from the tumor. This case shows that these large masses are at times malignant. In the second procedure help was derived by liberating the peritoneum from the adjacent extraperitoneal tissues. In this way adhesions were avoided.

DR. EMMET RIXFORD, San Francisco, mentioned a similar case occurring in a young woman of 27 who had been pregnant some time before the tumor was discovered. The tumor grew slowly but continuously and when operated on it measured 4x8 inches. It was somewhat the shape of a modern football, was smooth in outline and situated in the anterior abdominal wall at the outer edge of the left rectus muscle. The operation was simple. The growth, which was situated in the internal oblique muscle, was simply shelled out. The peritoneum was not opened. The muscles were drawn together with chromicized cat-gut and wound closed. Although the operation was done some ten years ago and the patient has since been through two childbirths there has been no recurrence of the tumor and no hernia. The tumor was diagnosed as sarcoma but it was definitely a desmoid, although the pathologist was unable positively to exclude malignancy because some of the areas in the tumor were evidently sarcomatous while other areas were apparently of simple fibrous tissue.

DR. ALEXIUS A. MCGLANNON, Baltimore, stated that recently he had a similar tumor for three years. After operation the patient was free from the growth for fifteen months and then it recurred and was again removed. The first tumor was a soft fibroma, while the second showed all the varieties of malignant connective tissue tumors. It was lobulated, some lobules showing fibro-spindle-cells sarcoma, and some mixed spindle and round cells. The second operation was only done in May, so that Dr. McGlannon does not know the results. The fact that the tumor became more prominent after contraction of the abdominal muscles was considered important, indicating a superficial position; but the tumor involved the entire thickness of the wall from subcutaneous fascia to peritoneum, and became prominent when the muscles were contracted because of intra-abdominal pressure.

DR. J. P. CONNELL, Fond du Lac, Wisconsin, reported two cases, one of which was a tumor of the rectus muscle, the size of an egg, which has not recurred. The second case occurred six months ago, and the tumor extended from the erector spinæ almost around to the ribs. He took a section of the growth and the pathologist reported a fibroma; he then advised removal. He dissected the growth out from the rectus muscle, a great deal of which was involved, as were several other abdominal muscles. The attachment extended to the periosteum of the ribs and in operation he removed a section of several of them. The patient made a good recovery. In his dissection he made a large flap and after turning out the growth stitched the flap back into place.

DR. O. O. WITHERBEE, Los Angeles, reported a case involving the left rectus muscle following an operation for salpingitis. The microscope gave a spindle-cell appearance but not exactly of the sarcomatous type. To have removed it would have left the patient without any abdominal wall, and he therefore advised using the Coley fluid. The patient had been reduced in weight to 85 pounds when beginning the serum, so that the prognosis was most unfavorable. He used the serum under protest, but it looked like a last resort. At first it was used every other day, in sufficient quantity to produce a reaction; in a few weeks it was used every third day, and later every fourth day, until after six months it was used only once a week. The patient now weighs 120 pounds, and there is only just a suspicion of the tumor left.

DR. JACOB A. FULTON, Astoria, reported a case of fibroid tumor of the abdominal wall on which he operated 16 years ago. At that time he considered it a rare disease for he found few reported cases. In its removal a portion of the peritoneum about the size of a dollar was removed and although the patient had secretly eaten a large number of dried prunes before the operation, and vomited prunes in large quantities, the operation was successful and no hernia followed. There has been no return of the disease.

DR. L. L. MCARTHUR, Chicago, mentioned one case of this type which well illustrates the difficulties of diagnosis. The

growth was so mobile that it was transferred from the gynecologic to the surgical department of the hospital. On opening the abdomen Dr. McArthur found a tumor with a broad, flat ribbon-like base extending from nearly the umbilicus to the symphysis. He thought that he had to deal with a long pedunculated uterine fibroid. The interne, in his bi-manual manipulation, had been able to detect that when the tumor was pushed down the abdominal wall was also dragged down, especially under the right rectus.

DR. MAURICE H. RICHARDSON, Boston, stated that Dr. Wiloughby's reference to Coley's treatment brought to his mind an inoperable case of fibrosarcoma of the abdominal wall so successfully treated that a hernia developed in the scar of exploration through a space occupied originally by six or eight inches of dense tumor. Dr. Richardson has seen several cases of fibroid tumors of the abdominal wall. Whether they were of the desmoid variety or not, he cannot say. The practical point in the treatment of any neoplasm extensively involving the abdominal wall is the closure of the gap left by its removal. He has recently succeeded in filling in the gap left after removing the muscles of the left lower quadrant, which, with a portion of the os pubis, had been involved in the fibrosarcoma of great extent. The muscular belly of the tensor vaginæ femoris, with the fascia lata, was reflected from the thigh and sutured to the edges of the gap, as shown by these blackboard drawings. A firm and serviceable abdominal wall has resulted.

