THE Journal of the American Medical Association.

EDITED FOR THE ASSOCIATION BY N. S. DAVIS.

PUBLISHED WEEKLY.

Vol. IX.

CHICAGO, NOVEMBER 5, 1887.

No. 19.

ORIGINAL ARTICLES.

INJURIES OF THE ABDOMEN AND THEIR PROPER TREATMENT.

Read in the Section on Surgery, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887.

BY N. B. CARSON, M.D.,

OF ST. LOUIS, MO.; SURGEON TO THE MULLANPHY HOSPITAL, ETC.

Sir Spencer Wells has said: "abdominal surgery, though not without just claims to the credit of having done good service to humanity, must still be looked upon as a branch of our science and art which, still important, calls for continued search for truth, and for constant efforts to improve methods of practice from every surgical stand-point."

To no branch of abdominal surgery does this statement apply with greater truth than to that pertaining to abdominal wounds. No branch of this subject is receiving larger attention to-day than is this, and in no other is there greater necessity; for in no department of the subject is there so much uncertainty. The subject is being discussed at the meetings of surgical societies and in journals all over the world, and yet, notwithstanding all that has been said, there is still much to be learned, for the subject is only in its infancy, and although operative procedure in these cases meets with much opposition, it will nevertheless, and at no distant day, take its place with ovariectomy as an acknowledged operation.

I do not expect in this paper to add anything new, or to make any suggestions which have not been already offered, but simply to give my experience and add my name to the list of those who have already spoken in favor of operating in these cases, instead of treating them as Dr. Martin, of Herde, justly remarks by "opium euthanasia."

As to wounds of the abdominal walls, little need be said, as the various text-books treat them so fully as to require no more than a passing notice on my part. From personal experience I am in doubt as to the possibility of a force being applied to the abdominal wall with sufficient violence to produce an inflammation of the peritoneum, *per se*, without rupturing some of the viscera.

If, however, peritonitis should follow such an injury, I would, upon the first indication of inflammation, open the abdomen and keep it thoroughly drained. The success attending this plan of treat-

ment in cases of peritonitis from other causes, I think, fully justifies the procedure.

"The effect of contusions of the abdomen is not always limited to the walls, but extends sometimes to the whole visceral mass, but more commonly to the large solid and fixed viscera—the liver, spleen, and kidneys—and less frequently to the hollow viscera, the stomach, intestines and gall-bladder. Probably all of the organs contained in the abdomen, even the blood-vessels, may be torn or ruptured without the existence of external wounds." Otis reports: Where the solid organs and blood-vessels are wounded by blows or falls on the abdominal walls without penetration, the injury is generally so great as to give the surgeon little chance for rendering aid, the patient rarely recovering from the shock. Hæmorrhage is necessarily great and post-mortems usually show the cavity filled with blood. If, however, the patient should survive the shock and the symptoms indicate surgical interference, I would open the abdomen, and if a bleeding vessel were found, would ligate it; or if the liver were ruptured would control the bleeding either with the thermo-cautery, or a solution of sub-sulphate of iron, or pack it with aseptic gauze, bringing the free end out through the abdominal opening. In case the spleen or either kidney were the organ involved, I would remove them. This operation has been done with sufficient success for other causes than injury, to teach us its possibilities.

As to the pancreas, Senn has said all that can be said in regard to wounds of that organ, and I will not refer to it hereafter in the consideration of the subject.

Up to the present time there has not been a successful case recorded where laparotomy has been done for the relief of intestinal rupture without penetration. The nearest approach to success was the case of J. Croft, of St. Thomas's Hospital, who opened the abdomen of a man, who had been injured twenty-four hours before by his companions jumping upon him and rupturing the bowel. Laparotomy was done shortly afterwards and the bowel fastened to the external opening. The patient survived the first operation, but as he did not gain flesh, and on account of discharges irritating the skin in the neighborhood of the opening, Mr. Croft attempted to close this by resecting and bringing together the divided ends. A month had elapsed since the first operation, but on account of sufficient nourishment not being taken up by the system, the

patient could not withstand the shock of the second operation and died within a few hours.

The uncertainty of diagnosis in these cases is the reason operation is delayed until it is made certain by the advent of peritonitis, and thus many valuable lives are sacrificed, as the following cases that have come under my own observation in the last few months will show.

