"either isolated in the liquid, collected in colonies or cloud-like masses, or embedded in the cell-substance of pus-corpuscles. "The presence", he says, "of characteristic organic forms in infective liquids affords *in itself* no conclusive evidence that these bodies are themselves the cause of the infectiveness."

(To be continued.)

REMARKS

ON

THE TREATMENT OF GUNSHOT-WOUNDS OF THE ABDOMEN IN RELATION TO MODERN PERITONEAL SURGERY.

By J. MARION SIMS, M.D., LL.D., etc.

[Continued from page 186 of last number.]

THE presence of bloody serum in the peritoneal cavity, when there has been wound of bowel, with escape of flatus and intestinal contents, is not surprising; and it is always found when we know how to look for it. Heretofore, the necropsists have expected to find peritonitis in every case of death following wounds of the peritoneum, because they were not prepared for anything else. Educate the medical mind in the truth, and it will always grasp and appreciate it. I have more than once seen necropsies made by men of reputation as pathologists, who, as soon as they saw the intestines agglutinated by plastic lymph, would say: "Here is peritonitis; here is the cause of death." They would then proceed to run a sponge down into the pelvic cavity, and bring it up full of bloody serum, and squeeze it out into a basin, without attaching any importance whatever to it. A peritonitis that stops at agglutinating contiguous serous surfaces is not dangerous; never fatal. It cannot end in death unless it proceed to purulent infiltration; and then it is almost always fatal—fatal, because it produces blood-poisoning, for which there is no remedy, and never can be, till we open the abdomen, and remove the purulent deposits, the source of the blood-poisoning, just as we have opened it after ovariectomy, and removed bloody serum, which was the source of blood-poisoning.

The records of the American civil war contain but few fatal cases of gunshot-wounds of the abdomen that did not die of peritonitis, so-called. Twenty years ago, when our war began, none of us knew any better. We hardly knew the term septicæmia, and knew less of its causes and nature. I shall never forget the surprise manifested by M. Nélaton, in 1864, when he saw a quart of red serum in the peritoneal pelvic cavity of his patient dying from ovariectomy. If he, the great surgeon of his day, did not understand it, how could men of less knowledge and less opportunity properly interpret it? If the army of surgeons with the two great opposing forces in our civil war had had the knowledge of the present day, their *post mortem* reports would have told a different story; for the laws of nature are uniform, and the wounded peritoneum would have poured out the same bloody serum then that it did at Sedan, and does now.

Bloody serum is an ordinary result of any gunshot-wound in the fleshy parts of the body, and it is not unnatural that it should be found in wounds and bruises of the contents of the peritoneal cavity. It is possible that the escape of flatus and contents of the intestines into the peritoneal cavity may give an intensity to the poisonous qualities of the bloody serum that it would not have without it; for, as said before, death results more rapidly from this than from peritonitis pure and simple.

In 1872, I published my paper on Ovariectomy, proving that septicæmia, and not peritonitis, was the usual cause of death after ovariectomy. In this paper, I said (p. 85): "I have alluded to my Sedan experience, because I believe it establishes very clearly that the principle of drainage at the most dependent part of the peritoneal cavity is the correct method of treating wounds of the peritoneum. Pleuritis was formerly occasionally fatal, but no one now dies of it. It terminates in an abundant effusion, that may kill by suffocation; and, again, in the exudation of purulent fluid that kills by blood-poisoning. But in this enlightened day, death never occurs in this way, because the effusions, whether benign or pyæmic, are promptly evacuated, and life is saved; and so it will be in diseases and wounds of the peritoneum. The time will assuredly arrive when peritonitis, so-called, will not kill,

because we will learn that effusions in the peritoneal cavity may be as safely evacuated as those of the pleural cavity; that the danger will consist, not in opening the peritoneal cavity, but in keeping it closed, with its retained fluids to poison the blood and take the life of the poor sufferer. The time will also come when gunshot and other wounds of the abdomen, and perforations of the intestine, will be treated by opening the peritoneal cavity, and washing out or draining off the septic fluids that would otherwise poison the blood; for death, in all these cases, is produced by the same cause, and in precisely the same way, and they will require the same plan of treatment."