DR. CHARLES A. POWERS stated that it is difficult to distinguish between certain types of fibromata and sarcomata, and that the best that can be done is to get a reliable pathologist's report on the tumor. Dr. Powers stated that his paper dealt only with fibromata. In referring to Dr. Richardson's case Dr. Powers quoted Dr. Jacobi of New York who reported a case of extremely high temperature which he had observed; a number of men disputed the accuracy of his observation whereon Dr. Jacobi said that when the clinical facts collide with previously existing scientific knowledge the latter goes to the wall and the facts stand. Dr. Powers said that he is quite ready to accept Dr. Richardson's conclusions.

CYSTS OF THE SPLEEN.*

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Splenic cysts, unaccompanied by cystic formation in other structures, do not often occur. The classes found are: 1, Dermoid cysts, one of this type being reported by Andral; 2, simple, serous, or blood cysts, of which a few cases have been reported; 3, echinococcus cysts. Although the latter usually occur in association with similar cysts in other organs, there are reported, according to Coen, as quoted by Douglas, 61 cases of solitary splenic cysts, although the spleen is involved in only from 1 to 3 per cent. of human echinococcus.

The etiology of cysts of the spleen in the case of dermoids and echinococcus may be summarily dismissed with the statement that it is the same as in other structures. Simple serous or blood cysts are of more interest. They are called by the last name of the three by certain authors from the fact that they are all thought to occur from an extravasation of blood within the organ or its capsule, the sanious contents remaining indefinitely or being replaced by a fluid, sometimes clear, sometimes straw-colored. Others, however, attribute the serous and the blood cysts to different causes. Andral reported a case of simple serous cyst in the center of the spleen, and Leudet a multilocular cyst in a spleen that was not enlarged. Boettcher found a multiple serous cyst in an amyloid spleen and noted that some of the

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cysts were traversed by fine trabeculae of connective tissue. He attributes the cause of these cysts to occlusion of the arterioles, due to the amyloid change with fatty degeneration and ultimate softening and sloughing of the splenic parenchyma. For the most part, however, we can say that serous cysts in the spleen are formed precisely as elsewhere. The enlargement and the associated changes accompanying chronic malaria seem to favor the formation of splenic cysts, as is shown in the case of Livois, Marcano and Fereol, Spencer Wells, H. C. Cutcliffe, Giuliano, and myself.

Blood cysts are found more frequently than simple cysts, and essentially follow hemorrhage into the splenic substance or, as happens in the majority of cases, just beneath the capsule. This variety of cyst forms more rapidly than any other, in the nature of the case. However, full development is not necessarily reached early. In Crd's case ten years intervened between the time of traumatism and of operation. Irregular development is seen in some of them, periods of rapid increase alternating with periods of quiescence, caused by additional hemorrhages.

Cysts of the spleen contain a capsule, lined with endothelial cells, except dermoids, which are lined with epithelium. The capsule is made up of fibrous tissue containing now and then unstriped muscle fibers. In Foerster's case the cyst was surrounded by cartilage. Hydatids give us a more complex capsule, externally is a more or less complete layer of fibrous tissue, adventitious in origin, the cuticular membrane separating, as it were, the structure of the containing organ from the echinococcus capsule proper, the endocyst. This inner wall collapses and curls up when removed, has a characteristic lamination of seven or eight layers, and has a gelatinous appearance. The endocyst has an external wall and an internal, the former having the appearance of "highly elastic, lamellar cuticle," the latter that of "granular matter, cells, muscle tissue (unstriped), and a water-vascular system," according to Sutton. Extending from the lining of the hydatids we expect to find daughter cysts, although it is a well-known fact that they are not uniformly present.

The simple serous cyst contains a fluid varying from clear colorless to straw-colored. In this fluid are to be found sometimes a small amount of dbris from more or less completely broken down cells. The specific gravity varies from 1000 to 1028 or 1030, and Ruess has formulated a table to determine the amount of albumin approximately from the weight of the fluid, the essence of which may be stated thus: Below 1008 there is little or no albumin; at 1008 the albumin is 0.2 per cent., and for each point of increase in specific gravity there is between 0.3 per cent. and 0.4 per cent. increase in the amount of albumin, being nearer 0.4 per cent. than 0.3 per cent. For example, at 1008 the amount, as stated above, of albumin is 0.2 per cent.; at 1009 it is 0.6 per cent.; at 1010 it is 1.9 per cent.; at 1011 it is 1.3 per cent. It must be remembered that hemorrhage into a simple cyst will give contents similar to an original hemorrhagic cyst and will thus produce confusion as to the original nature of the fluid. However, it is claimed by some, as mentioned already, that the simple cyst of the spleen originates from hemorrhage.