The first case was that of a hostler who had been kicked in the abdomen, two days before he was brought to the St. Louis Mullanphy Hospital, where I saw him a few hours after his admission. He was moribund and an operation was out of the question. The post-mortem showed the ileum ruptured low down, the peritoneum inflamed, the result of fecal extravasation. The patient, I feel sure, could have been relieved by an operation; as might also have been the following case—in which I assisted Dr. Gregory—had the operation been done earlier. The patient had fallen about four feet and struck the abdomen across the top round of a ladder. There was considerable shock after the fall, with much pain which steadily increased instead of diminishing. His condition went on from bad to worse until the following Tuesday at noon—three days after the injury—when the abdomen was opened, only as a forlorn hope. A small rent in the intestine was discovered which was closed by the Lembert suture, and the cavity thoroughly cleansed, the abdominal opening closed, and the patient returned to bed, little if any worse for the operation; but he died six hours later.

The symptoms in many of these cases are obscure, and when to operate will always be a question; while in others, as in the following, they are so clear that there cannot be any doubt. In this case the patient was brought to the hospital where I saw him shortly after. He was then collapsed—skin bathed in a cold perspiration, pulse low, vomiting everything taken into the stomach, abdomen much distended, liver dulness diminished, bladder empty, thirst intense. Rupture of the bowel was diagnosed and laparotomy advised in case patient recovered from the shock, which he did not do. Post-mortem showed ileum ruptured about its middle entirely across. Neither the abdominal wall or peritoneum were injured, while the omentum immediately under the site of the injury was bruised, and in places contained extravasated blood.

If called to see a case of non-perforating injury of the abdomen, if the symptoms indicated in any way an injury of the viscera, I would advise immediate operation, and unless I did so, would consider I had not done my duty, as we shall see from tables later on, that exploratory laparotomy is far less fatal than the expectant plan of treatment heretofore adopted in these cases.

As the table of Sir W. MacCormac is more complete than the one I had compiled, I will refer to it. In these tables twelve cases are recorded, all of which were fatal.

The same author has collected sixteen cases of laparotomy for intra-peritoneal rupture of the urinary bladder of which six were successful, and ten failed.

These results are certainly encouraging, especially as these cases have been almost universally fatal before the *bold* and *daring* surgeon of the day undertook to save them. Renigald Harrison—"International Ency. of Surgery," Vol. vi. p. 329—says: "Where the rupture has extended into the peritoneal cavity, I cannot find any evidence to warrant the belief that life has ever been saved without the intervention of surgery. In the few cases where recovery has taken place, it has been directly traceable to the aid which nature has received from the surgeon's hand."

The fatality of penetrating abdominal wounds is so generally recognized, that I almost feel like apologizing for referring to it. It has been said that Mr. Abernethy used quaintly to remark that "nature would have nothing to do with these cases, but stood by and shook her head, and left the patient to his hopeless fate." While nature stood appalled by the task before her, man, more daring and venturesome, was not willing to stand by and see his fellow man die without an effort to save him, and fortunately for mankind the introduction of antiseptics into surgery has enabled him to accomplish wonders, and the day is rapidly approaching, if not already here, when the man with a wound penetrating his belly has some chance of being saved.

That the peritoneum may be penetrated with a certain degree of impunity without any very grave consequences, may readily be proved by a reference to the records of our hospitals, (provided the viscera are not injured), and by the few fatal results following exploratory laparotomy, which to-day is a recognized operation. Still it is not a pleasant thing to open the abdomen, even if it is by enlarging an already existing wound, to find there was no cause for so doing.

The question then arises: What are the symptoms which should induce us to advise the operation? Certainly not simply because a body passed through the cavity, for there are many cases on record where different things have passed entirely through the belly without injuring, in the least, any of its contents. The following case is in point, and as I believe it has never been reported will mention it: An old miser, an inmate of the St. Louis Mullanphy Hospital, having concluded he was of no use in this world, determined to get out of it. He had in his possession an old dress sword, such as were worn in the good old times gone by, which he concluded to use in carrying out his purpose. To make the killing sure, he entered into negotiations with a scissors grinder to have it sharpened. But the grinder would not take less than fifteen cents, and the miser would not pay such an extravagant price, the bargain was not closed, and as a consequence the man did not get rid of himself. The weapon was too dull to cut and passed entirely through the cavity without injury to its contents. From this it will be seen that the question as to the viscera being wounded, is not always a matter of certainty, and the propriety of the operation becomes a question.