Thus it will be seen that I advocated the same line of treatment ten years ago in shot-wounds of the abdomen that I plead for to-day. But the profession was not then prepared for such radical views, and they fell stillborn. Ovariectomy was not then as successful as it is now; Battey's operation had not seen the light of day; the great domain of peritoneal surgery had not been opened up; and I know of but one man who was ready to accept my doctrines. Hunter McGuire, Professor of Surgery in the Richmond Medical College, Virginia, and surgeon to Stonewall Jackson's command, looking back upon his immense experience during our great civil war, recalled cases and *post mortem* examinations that could be explained only as it is done now. As President of the Surgical Section at the last meeting of the American Medical Association (June 1881), Dr. McGuire read a paper on Gunshot Wounds of the Abdomen, advocating the same views as I do. In this paper, he gave the histories of four cases that are unique in military surgery, not because such cases never happened before, but because no one, as far as I know, had observed the facts and published them before. Two of them occurred during the war, and two in private practice since then. In all these cases, the ball passed transversely and superficially through the walls of the abdomen, wounding or bruising only the peritoneal lining of the abdomen, not perforating it, or wounding the intestine, or even the omentum. All of these cases died of septicæmia.

CASE I. "Fully a quart of reddish serum escaped from the pelvis and abdominal cavities during the necropsy."

CASE II. Died three days after wound. "Three pints of red serum in peritoneal cavity."

CASES III and IV were seen in Confederate soldiers. Both had large quantities of red serum in the peritoneal cavity.

In these, death resulted precisely as it would have done if the peritoneal cavity had been penetrated, and the omentum or intestine wounded. These help to prove that all wounds of the peritoneum have a common termination in death by septicæmia, and not by peritonitis. Where the outer surface of the peritoneum was merely bruised by the transit of the missile, we might have expected recovery without special symptoms; or if inflammatory action supervened, we would have reasonably expected its propagation to the inner surface of the peritoneum, producing legitimate peritonitis; but, in Dr. Hunter McGuire's cases, no such thing was found. When the injured peritoneum took on action necessary to throw off bloody serum along the track of the ball, this same action on the inner surface of the peritoneum resulted in the exudation of bloody serum into the peritoneal cavity. Here, then, is a problem for pathologists. The idea prevails that bloody serum in the peritoneal cavity is aseptic and harmless, when there is no vent by which air can reach it. In the above cases, the intestine was not opened, and its contents could not mingle with the bloody serum; nor was the peritoneum penetrated, and hence no air could enter by the track of the ball. Why, then, should the bloody serum in these four cases have produced death in two and three days, quite as rapidly as if the peritoneal cavity had been penetrated, with injury to intestine? Is it by the physiological law of osmosis, by which gases and germ-bearing contents of the intestinal canal are brought into contact with the reddish serum in the peritoneal cavity? It is not my province to solve this question. I accept the facts, and report them as they were observed by one of the ablest and most accomplished surgeons in our country.

Judging from my experience in ovariectomy, from my observations at Sedan, from the cases of Richardson and Frisk, and from the reports of Dr. Hunter McGuire's cases, the inference is clear that septicæmia from bloody serum in the peritoneal cavity is the usual cause of death after gunshot or other wounds of the peritoneum, and its contained organs. Of course, I speak of cases that survive shock and hæmorrhage. Shock and hæmorrhage are co-workers. Strong men seldom die of uncomplicated shock, especially from shot-wounds in any part of the body; but, of course, they die very speedily of internal hæmorrhage if large blood-vessels be wounded, and more slowly if smaller vessels be injured.

We all remember the melancholy death of the distinguished jurist and statesman, Vallandigham of Ohio, in 1873. He was addressing a

jury on a criminal case, and, with pistol in hand, he was demonstrating how a man might accidentally shoot himself in the abdomen; and, when he pointed the weapon (which was unfortunately loaded) toward his own abdomen, it went off, and the ball perforated the peritoneal cavity. He fell to the floor, and died in twelve hours, without reaction, for he died of internal hæmorrhage. If the abdomen had been promptly opened, the bleeding vessels could have been secured, and a valuable life saved.