Blood cysts of the spleen have been found far more frequently than simple cysts. Yet, as Loomis and Thompson claim, it is probable that some of these are simple cysts into which bleeding has taken place. The same characteristics of fluid are seen that blood may as-

sume when long confined anywhere in the body. The color of the fluid is black, brown, reddish yellow, red or yellow, and if the cyst is of long standing the contents vary in consistency according to the extent of absorption and the abundance of serum.

In reviewing the cases of cystic spleen exclusive of echinococcus it is found that the contents vary largely in the proportionate distribution of the chief constituents. The fluid is degenerated blood in most cases and may contain red and white blood cells, cholesterin crystals and shreds of tissue. A case reported by Pean had calcareous granules in the fluid. Terrier's case had blood clots which brightened on contact with oxygen. Piccinelli reports an ossified cyst of the spleen. It is rare to find a splenic cyst in which the greater part is made up of cholesterin. Andral, in 1829, found a splenic cyst with fibro-serous walls whose interior contained fatty matter, like tallow, in the midst of which some hairs were scattered. This has been classified as a dermoid cyst.

Echinococcus fluid is clear, free from albumin, neutral or alkaline in reaction and of a specific gravity of 1004 to 1010. Small amounts of grape sugar and albumin are at times found, but the specific gravity, according to Ruess' table, can not allow large percentages of albumin. Inorganic salts occur in considerable amounts, while inosit and succinic acids are occasionally seen; traces of urea and creatin have also been found. Boinet and Chazoulier discovered and isolated the toxic ptomaines of this fluid. The best evidence is in the hooklets and scolices of the parasite. Besides these there are observed at times shreds of faintly yellow membrane. These alone constitute a positive diagnosis of hydatids, and yet these microscopic findings are not always present. Virchow was the first to recognize the true nature of echinococcus multilocularis which had theretofore been accepted as colloid carcinoma. Numerous small round cavities filled with a gelatinous fluid constitute in the aggregate a large mass resembling a tumor. The central cavities are often found broken down, or fused, as it were, into a large cavity. Here scolices are rarely found. Daughter cysts become separated occasionally from the maternal growth and lie loose in the fluid, escaping, it may be, in great quantities with the liberated contents. When the primary cyst produces no buds, it is called acephalocyst.

Cysts of the spleen, when small and uncomplicated, present no symptoms and pass unnoticed to the post-mortem table or to the grave. When, however, complications or considerable size become features of such a cyst or cyst group, then physical signs and symptoms are present, although they are, by no means, always clear enough to make a diagnosis. Out of seventeen cases in which attempt was made to show some previous or present possible etiology there were five cases preceded by traumatism, five by malaria and two by both. One patient died of mitral affection and two of Bright's disease. One patient developed the initial symptom during an attack of mumps. One developed immediately after parturition, and a second followed parturition, succeeded shortly by trauma. So that we see seven out of seventeen had a history of malaria, in some of whom enlargement of the spleen had been recognized before the cyst formed; and eight, not including one parturient patient, had traumatism over the spleen. Where sex is mentioned the division is equal. The youngest patient having simple or blood cyst was 7 years old. The patient, if the cyst be large enough to call his attention

to the fact that a tumor is present, gives a history of the first appearance being in the left hypochondrium and growing down from under the ribs. This he may reduce with more or less completeness back into the original site, but such restoration is, of course, limited by the size of the growth and the extent and density of adhesions. Out of eleven cases of simple and blood cysts only two were fixed. Recognition of cyst development in a misplaced or wandering spleen would be a practical impossibility unless diagnosis of the wandering spleen had been made before cyst formation had begun. In Bardenheuer's case the spleen was in the pelvis. Pressure symptoms and those produced by dragging are the chief subjective evidence that anything has gone wrong. Adhesions aid these in producing symptoms in the case of echinococcus. The habits of a patient or his place of abode may give beneficial help to determine echinococcus, but these have no bearing on simple serous or blood cysts, except in so far as malaria is a causative agent. Nausea and vomiting, together with pain in the left hypochondrium, occur. By pressure, retention of the feces or obstruction of a ureter occurs, or pressure against the diaphragm, heart and lungs is so intense as to produce dyspnea. Some of the cases have had severe colics and some have developed ascites and edema of the legs. Mosler has stated that pain is an early symptom in echinococcus of the spleen, beginning in the left hypochondrium and extending into the lumbar region. In Martineau's case pressure of the enlargement on the lumbar plexus caused pain in the left lower extremity, diminished tactile sensibility and flexion at the hip joint.