The following interesting case was related to me by a gentleman in the country, for whose integrity I

LAPAROTOMY FOR GUN-SHOT WOUNDS OF ABDOMEN.

Operator and Reference.	Age and Sex.	Operation.	Time of Operation after Injury.	Condition at Time of Operation.	Organs Involved.	Result.	REMARKS.
W. W. Seymore, N. Y. Med. Jour., 1886, xliv, 209.	16. Male.	Lapar., resection of colon, suture of small intestine.	13 hours.	Fair.	Colon, small intestine and mesentery.	Died.	
R. Abbe, Med. News, Nov. 6, 1886.	53. Male.	Lapar., suture intestine and bladder.	6 hours.	Fair.	Small intestine, bladder & mesentery.	Died.	
D. V. Dean, Records St. Louis City Hospital, unpublished.	16. Male.	Lapar., suture of intestine, cleansing of abdominal cavity.	Not given.	Very bad.	Small intestine.	Died.	
F. J. Lutz, St. Louis Cour. Med., Sept., '86.	21. Male.	Lapar. and suture of wounded viscera.	10 hours.	Good.	Small intestine and mesentery.	Died.	
J. B. Hamilton, Journal Am. Med. Ass'n, Aug. 22, 1885.	19. Male.	Lapar. and suture of wounds.	2 hours.	Good.	Colon, small intestine & omentum.	Recovered.	
F. S. Dennis, Medical News, xliii, 10, 1886.	23. Male.	Lapar., cleansing of abdominal cavity.	Not given.	Very bad.	Liver and vessels of liver.	Died.	
Same, Med. News, xliii, 10, 1886.	26. Male.	Lapar., suture of intestine.	Not given.	Fair.	Small intestine and iliac vein.	Died.	
W. T. Bull, N. Y. Med. Jour., Feb. 14, 1885.	22. Male.	Lapar., suture of small intestine.	17 hours.	Not given.	Small intestine.	Recovered.	
Same, Med. News, Nov. 6, 1886.	25. Male.	Lapar., suture of wounded viscera.	2 hours.	Good.	Small intestine, meso-colon.	Recovered.	
Same, Med. News, Nov. 6, 1886.	24. Male.	Lapar., suture of wounded viscera.	6 hours.	Very bad.	Trans. colon and small intestine.	Died.	
H. H. Mudd, not reported.	17. Male.	Lapar., suture of stomach.	3 days.	Good.	Liver and stomach.	Died.	Wound in stomach had entirely closed, extravasation of blood in meso-colon, about 4 inches in breadth, slight peritonitis.
N. B. Carson, St. Louis Courier of Medicine, March, 1887.	25. Male.	Lapar., suture of wounded viscera and resec. of 2½ inches of intestine.	6 hours.	Good.	Small intestine and mesentery.	Died.	Operation unsatisfactory on account of inability to cleanse peritoneal cavity. Post-mortem not allowed.
Kocher, British Medical Jour., July, 1884.	14. Male.	Lapar. suture of wound in stomach.	3 hours.	Collapsed.	Stomach.	Recovered.	
R. A. Kinloch, N. C. Med. Jour., 1882, x, 1.	Age not given. Male.	Lapar., suture of wounds.	11 hours.	Fair.	Small intestine and mesentery.	Died.	
Same, Trans. Am. Surg. Ass., reported in Am. Med. Ass'n Journal, June 4, 1887.	27. Male.	Lapar., suture of wounds.	2 hours.	Fair.	Small intestine and mesentery.	Died.	Post-mortem showed cavity containing some fluid abscess in mesentery.
David Prince, not reported.	30. Male.	Lapar., suture of wound in bowel.	1 hour.	Good.	Ascending colon.	Recovered.	Attempt was made to enter abdomen by median line, but old adhesions preventing, the region of ball entrance was chosen; patient was seen recently doing full work. Operation perf'd June 25, 1886.
J. Loyd, British Medical Jour., 1883, I, 500.	19. Female.	Lapar., and formation of artificial anus.	3 days.	Bad.	Small intestine.	Died.	Post-m. showed mesentery perforat'd and injury of bladder not made out at time of operation.
W. W. Keen, Medical News, May 14, 1887.	18. Female.	Lapar., suture of wounded viscera and nephrectomy.	9 hours.	Fair.	Liver, stomach, intest., sup. mes. vein and kidney.	Died.	Survived 15 days; died of peritonitis due to gangrene of bowel at site of one of the perforations.
C. Kollock, Med. News, April 15, 1887.	15. Male.	Lapar. and suture of wounded intestines.	7 hours.	Fair.	Des'g colon and small intestine.	Recovered.	
W. T. Bull, Med. News, Nov. 6, 1886.	57. Male.	Laparotomy.	8 hours.	Very bad.	Liver.	Died.	Died on the table.
M. Freyer, Deutsche med. Wochenschrift, July 15, 1886.	19. Male.	Abdominal wound enlarged and int. resected outside of cavity.	6 hours.	Collapse.	Small intestine.	Recovered.	
C. K. Briddon, Annals of Surgery, 1887.	Age not given. Female.	Lapar., suture of wounded viscera.	12 hours.	Fair.	Stomach and omentum.	Died.	
E. Andrews, Weekly Med. Rec., Chicago, 1884, x, 441.	Age not given. Male.	Laparotomy.	15 hours.	Good.	Abdominal wall.	Recovered.	
F. W. Parham, N. O. Med. and Surg. Jour., 1886-7, N. S., xiv, 508.	34. Male.	Lapar., suture of wounded viscera.	2 hours.	Shock.	Small intestine, ascending colon and bladder.	Died.	