Do men ever recover spontaneously from gunshot-wounds of the abdomen perforating the peritoneal cavity? Rarely indeed, if the bowel be wounded above the brim of the pelvis.

At Sedan, we had seven cases of shot-wounds of the abdomen, and they all died, most of them within twenty-four hours. I made *post mortem* examinations in several of these, and in all found large quantities of reddish serum in the pelvic peritoneal cavity; and, in all, death was evidently the result of septicæmia caused by this reddish serum. There were several cases of recovery, where balls passed through the pelvis, wounding the bladder or bowel, or both; but no recovery where the wound was above the brim of the pelvis.

We had three cases of pelvic shot-wounds that recovered in the Anglo-American Ambulance at Sedan. In one case, "the ball entered on the left side of the coccyx, traversed the rectum and bladder, and emerged just above the symphysis pubis. For a considerable time, all the fæces passed by the posterior opening, while the urine flowed entirely by the anterior wound. He recovered without one single unfavourable symptom. Both wounds had closed by the 18th September (seventeen days after the battle), and remained so till his discharge from hospital on September 28th, when he appeared as well as if nothing had happened to him" (*Notes and Recollections of an Ambulance Surgeon, etc.*, by William Mac Cormac, pp. 73, 74. 1871). Sir W. Mac Cormac saw three other cases of pelvic gunshot-wound involving the bladder recover without accident, two in a Belgian ambulance, and the third under Dr. Junker's care at the Chateau de Bazielles. Sir W. Mac Cormac further says, "There were some other cases of similar injury which I did not see, but which, I was informed, were doing well".

Four days after the battle of Sedan, I went to Mézières for supplies for the wounded soldiers. Travelling under the banner of the red cross, we were hailed at almost every hamlet, and asked to visit sick and wounded. Amongst the great number demanding our care, my son, Dr. Harry Marion Sims, called my attention to a young German who was shot through the pelvis. The ball entered about two inches above Poupart's ligament, and midway between the linea alba and the crest of the ilium on the left side, and passed directly back through the pelvis, wounding the sigmoid flexure. Fæces passed freely by both openings, but, of course, more freely by the posterior, as he lay mostly on his back. His pulse was but 78, and there was no pain or tension in any part of the abdomen; and he had every appearance of a rapid recovery. He was among French wounded, could speak only his own language, and his greatest suffering was from nostalgia. When my son spoke to him in German, and gave him every assurance of a speedy cure, and of early removal to a German ambulance, it raised his drooping spirits, and I have no doubt that he eventually recovered. He was shot through and through the pelvic peritoneal cavity, perforating the bowel, and yet there was not the least constitutional disturbance, nor the first symptom of peritonitis. This was four days after the wounding.

Thus, at our Sedan ambulance, we had three cases shot directly through the pelvis; one at the ambulance at Bazielles, one on the road to Mézières, and two at the Belgian ambulance; seven in all. Thus, seven shot through the pelvis all recovered, and seven shot through the abdomen all died in about twenty-four hours.

Professor Montrose A. Pallen, who had a large experience in the Confederate Army, saw a case recover, where the ball passed through the bladder and out through the left ilium; and Professor von Nussbaum says, "I have seen cases get well in which the bladder and rectum were shot through and through, the ball making not only an inlet, but an outlet as well".*

Major Gardner, surgeon, United States Army, has given me the histories of four cases of recovery from shot-wounds of the pelvis, two during the war, and two since.

1. General X. Ball shattered radius of right arm, entered abdomen, right side, three inches above Poupart's ligament, perforated colon, and passed out at right sacro-iliac junction; radius right arm resected; fæces passed by both entrance and exit openings. Returned

to duty in three months, wearing pad on posterior fistulous track, through which fæcal matter passed in small quantities. This healed soon after, and the General lived many years in perfect health.