The tumor, if large enough to palpate, is found to be movable and easily reducible into the original splenic site in all of those cases of cysts which have not become inflamed and adherent or which are not too large, and in echinococcus which habitually produces more or less peripheral adhesions to adjacent structures so that we may not be surprised to find it thoroughly immovable by manipulation and respiration, and we rarely expect to see it movable without any limitations except the normal supports of the spleen.

The growth may present a fluctuating mass or, if echinococcus, may give the hydatid thrill, but by no means constantly. This is absent in 50 per cent. of cases, especially in solid or deep cysts, and it appears in other conditions, viz., ascites and ovarian tumors, some authors claiming higher frequency for it in the latter conditions. Hence, its diagnostic value is little. The surface may be smooth and even or give a lobulated presentation to the hand, caused by multiple or multilocular cysts.

On aspiration the fluid found will give a clue to the diagnosis. But when suppuration has occurred the characteristics are so obscured as often to be worthless. If there is any probability of such a cyst being hydatid or having suppurated, aspiration should by no means be resorted to for diagnostic purposes.

Differential diagnosis may be made between cystic spleen, on the one hand, and, on the other, abscess of the spleen, ovarian cysts, pancreatic enlargement, hydronephrosis, cysts of the mesentery, and hypertrophied spleen as found in malaria and leukemia. The site of the tumor, the direction of its growth, its attachments or, what amounts to the same thing, the directions in which it may be moved, the pressure and traction symptoms, the constitutional condition of the patient at the time and prior to the beginning of the growth taken to-

gether make it possible in some instances to differentiate correctly in these rare cases. In others, even the majority, the surgeon simply will recognize that he has a surgical condition, changing or confirming his first opinion on opening the peritoneum.

Spleen cysts last for years without producing symptoms, remaining in *statu quo*, or gradually or suddenly attaining large size. Echinococcus cyst may terminate by complete disappearance, due to death of the echinococcus or to deprivation of nourishment from calcification of the walls; the more usual termination, however, is by suppuration, or rupture, which may take place into any hollow viscus and allow escape of the fluid, producing a cure; or perhaps into the pleural cavity, causing violent symptoms and even rapid dissolution, or into the lung. The escape of hydatid contents into the body cavities is capable of producing secondary hydatids, as demonstrated by Martin's case. His patient, 37 years old, had had hydatids of the liver ten years and felt something give way in the upper abdomen. Shortly afterward he had pain in the back and the epigastrium, nausea, vomiting and rapid emaciation. On operation the cyst was found ruptured and both visceral and parietal peritoneum were covered with hydatids from the size of a nut to the size of a hen's egg. Though serious, perforation into the peritoneal cavity is not always fatal. Skoda narrates a case in which the principal symptoms were pain, rigors, wiry pulse and cyanosis. Patient recovered.

Henoch claims that the urticaria which sometimes follows the removal of the fluid is due to escape of a few drops into the peritoneal cavity.

The final outcome of cysts of the spleen varies with the type of cyst and the course it pursues. Small simple cysts cause no trouble. Larger cysts produce a more unfavorable prognosis. Blood cysts are more prone to grow, owing to repeated hemorrhages occurring within them. Echinococcus may rupture into a viscus and escape to the outer world, producing cure, or into an internal cavity resulting in death. When abscess formation follows a cyst the prognosis is that of the former. Complete cure follows these cysts rarely, by absorption, shrivelling and calcification of the capsule. This happens in echinococcus only when the tenia is dead, not invariably then.

I lay down as the first rule for treatment that these cases should be operated on by incision, not by puncture, if the cyst is large enough or is producing symptoms enough to demand treatment; I might more correctly, I believe, say if the cyst is sufficiently large to produce clear physical signs, whether the cyst belongs to one or the other variety, for in absence of hydatids elsewhere one can not make accurate differential diagnosis between them. Splenectomy is to be done in those cases in which the organ is so perfectly destroyed as to render it of no further service and not so completely adherent that its removal becomes hazardous. In cases where the spleen is not absorbed and in those where manifestly it can not be removed with safety, the better procedure will be to drain the sac after suturing to the abdominal wound. Giuliano, in an article on blood cysts, states that diagnosis can not be accurate, and then advises either puncture or celiotomy, leaning to the former, if one may judge from the text. Splenectomy, he says, is not warranted in this class. In his researches he has found 15 cases besides his own. Excision of the spleen seems to me a far more judicious operation than simple

removal of the diseased area. Hemorrhage can not fail to follow the latter far oftener than the former.