LAPAROTOMY FOR GUN-SHOT WOUNDS—CONTINUED.

Operator and Reference.	Age and Sex.	Operation.	Time of Operation after Injury.	Condition at Time of Operation.	Organs Involved.	Result.	REMARKS.
F. W. Parham, N. O. Med. and Surg. Jour., 1886-7, N. S. xiv, 508.	22. Male.	Lapar., suture of intest. and ligation of artery.	3 hours.	Shock.	Small intest. & ext. iliac artery.	Died.	
J. McF. Gaston, Med. and Surg. Reporter, Phila., June 12, 1886, p. 739.	30. Male.	Lapar. and cleansing of abdominal cavity.	4 days.	Very bad, owing to diffuse peritonitis.	Abdominal wall.	Died.	
T. G. Richardson, N. O. Med. & Surg. Reporter, 1885, No. 6, N. S. xiii, p. 867.	Age not given. Male.	Lapar., suture of intestine.	9 hours.	Shock.	Small intestine, ascending colon and mesentery.	Died.	
C. A. Jersey, Med. Rec., Oct. 16, 1886.	44. Male.	Lapar., suture of intestine.	20 hours.	Good.	Small intestine and mesentery.	Died.	
M. Pickett, Med. Press, West. N. Y., Buffalo, 1886, 5, 6, 1, 247.	13. Male.	Lapar., exploratory.	Not given.	Good.	Abdominal wall.	Recovered.	
T. Annandale, London Lancet, April 25, 1885.	15. Male.	Lapar. and suture of wounded viscera.	1 hour.	Good.	Small and large intest., rectum, and mesentery.	Died.	
Sebastapoble, reported by M. Tralo in Trans. Méd. de Paris, Jan. 15, 1887.	Not given.	Lapar., suture of intestine.	Not given.	Not given.	Small intestine.	Recovered.	
W. T. Smart, Brit. Med. Journal, 1885, 1, 379.	Age not given. Male.	Laparotomy.	Not given.	Shock.	Liver.	Recovered.	Ball extracted from liver.
A. V. Parks, Chicago Medical Jour. & Ex., 1885, li, 412.	16. Male.	Lapar. and suture of intestine.	22 hours.	Fair.	Small intestine.	Died.	
C. B. Nancrede, Phila. Med. Times, 1886-7, xvii, 7, 158.	Not given.	Lapar., suture of wounded viscera.	Not given.	Fair.	Stomach & duodenum.	Died.	
Vaudens, Plaies d'Arms à Feu, 1836.	Not given.	Enlargem't of wound of entrance and resection of intestine.	Not given.	Not given.	Small intestine.	Died.	Post-mortem showed wound of cæcum with fecal extravasation
Same, Günther, Operationslehre, Abtheilung iv.	Not given.	Abd'l wound enlarged and intestine sutured.	Not given.	Not given.	Large intestine.	Recovered.	
T. Billroth, Prof. Billroth's Klinik, 1886 (R. von Hacker, reporter).	63. Female.	Lapar., resection of ribs, excision of contused part of stomach and suture of wounds.	32 hours.	Very bad.	Stomach, liver and aorta, and right kidney.	Died.	
A. O. MacKellar, Dec. 26, 1886 (unpublished). Noticed in Lancet, '87, 1, 37.	22. Male.	Lapar., perforation secured by ligatures.	33 hours.	Collapse.	Sigmoid flexure and bruising of small intestine.	Died.	
T. G. Morton, Phila., unpublished.	36. Male.	Lapar. and suture of wounded viscera.	1½ hours.	Good.	Stomach, transverse colon and omentum.	Died.	
Newell, New Brunswick, Brit. Med. Jour., Feb. 25, 1882, 260.	Age not given. Male.	Lapar., gun-wad and pieces of clothing removed from abd'l cavity.	1 day.	Not given.	Small intestine.	Recovered.	
Pirogoff, Langenbeck's Archiv, xxvii, 278.	Age not given. Male.	Lapar., resection of intestine and mesentery.	Not given.	Not given.	Small intestine.	Result doubtful.	Progressed favorably for 4 days, then lost sight of.
Pozzi, Revue de Chirurgie, 1887, 178.	13. Male.	Lapar., partial resection of gut.	8 hours.	Bad.	Small intestine and bladder.	Died.	
A. C. L. Ramsey, Northwest Lancet, 1885, iv, 1887.	7. Male.	Lapar., excision of gut.	6 hours.	Bad.	Duodenum, contusion of colon.	Died.	

