii. of the *Medical and Surgical History of the Rebellion*, pp. 269–299, a number of analogous instances are described, and many of the specimens are figured. A large phosphatic calculus from a soldier, shot through the sacrum at Gettysburg eight years previously, was successfully removed in November, 1871, by Dr. Samuel Cabot, of Boston, and is now preserved in the cabinet of the Society for Medical Improvement, and a full description is printed in the proceedings of the society in this *JOURNAL* for 1872, vol. ix., N. S., page 169. To the collection of the Army Medical Museum, already rich in such specimens, the following has recently been added:

¹ Guthrie's case is recorded in his *Treatise on Gunshot Wounds*, 3d ed., London, 1827, p. 332; and the cases of Buck, Haszenberg, Whitcomb, Packard, Fauntleroy, and Morton in *Circular 7*, S. G. O., 1867, pp. 47–55. Otis's and Lincoln's in *Circular No. 3*, S. G. O., 1871, p. 215 and p. 283; A. Mott's in *Hamilton's Treatise on Military Surgery*, 1865, p. 629, and Fayrer's in the *Med. Times and Gaz.*, 1867, vol. ii., p. 483, and Fayrer's in *Clin. and Path. Obs.* in India, London, 1873, p. 499; Packard's case is also recorded in *New York Med. Jour.*, 1865, vol. ii., p. 165; Fauntleroy's in *Richmond Med. Jour.*, 1866, vol. i., p. 7; and Morton's in *Am. Jour. Med. Sci.*, 1866, vol. iii., p. 17.

² Syme's case is recorded in *Edinb. and Lond. Monthly Jour.*, 1848; Jules Roux's in *Gaz. hebdom. de Paris*, 1860, pp. 292 and 297; Heyfelder's in *Deutsche Klinik*, 1862, S. 275; Fayrer's two cases in *Clin. and Path. Obs.* in India, 1873, p. 489.

³ A. Cooper's case was first published in *London Lancet*, 1824, vol. ii., p. 96; Bradbury's in *Boston Med. and Surg. Jour.*, 1852, vol. lxi., p. 349; Beck's in *Deutsche Klinik*, 1856, No. 47; Roser's in *Thieme's Diss.*, Leipzig, 1867, p. 9; Textor's in *Esche's Diss.*, Würzburg, 1863; Chelius's in *Thieme's Diss.*, Leipzig, 1867, S. 8; Heyfelder's in *Thieme's Diss.*, Leipzig, 1867, S. 8; and Hancock's in *London Lancet*, 1860, vol. i., p. 319.

⁴ Mayo's case is reported in *Costello's Cyclopædia of Surgery*, 1841, vol. i., p. 182, and S. Cooper's *Diet. of Pract. Surgery*, 8th ed., 1861, p. 117; Boisseau's in *Metz's Diss.*, Würzburg, 1841, S. 17, and *Schneider's Diss.*, Würzburg, 1848, S. 14; W. S. Cox's in *A Memoir on Amp. at the Hip-Joint*, London, 1845; Van Buren's in *Contrib. to Pract. Surg.*, Phila., 1865, p. 10; Gros Clark's in *London Lancet*, 1867, vol. i., p. 11; Chelius's in *Bruch, Die Diagnose der bösartigen Geschwülste*, Mainz, 1847, p. 3; Volkmann's in *Deutsche Klinik*, 1868, p. 388, and *Völtner's Diss.*, Halle, 1868, and Lister's in *Reyher's Ueber die Lister'sche Wundbehandlung*, in *Langenbeck's Archiv*, B. xvii., p. 516.

CASE III. — *Successful Lithotomy for the Removal of a Vesical Calculus having a Fragment of a Musket Ball as its Nucleus*, by HENRY F. CAMPBELL, of Augusta, Georgia. The subject of this operation was private W. B. Griffen, a Confederate soldier, of a South Carolina regiment. He was wounded July 3, 1863, at the battle of Gettysburg. He returned to Abbeville District after the war, and remained there till operated on for the removal of the stone, January 22, 1868, a period of over four years and a half. The patient was the subject of a shortened and distorted union of a fracture in the upper part of the right thigh, produced by a minie-ball, and had suffered from symptoms of vesical irritation and more or less trouble in passing water from the first moment of the reception of the wound. A large portion of the distorted ball was removed from the neighborhood of the fracture by the field surgeons at the time the case was first examined. When I removed the ball by lateral operation its weight was four and one half ounces. The composition of the concretion is supposed to be mainly phosphate of lime. This patient left the hospital at Augusta, perfectly well, in twenty days, and returned to his plowing forty days after the operation. The edge of a flattened ball was found exposed on the under surface of the irregularly shaped concretion. I think that the lead was arrested in the neck of the bladder, and that the concretion deposited about it in that situation; hence the stone was partly in the bladder and partly projecting into the neck of the viscus.

(FIG. 3.) Section of a vesical calculus formed about a fragment of a musket ball. Specimen 6732, Army Medical Museum, $\frac{1}{2}$.

Vesical calculi having nuclei of bone fragments are also very rare. Since the late civil war in this country, three instances have been reported in which bone splinters driven into the cavity of the bladder have been found to be the nuclei for depositions of calcareous matter, forming concretions that were successfully removed by lithotomy (Med. and Surg. Hist. of the War of the Rebellion, vol. ii., part ii., pp. 277, 278.) The specimen from a fourth case has been contributed to the Army Medical Museum, by Dr. Henry F. Campbell.

CASE IV. *Successful Bilateral Lithotomy for a Vesical Concretion with a Fragment of Bone as a Nucleus*, by HENRY F. CAMPBELL, of Augusta, Georgia. The subject of this operation was Colonel M. J. Crawley, of Holcomb's Legion, a South Carolina Confederate regiment. "He was wounded in action near Malvern Hill, July 28, 1864. The ball entered in front, somewhat to the left of the symphysis pubis, perforating the body of the bone and traversing the bladder, and passed out near the fold of the left buttock. At the time of examination, September 26, 1868, there was great vesical irritation. Very little urine passed by the urethra; nearly all was discharged through the fistulous track of the ball which had traversed the pelvis. This track had been open almost continuously since the receipt of the wound. He seemed to have a fair degree of control of the urine, and did not pass water through the fistulous track until, in his own language, "he was called on to void it." His youngest child was some months over four years of age. On September 28, 1868, Dr. Henry F. Campbell removed the calculus. A section of the concretion, half the size of nature, is represented in the adjacent wood-cut (Figure 4). The nucleus was found to consist of a spiculum of laminated bone detached from the pubic wall and imbedded in concentric layers of magnesian phosphate. Four years and two months had elapsed from the date of the reception of the injury until the operation. Secondary hæmorrhage occurred on the tenth day, but was arrested by pressure. The patient recovered rapidly. Virility was restored, and he became the father of another child within one year after removal of the stone. The notes above given are briefly compiled

(FIG. 4.) Vesical calculus formed about a nucleus of bone. Specimen 6733, Army Medical Museum, $\frac{1}{2}$.

from the manuscript of a paper on lithotomy and the pathology of the calculous diathesis which I had prepared for the Centennial Medical Congress. I submitted a synopsis of my paper, but did not get it ready for publication in the Transactions. If it is ever published anywhere I will take pleasure in sending to the National Medical Library a full report of my forty or fifty cases of lithotomy."