Tapping, injections and excision have no field for usefulness; the treatment must be splenectomy or open cyst drainage. If, however, one can sufficiently assure himself that the cyst is serous or hematic, then aspiration once or twice cures; and, if on reaching the spleen and aspirating, there is no doubt of the condition, a cure may be relied on if all the fluid is removed and the wound closed.

I could find records of eleven patients with serous or blood cysts treated by aspiration, all of whom recovered; eight cases of splenectomy, including my own, in all of which cure followed. One patient was marsupialized after curetting, cured; four patients were treated by injection of caustics, two of whom died; two patients were treated by resection and cautery, both recovering.

My own case is as follows:

REPORT OF A CASE.

History.—Mrs. H. L. S., white, age 39, came to me November 24, 1904, being referred by Dr. J. H. Laws. Patient is American born, housewife. Her father died at 61 years of age of apoplexy. Remainder of her father's family living in good health. She is the mother of six children and had no disease except those of childhood, and "fever" when small. Three years ago she had tertian chills for a period covering about one year. In August, 1903, she first noticed an enlargement in her left hypochondrium, which gave her no pain until the spring of 1904, although it grew steadily. She complained of pain under the left scapula which ran forward and down the left side. Oppression in the region of the heart. The pain under the scapula was increased by pressure on the tumor. There was a dragging, pulling sensation in the hypochondrium. She had noticed an increasing shortness of breath on exertion; this had not been present previous to the development of the tumor. She had lost 14 pounds weight in the past year. She has, for the last month, had considerable nausea and vomiting.

Examination.—There was present on examination an enlargement extending from the margin of the ribs at the left hypochondrium to within three or four inches of the pubic arch. Fluctuation was present, the mass was fairly movable, moved on respiration, and could be reduced into the space underneath the left margin of the thorax, but escaped immediately on removal of the hand. There was no leucocytosis.

Diagnosis.—Multilocular cyst of the spleen.

Operation.—The abdomen was opened through the left linea semilunaris, the incision being six inches long. The cyst was more easily approached through the transverse mesocolon, owing to adhesions between this structure on its upper surface and the spleen. The growth with the spleen was removed without being opened; but on cutting the vascular attachment and attempting to lift the tumor out of the abdomen, cystic fluid escaped through one of the vessels and dropped into the pocket whence the tumor was removed. Hence, not knowing but that I had echinococcus to deal with, the edges of the space were sutured to the wound, which was drained for a few days. The patient left the hospital on the twenty-first day, entirely recovered.

The cyst wall was at places very thin; there were several large pockets intercommunicating, and the splenic substance was obliterated except an ounce or two. The cystic spleen weighed two and one-half pounds. The fluid was clear and colorless. Specific gravity 1006, contained no scolices or hooklets and no albumin. The lining of the cavity contained no epithelial cells and was smooth and glistening and easily separated from the surrounding tissue. The wall was laminated fairly well and contained white fibrous and a small amount of unstriped muscle tissue.

This was, it seems, a case of simple cyst of the spleen and the only etiology discoverable was the fact of a long

siege of malaria preceding the formation. I have been unable to determine the connection between cysts of the spleen and enlargements due to malaria.

REVIEW OF CASES OF SPLENIC CYSTS.

Without presuming to make a rigid classification, I give below a brief review of the cysts of the spleen covered in the literature.

DERMOID CYST.

1. ANDRAL: Dermoid. Fibro-serous walls: containing a fatty matter, like tallow, and hairs scattered throughout.

SEROUS CYSTS.

1. GARCIA: Man, age 36, syphilis six years ago, tertian fever cured by quinin; fall from horse causing contusion of abdomen followed soon; one month later localized pains in abdomen; digestion poor, enemas required. Tumor in left hypochondrium, which grew still another month. Puncture liberated odorless gas and tumor diminished; next day second puncture liberated quart of fluid color of white wine, clear, transparent sp. gr. 1004, contained albumin and sodium chlorid. Another puncture after three months, 300 grams; cured.

2. GAUGET: Laborer, age 46, alcoholic history, dyspnea on exertion for some months. Symptoms of asystole. Died in collapse. Autopsy: Spleen slightly enlarged and contained yellowish liquid in rounded regular pocket size of hen's egg, and a second the size of a walnut.

3. LEUDET: Multilocular serous cyst: volume of spleen normal, surface normal. Cavity of four or five cells in splenic tissue; fibrous wall pavementous endothelium, and contained serous liquid. This was in a woman 60 years old who had mitral affection.