will vouch: A woman had the abdomen divided entirely across. There was no doctor in the neighborhood, and the relator's father-in-law, a prominent man of the country, and whose advice was sought on all occasions, was sent for. Realizing the necessity of doing something he invaginated the cut ends of the gut, returned it into the abdomen, and closed the external wound with an ordinary needle and flax thread (home-made). As the relator expressed it, he got the right ends of the bowel into each other, and the patient recovered, living several years, to die of another trouble, not connected in any way with this injury. From this case, if true, the possibilities of abdominal surgery can be seen.

LAPAROTOMY FOR STAB-WOUNDS.

Operator and Reference.	Age and Sex.	Operation.	Time of Operation after Injury.	Condition at Time of Operation.	Organs Involved.	Result.	REMARKS.
T. S. Dennis, Medical News, Feb. 27, 1887.	22. Male.	Wound enlarged and intestine sutured outside and returned.		Good.	Small intestine.	Recovered.	
Same, same.	57. Male.	Laparotomy and cleansing of cavity.	3 hours.	Bad.	Abdominal wall.	Recovered.	
Same, same.	25. Male.	Laparotomy and suture of intestine.	24 hours.	Fair.	Small intestine.	Died.	The intestine was perforated through the scrotum.
Same, same.	22. Male.	Laparotomy and suture of intestine.		Fair.	Small intestine.	Died.	
N. B. Carson, St. Louis Courier of Med., xvii, No. 3, 1887, p. 226.	40. Female.	Laparotomy and suture of wounded liver.	36 hours.	Good.	Liver and gall bladder.	Died.	Cause of death, iodoform poisoning morning of 5th day. Post-mort. showed periton' l cavity very nearly normal.
G. B. Thornton, Miss. Valley Monthly.	Age not given. Male.	Laparotomy with resection of intestine.	25 days.	Bad.	Small intestine.	Died.	Post-mortem showed undiscovered wound in bowel.
Wunderlich, N. Y. Med. Jour., 1887, 1, 68.	19. Male.	Laparotomy and suture of wound in stomach.			Stomach and diaphragm.	Died.	
I. Grindon, St. Louis Cour. of Medicine.	30. Female.	Excision of intest. and enlargement of abdominal wound.	1 hour.	Good.	Small intestine.	Recovered.	
W. G. Tremaine, Medical News, 1886, xlix, p. 601.	18. Male.	Laparotomy and cleansing of abdominal cavity.	10 hours.	Bad.	Abdominal wall.	Died.	Abdominal wound had been sutured by physic'n who saw the case, and who had also administered 8 grs. opium during the short time patient was under his care, from the effects of which he is supposed to have died, and not as result of last operation.
J. Avery, Med. Age, 1885, 1, 11, 412.	Age not given. Male.	Laparotomy and suture of intestine.	7 hours.	Much shock.	Small intestine and mesentery.	Recovered.	
E. A. J. Barker, London Lancet, 1886, 1, 347.	14. Female.	Abdominal wound enlarged & abd. cleansed.	1½ hours.	Good.	Abdominal wall.	Recovered.	