2. Ball passed transversely through both ilia, wounding bladder; wore a catheter. Three weeks after, there was urinous odour at the exit in left hip. Patient soon got well.

Two others, with similar pelvic wounds of bowel, recovered speedily. In all these cases, shock was less than when balls perforate the abdominal cavity. In one case, there was perfect reaction in four hours.

Dr. Thomas J. Murdoch of Baltimore gives me the history of a man wounded at Gettysburg. The ball passed antero-posteriorly through the bladder and bowel. He frequently passed fæces through the urethra as well as by posterior opening. In seven weeks, he left hospital well, and returned to duty.

Now let us sum up these pelvic gunshot-wounds, which have occurred under the observation of my personal friends: at Sedan, seven; Dr. Pallen, one; Dr. Gardner, four; Dr. Murdoch, one; total, thirteen.

From my Sedan experience, it would seem to be an exception for a man to recover if shot through the abdomen; and it appears to be exceptional for a man to die when shot through the pelvis. Why do men recover from gunshot-wounds perforating the bladder, bowel, and peritoneum in the pelvic cavity, and not from gunshot-wounds perforating the intestine and peritoneum in the abdominal cavity? The explanation is very simple. In the first case, there is natural drainage of septic matter directly from the pelvic cavity along the track of the ball, and the patient lives. In the other case, drainage is impossible, because the septic matter falls into the pelvic cavity, is there retained, and then absorbed, and the patient dies of blood-poisoning.

[To be continued.]

THE DIAGNOSIS OF EPITHELIOMA OF THE TONGUE.

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MOST surgeons will admit that, if operations for the removal of epithelioma of the tongue are to be undertaken with any prospect of permanent success, they should be performed at the earliest possible period of the disease, while yet but a small segment of the tongue is affected and the lymphatic glands are sound. Most surgeons will agree, therefore, that a certain and early diagnosis of epithelioma of the tongue is exceedingly to be desired. No means, however, are described by which a certain and early diagnosis can be effected. The characters which chiefly are relied on are, the sinuous outline of the epithelial ulcer; its raised, everted, nodular borders; its glazed, or foul and ragged surface; and the surrounding induration. But every surgeon knows how often one or the other of these characters is absent, and how often many of them are simulated in a tuberculous or syphilitic ulcer, and how difficult the diagnosis of certain cases is, not merely in their early stages, but when they have existed many months. Mr. T. Smith's case, reported from the St. Bartholomew's Hospital consultations in the last volume of the JOURNAL (1881, vol. ii, page 1015), affords an admirable illustration of the difficulty of distinguishing between epithelioma and tertiary syphilis of the tongue. It shows, too, the disastrous result which follows the practice of deferring an operation until the effect of anti-syphilitic remedies has been observed.

This watching of malignant ulcers, and studying the effect of remedies upon them, is so common, that a surgeon, so far from being blamed for following it until the disease is too far developed for operation, would more probably be blamed for adopting the opposite principle, and freely cutting out a disease of doubtful nature. It is at present impossible to make a certain diagnosis of all forms of malignant ulcers in all parts of the body; but in the tongue I believe it is possible, and not extremely difficult.

The structures of which epithelioma is composed are very characteristic, and lie so close to the surface that they can easily be procured for examination by scraping the surface of the ulcer with a blunt knife or Volkmann's spoon, or any similar instrument. In addition to pus and blood-corpuscles, *débris*, and microzymes, numerous epithelial cells are always present, but differing widely from the normal epithelium of the tongue. Many of them are smaller than the normal cells; others are much larger; the nuclei of both kinds are several times larger than the normal nuclei. All the cells are granular; some of them are clouded and opaque with granular matter. Some contain large round or oval spaces, clear and well defined. Many of them have more than a single

* On Drainage of the Peritoneal Cavity and Intraperitoneal Injections. A contribution to the Treatment of Wounds of the Peritoneum, and Ovariectomy, by Professor von Nussbaum, staff-surgeon, etc., 1873.