4. FOERSTER: Serous cyst of spleen with cartilaginous wall seen in the collection at Wurzburg.

5. CREDE: Man, age 44, pain five days following trauma over spleen. Tumor size of fist one year before operation in left hypochondrium; grew rapidly to size of fetal head fluctuant, mobile fixed at upper part; confused with hydronephrosis. Splenectomy. Cured. Fluid yellow, limpid, with numerous cholesterolin crystals.

6. MATTEI: Autopsy: Man, age 68; spleen weighed 370 grams; tumor size of orange, calcified at points on surface, cartilaginous at other points. Fluid yellow, transparent, contained albumin. The central cyst was size of turkey's egg and had seventeen smaller ones surrounding it. Under microscope, cholesterolin, formless masses of lime salts, granulous globules and proteid detritus.

7. WILKS: Old woman died of Bright's disease. Cysts also in kidneys. Cysts of spleen size of walnut and a few smaller on surface. Lined with smooth membrane and contained serum. Says another similar specimen from a man who died of Bright's disease is in Guy's museum.

8. KLIPPEL & LEFAS: Man, age 71, attacked long ago by parietic phenomena of four extremities. Autopsy: Spleen weighed 235 grams, and contained a cyst the size of a large walnut, enclosing a clear yellowish liquid, a second cyst size of small walnut, easily nucleable.

9. BOTTCHER: Multiple serous cyst, amyloid spleen, cysts varied in size from flaxseed to pea, some of them traversed by fine reticulated trabeculae. Lined with single layer of flat endothelial cells. Due, he thought, to occlusion of arterioles, from amyloid degeneration of their walls, with fatty degeneration softening and sloughing, in parts of spleen pulp.

HEMATIC CYSTS.

1. E. BOCCIA: Male, age 24, traumatism over spleen six years ago; pain for some days. Had had present disease three and one-half years. Pains increased with tumor in left hypochondrium. Diagnosis splenic tumor. Puncture. Cured. Dense chocolate-colored liquid, alkaline, and had physico-chemical characteristics of blood. Evacuation next day by incision under cocaine, on reaching cyst drew off 2,140 grams of fluid by trocar. Sutured wound. Healing per primam.

2. W. MINERVINI: Woman, age 44, robust multipara; tumor larger than adult head, in lower abdomen. Immovable. Fluctuating. Laparotomy. Splenectomy. Sero-hematic cyst in ectopic spleen. Claimed to be second thus far observed. Recovery.

3. PORGE: Purulent hematic cyst, size of walnut; cyst cavity enucleated, wall thick, fluctuant, yellowish gruelous odorless fluid. Numerous red globules; globules of pus and cholesterolin crystals in fluid. From the report I judge this was found post-mortem.

4. BACCELLI: Woman, age 27; married three years, pregnant four months. Two months' back traumatism over spleen. Pains after four days, which grew worse. Tumor of left upper quadrant, fluctuant, moved with diaphragm. Diagnosis cyst of spleen, from direction of growth, its connections, and movement on respiration. Two punctures and drawing off hematic fluid. Cured.

5. G. CHAVIER: Soldier, constipated three days, with some colics; abdomen somewhat ballooned. Put to bed, dieted, given sod. sulphat. That night had violent abdominal pains. Purging had no effect; passed no gas during day. Kicked over spleen seventeen months before by a mule. Died. Autopsy: Much foul gas on incising peritoneum; cyst of spleen, size of a Savoy biscuit, rested on anterior surface of stomach. Not adherent. Contained reddish brown extravasation between capsule and splenic substance; 1,870 grams of fluid. In pocket was organizing brownish fibrous deposit.

6. A. HEURTAX: Woman, age 27, single: Traumatism eight years ago. Pain continued in left side some days. Noticed a tumor a year afterward size of fist, not painful or movable. It had grown regularly since, till now it occupied three-fourths of left side of abdomen. Fluctuating. Diagnosis probably splenic cyst supposedly hydatid. Laparotomy: Cyst largely immobilized by serous leaf covering it. Drew off 9½ liters, opened, curetted, irrigated, marsupialized and drained. Recovery. Fluid contained blood cells, leucocytes, granulo-fat cells and cholesterolin.

7. LIVOTS: Man, age 46. Had severe intermittent fever four years before: tertian. After first attacks had pains in left side and noticed tumor, which grew to large size; fluctuated. Diagnosis cyst: connections not determined. Entered hospital for ulcer of leg. Did well and asked to be released. Eleven days

from entrance had violent colics, vomiting and diarrhea and died in three hours. Autopsy: Much reddish serous fluid in peritoneum. Cyst of spleen, size of ostrich egg, was found. It contained a great quantity of rosy matter, filamentous, and had much affinity with fibrin. Weight of spleen and cyst, 7 pounds. Liver was enlarged and stomach distended with greenish liquid.