F. J. Lutz, St. Louis City Hosp. Records, not published.	42. Male.	Laparotomy and cleansing of abdominal cavity.		Good.	Abdominal wall.	Recovered.	
Tuholski, St. Louis City Hospital Records, not reported.	21. Male.	Laparotomy and cleansing of abdominal cavity.		Good.	Abdominal wall.	Recovered.	
D. V. Dean, St. Louis City Hospital, not reported.	32. Male.	Laparotomy and cleansing of abdominal cavity.		Bad.	Abdominal wall.	Died.	Abdominal cavity contained much decomposed blood and serum. Peritonitis.
Same, same.	30. Male.	Laparotomy and cleansing of abdominal cavity.		Good.	Abdominal wall.	Recovered.	
A. C. Dalton, same.		Laparotomy and cleansing of abdominal cavity.			Abdominal wall.		
Baudens, Annals of Surgery, 1886, p. 392.	Not given.	Enlargement of existing wound.			Small intestine.	Died.	Post-mortem showed undiscovered wound in rectum.
G. Tiling, St. Petersburg med. Wochenschrift, 1848, No. 24.	19. Male.	Laparotomy and suture of wounds of stomach and intestine.		Fair.	Stomach, intest. and omentum.	Recovered.	
J. G. Brooks, Medical Herald, 1886, vol. viii, p. 134.	11. Male.	Laparotomy and ligation of vessels.	A few hours.	Great shock.	Abdominal wall and mesentery.	Recovered.	
Kwiciński, Przegl. lek. Krakau, 1885, xxiv, 71.	20. Male.	Laparotomy and suture of wounds in intestines.	1 hour.	Fair.	Small intestine.	Recovered.	
W. O. Roberts, Kentucky, Am. Practice, 1884, xxix, 13.	54. Male.	Suture of wounds in intestine & mesentery, enlargement of abd'l wound.		Good.	Small intestine and mesentery.	Recovered.	
J. B. Roberts, Phila. Polyc., 1886, lxx, 93.	19. Male.	Laparotomy and suture of wound in bowel.	2 hours.	Very bad.	Small intestine.	Died.	Post-m. showed one wound in bowel overlooked.
J. B. Deaver, unpublished.	Adult.	Excision of spleen.		Great shock.	Spleen.	Died.	Post-mortem showed wound of kidney, etc.
Jobert, Günther, Operationslehre.	23. Male.	Enlargement of abdominal wound and suture of bowel.			Small intestine.	Died.	

LAPAROTOMY FOR STAB-WOUNDS—CONTINUED.

Operator and Reference.	Age and Sex.	Operation.	Time of Operation after Injury.	Condition at Time of Operation.	Organs Involved.	Result.	REMARKS.
T. G. Morton, unpublished.	30. Male.	Lapar., suture of omentum, ligature of bleeding omental artery.	9 hours.	Increasing pain about wound, emphysema, no shock.	Wound of omentum.	Recovered.	
J. B. Roberts, unpublished.	40. Male.	Laparotomy, wounds all closed with Lembert's suture.	45 minutes.	Violent abdominal pain, free hæmorrhage.	Small intestine, colon and mes.	Recovered.	
Davids, Günther, <i>Operationslehre, Abtheilung iv</i> , 163.	Not given.	Enlargement of abdominal wound, gut sutured.			Small intestine.	Recovered.	Gored by ox. Subsequently ventral hernia formed in scar.
Gal, <i>Centralblatt f. Chirurg.</i> , 1886, 686.	45. Male.	Enlarging abdominal wound.	9 hours.	Good.	Abdominal wall.	Recovered.	Gored by a cow.

The following interesting case occurred in my practice and is of especial interest, on account of its involving the medico-legal point, as to the propriety of operating in cases where the lives of two persons are involved instead of one. As a matter of opinion, I think the interest of the second party should not be considered, as by his own act he forfeits all rights in that direction.

I first saw this case—a woman about 40 years of age—thirty-two or three hours after she had been stabbed by her husband. She was then somewhat under the influence of morphine. Her condition, however, was good, the only indication of serious trouble was an occasional intermission of the pulse, which, however, was of good volume, etc. The abdomen was painful on pressure and somewhat distended. From the history of the case I learned that the patient had been accustomed to taking stimulants rather freely—that at the time of the injury there had been considerable shock, from which she had readily recovered. I found upon examination, a knife wound three-fourths of an inch in length, entering the cavity about an inch and a half below the margin of the ribs, and two inches to the right of the medium line. It was supposed the knife had entered the transverse colon. Laparotomy was advised and assented to by both herself and children. As the surroundings were very unfavorable, I had her removed to the hospital, not very far distant, where, thirty-six hours after the receipt of the injury, I opened the abdomen, and instead of an intestine, I found the liver had been penetrated, and the further progress of the knife stopped by a stone which entirely filled the gall-bladder.

The toilette of the peritoneum was carefully made and a drainage tube introduced at the lower angle of the wound. Everything went on well until the evening of the third day when symptoms of iodoform poisoning set in, and she died on the morning of the fifth day. The post-mortem examination showed the peritoneal cavity as nearly normal as possible, under the circumstances. The left ventricle and arch of the aorta contained old well-organized blood-clots. The liver was perfectly healthy in appearance. The

post-mortem was not completed as the coroner did not think it necessary.

I am at a loss to account for the bile that was found, as the stone certainly filled the gall-bladder, and at the point of perforation was firmly adhered to the mucous membrane, nor were the belt ducts enlarged to indicate an engorgement of the liver. I think, had the iodoform not been used the patient would have recovered.

From all sources I have collected twenty-eight cases wherein the abdomen has been opened for penetrating wounds. Of these sixteen recovered, eleven died, and one, undecided, died on the third day. Of this number eight involved the abdomen only, with five recovered, two deaths and one undecided. Of the deaths one was evidently due to opium poisoning, of which the patient had been given 8 grains in a short time by the physician who saw him first. In the other case peritonitis had already set in, and the patient was in a bad condition at the time of operation. Of the remaining nineteen cases all had wounds involving one or more of the viscera. Of this number ten recovered and nine died; a showing very decidedly in favor of laparotomy, as it is evident from the nature of the wounds and the parts involved, many, if not all, would have died had nature been left to care for them.

The great mortality attending gun-shot wounds can never be overcome, but I believe these cases need not remain as they have been in the past—beyond hope.

Hunter McGuire places the mortality in this injury at more than nine out of ten. The records of cases as far as I have been able to examine them verify this estimate. I have not found a case of gun-shot wound involving the small intestines wherein death did not result. When the stomach is the organ involved the patient has more chance of recovery, but such chances are so very few as compared with the unfortunate ones as hardly to be worth considering.

In every case of gun-shot wounds of the intestines, says Park, where there was extravasation of the intestinal contents, death was the result, unless the

cavity was cleansed; and the opening of the abdomen is the only means we have to accomplish that end. But how are we to decide when to open the abdomen, as the symptoms are not always plain in these cases, as the following that have come under my personal observation demonstrated.