8. PEAN. Woman, age 20, single. Two years ago had a swelling in the hypogastric region, with pains. Symptoms gradually increased, and became very violent two months before operation, finally unbearable. Tumor in hypogastrum like full term gravid uterus, but fluctuated. Opened abdomen, punctured, drew off 3 liters of thick viscous yellowish fluid. Removed most of cyst and spleen and cauterized remainder. Recovery. Fluid contained albumin, leucocytes, red blood cells, cholesterol and calcareous granules.

9. PEAN & ROUSSET: Girl, age 7, sero-sanguinolent cyst. Diagnosed by puncture. Treatment by caustic. Death two months from beginning of treatment followed by injection iodine, from acute peritonitis.

10. MARCANO & FERREOL: Man, age 31, malaria three consecutive years. Three years ago spleen became voluminous, causing dyspepsia. Colics two years ago, dyspepsia, nausea and vomiting after eating. Symptoms again at end of two years, but became better, and recurred after another year. Tumor in epigastrium and left hypochondrium, fluctuating, spontaneous pains not increased by pressure. Puncture, resulted in drawing of 300 grams fluid, chocolate colored, viscous and containing blood cells. Treated by injection of iodine and permanganate of potash, one or other three times a day.

11. QUINTARD & PEAN: Woman, age 53, hematic cyst, treated by caustics. Death some days after opening pouch, due to splenitis and acute peritonitis.

12. KNOWLES & THORNTON: Girl, age 19. Painful tumor in left side two years, grew rapidly, fluctuating, movable. Diagnosis doubtful, but spleen was eliminated from low position. Splenectomy. Fluid reddish serous with cholesterol. Recovery.

13. SPENCER WELLS: Woman, age 21, married; at four years had intermittent fever lasting two years. Hypertrophy of spleen. Married at 19 years of age. After one year had diagnosis of ovarian or periovarian tumor. Another diagnosed tumor of left ovary. Had normal labor same year. Tumor descended, not attached to ovary, freely movable. Wells diagnosed hypertrophied spleen. Patient grew much worse. Diagnosis corrected by puncture. Cyst broke during operation, and contained 4 or 5 liters of reddish brown liquid, which showed red globules and leucocytes. There were numerous adhesions. Incomplete removal. Cured.

14. FERRIER: Woman, age 33, married twelve years, three children. During attack of mumps one year previous had pains in left side of abdomen, which became larger, growth and pain persisted, tumor to left of umbilicus, size of fist, movable and had large pedicle from hypochondrium. Diagnosis cyst, perhaps hydatid of epiploon or spleen; examination was painful. Laparotomy, excision and cautery. There were many adhesions. Contained fluid blood clots, black, but becoming red in atmosphere. Cured.

15. VERNEUIL: Said he had seen four cases of hematic cysts, three of which were cured by trocar.

16. CHALITE: Woman, age 36, had dyspnea, heaviness and abdominal pains. Two years before after parturition swelling of abdomen and edema of legs, abdomen enormous, left side more prominent. Tumor hard, painless, mobile rising below left false ribs. Diagnosis cyst of spleen, possibly hydatid. Splenectomy. Eight liters of brown liquid, in which rags of splenic tissue floated. Cured.

17. MARESCI & GHETTI: Woman, age 42; severe pains in left hypochondrium twelve days after eighth parturition, lasting four or five hours, ceased after twenty-five days. Nine months later pain returning while carrying heavy object; four months later traumatism over spleen, and soon noticed small painless tumor that grew rapidly. It was movable, elastic, fluctuant. Splenectomy. Weight, 1,315 grams, contained blackish limpid liquid showing white and red cells. Recovery.

18. BARBACCI: Autopsy: Found cyst of spleen size of hen's egg. Transparent viscid fluid, color of gold flowed, coagulum of fibrin in pocket. He found a second cyst size of a lentil with similar fluid, alkaline and albuminous. He called this a lymphatic cyst.

19. H. C. CUTCLIFFE: Male, age 40, had intermittent fever four months and enlarged spleen. Twelve days ago swelling in left side under ribs, preceded two or three days by acute hypochondriac pain. Tumor hard and free from tenderness; after five days seemed to fluctuate. Punctured. Found degenerated blood. Cured.

20. SPILLMAN: Man, age 51, sick three days; this appeared suddenly, with violent shivering in left side, followed by a dry, painful cough, dyspnea. Died in ten days. Autopsy: Spleen contained cyst size of fetal head, contained yellowish liquid, cholesterol, fluid red by transmission. Density of water. Analysis proved to be hematic.

21. GIULIANO: Man, age 33. Malaria for some years, six months before coming to Giuliano had trauma of left hypochondrium and felt intense pain. Large tumor in left hypochondrium, connected with spleen. Puncture liberated degenerating blood. Recovery.

22. BAGINSKY: Girl, age 13, cystic tumor connected with spleen, resulted from trauma and increased gradually. Puncture brought 2 liters of red brown liquid containing many red corpuscles.

Below I give another group not definitely classified by the men who found them.

1. PICCINELLI: Priest, age 67, digestive disturbances thirty years before. In time oppression in epigastric region. Sharp, darting pain behind left hypochondrium five years ago while at a banquet, and extended to splenic region, where it remained. Became worse with complications till death. Autopsy: Spleen in place, undersize, contained a hard tumor larger than hen's egg, situated at the hilum, and full of knobs. Incised with difficulty and viscid gelatinous fluid came out; an ossified cystic tumor.

2. GIOVINARDI: A pathologic specimen, consisting of a cyst cretified in its walls, which he found in the spleen of a cadaver.

It contained an albuminous liquid which effervesced in hydrochloric acid. Cyst was the size of a small nut.

3. J. H. HASWELL: Man, age 57, died of cancer. Fullness of left hypochondrium noticed before death. Fluctuation. Contained on puncture small amount of whitish debris, showing microscopically fatty globules, cholesterol and a few granular red bodies. Spleen and cyst weighed 3½ pounds. On opening, a semipulvaceous matter exuded, mostly in rounded masses of a dirty yellow; among these were round, jelly-like globules, the size of a walnut, from which puncture brought a clear fluid. No hooklets or scolices were found nor any dermoid structure. Haswell calls this a mucous cyst. Almost certainly it was echinococcus.

4. BARDENHEUER: Woman, age 47, a few months previous had vivid pains in left hypochondrium. Tumor appeared and was diagnosed cyst of ovary. Bardenheuer saw patient six months after beginning of pain. Tumor in pelvis size of infant's head, pushed uterus slightly to right. Slightly movable. Diagnosed cyst of left ovary. Exploratory incision. Resection and cautery. Recovery. Contents not given.

INDICATIONS FOR THE REMOVAL OF THE PATHOLOGIC SPLEEN.*

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OMAHA, NEB.

CASE 1.—Miss S., clerk, aged 40, presented herself at the clinic of the University Medical College January 27, 1904, with the following history:

History.—Family history negative. One year ago she had German measles. Two weeks later she contracted a severe cold which lasted two weeks, and she has not felt well since. She is prone to headaches and becomes easily tired. For past six months she has complained of languor and weariness on slight exertion; also of a nausea, faintness, shortness of breath and occasional sharp pains in her left side near the costal arch. In November, 1903, she discovered an enlargement in the left upper quadrant of the abdomen extending below the arch of the ribs. She was able to continue her occupation, that of clerk in a dry goods store, until December, 1903, when she was compelled to stop it on account of the increasing muscular weakness and her inability to stoop because of pressure and soreness caused by the abdominal growth. She has never lived in a malarial district.

Examination.—She is a small woman of an anemic appearance, somewhat emaciated. A firm tumor is to be felt in the left upper quadrant extending to the median line; it moves with respiration and cannot be pushed up under the ribs. The condition excited Dr. Thomas Truelson's suspicions and he made a blood count which is recorded as follows:

Reds	3,968,000
Whites	9,600
Polynuclears (per cent.)	77
Small lymphocytes (per cent.)	17
Large lymphocytes (per cent.)	5
Eosinophiles (per cent.)	1
Hemoglobin (per cent.)	37

The heart was somewhat more rapid than normal, lungs and liver were normal. Dr. Truelson felt justified in making a diagnosis of splenic anemia and put her on medical treatment and made numerous blood counts. I am greatly indebted to Dr. Truelson for the benefit of his careful and frequent clinical records extending over a year.

In the summer of 1904 I saw her and the condition was about the same.

Later History.—Early in January, 1905, she became shorter of breath, more nauseated, had considerable rise of temperature for a period of two weeks, with pain in the region of the splenic enlargement, and distinct tenderness on pressure. The mass now became distinctly larger and was less movable than before. She also complained of increased difficulty in stooping, evidently because this caused pressure of the mass between the posterior bony wall of the abdomen and the arch of the ribs in front. For some time she had complained of a dry cough which she said seemed to be excited by a dragging or pulling sensation at the lower part of the left lung. There was no hemorrhage from the mucous membranes or diarrhea.

After she had recuperated from her febrile attack the question of splenectomy came to the fore with more force, since

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