In the first case I saw—three hours after the injury—there were then no symptoms that would enable us to say that the abdomen had been penetrated. As there was no shock, the pulse was regular and full—the abdomen nearly normal, and except the hole of entrance, showed nothing to indicate any serious injury underneath. His expression was good and he complained of little or no pain (there had been no shock). As the surroundings were bad I had him removed a distance of three miles to the hospital. Upon his arrival there, two hours later, his condition had changed little if at all. A careful examination showed occasional loss of a beat in the pulse—a symptom I have almost invariably found when any of the important abdominal viscera are wounded—otherwise it was very good—voice strong, expression good, abdominal percussion showed slight increase in the resonance, except to the right of the umbilicus over a space about as broad as the hand where it was dull—almost flat. The abdomen was opened six hours after the receipt of the injury, and the intestines found to have been perforated eight times—once at the mesenteric border. Two and a half inches of the bowel had to be resected in one place on account of the laceration of the parts. In the remaining perforations the edges were pared and the opening closed with Lembert sutures. The cleansing of the cavity was not satisfactory on account of a portion of the intestine being adherent to the lower part of the abdomen; its great depth and the rigidity of the abdominal muscles. The patient survived the operation three days, dying of septic peritonitis. No post-mortem was allowed.

Another case, one which I saw in consultation with Dr. Mudd, was one also which presented few symptoms to indicate that the abdomen had been entered and important viscera wounded.

A young man, 17 years of age, accidentally shot himself with a small target rifle, just above the umbilicus. When I saw him with Dr. Mudd, three days after the accident, there were really no bad symptoms, unless it was that the pulse, every little while, lost a beat. The abdomen was tender but very little distended. Laparotomy was advised and consented to by the father, who is one of our leading physicians.

The reasons for advising the operation were the belief that the ball had penetrated some of the viscera, and that there were missing pieces of clothing; and also a beginning peritonitis.

Upon opening into the cavity a wound in the liver was found, as was also the wound of entrance of the ball into the stomach, but not that of exit. There were no evidences of extravasation. The stomach wound had healed. The trans-colon was much distended, and showed symptoms of beginning inflammation, as did also the peritoneum generally.

In this case the operation probably did harm in-

stead of good, for I believe had the operation been left undone the patient's chances for recovery would have been better, although I have doubts as to the result being different.

As to there being any symptoms or rules to guide us in our selection of cases for operation, I do not believe they exist in any definite form, and each case has to be decided upon its own merits. I do, however, firmly believe that the day is not far distant when the great majority of these cases will reach the surgeon much sooner after the receipt of the injury, than they now do, and that a fair per cent. of recoveries will be the result.

From all sources I have collected forty-four cases of gun-shot wounds, for the relief of which laparotomy was done, with thirteen recoveries, thirty deaths and one doubtful. This is certainly a favorable showing as compared with the let alone plan.

Finally, I will refer to the excellent paper of F. S. Dennis and to his conclusions, as containing sound principles which should guide us in the selection of cases for operations.

I wish to acknowledge my indebtedness to the tables of Sir W. MacCormac for several cases not reported elsewhere.

LAPAROTOMY AS A CURE FOR TUBERCULOSIS OF THE PERITONEUM.

Read before the Section of Obstetrics and Gynecology, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887.

BY ELY VAN DE WARKER, M.D.,

OF SYRACUSE, N. Y.

SURGEON TO THE CENTRAL NEW YORK HOSPITAL FOR WOMEN; FELLOW AMERICAN GYNÆCOLOGICAL SOCIETY; FELLOW NEW YORK STATE MEDICAL ASSOCIATION, ETC.

The subject of this paper is well illustrated by the detail of the following case:

Mrs. C., æt. 28 years, 4 years married, the mother of one child 1 year old; of medium size, light blonde, sought my advice for swelling of the abdomen, which she supposed to be a tumor. She had noticed a gradually advancing enlargement for about two months. On examination fluctuation was marked but diffuse, extending in an evident wave over the abdomen with the patient upon her back. In this position the abdomen was flat and bulging on either flank, with protrusion of the umbilicus. In this position, also, the area of percussion dulness corresponded to the extent of lateral fulness, while the umbilical region was clear, down nearly to the hypogastrium. On changing her position to the side, the upper flank became clear on percussion, while the region of dulness was transferred to the lower side on a line nearly to the level of the umbilicus. On reversing the position the regions of dulness and clearness changed sides. The examination of the pelvic organs gave negative evidence. The uterus approximated the normal in size and position; the organ was freely movable, and was not affected by abdominal manipulation except by the percussion wave, which could be felt in the vaginal cul-de-sacs. The region of the liver was free from tenderness and