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DISCUSSION.—DR. PAT R. IMES, Louisville, Ky.: As Dr. Poer indicated, the greatest mortality factor in abdominal injuries in World War II was shock. Because of its importance and frequency in such injuries, the greatest benefit resulted from readily available whole blood which the Services provided for their care. I believe such availability of blood in civilian practice will show comparable improvement in the results. A review of the records of 53 patients admitted to the Louisville General Hospital because of abdominal trauma during 1946 showed that there were 15 deaths; two before surgery, five on the operating table and five within 24 hours following the operative procedure. I feel that these 12 of the 15 deaths might be attributed directly to the presence of shock. I also found that, in spite of our war experience, we were utilizing an average of 625 cc. of blood preoperatively and during the operative procedures, an obviously inadequate amount.

Regarding the policy of exteriorization of colonic wounds, there was not uniform agreement on this subject during the war. I did not feel that it should be practiced routinely and some of the British toward the end of the war likewise indicated their preference for primary closure in selected cases. On reviewing our experience in the Mediterranean theater, we were able to collect 168 cases who had primary suture of the colonic injury with a mortality rate of 24 per cent, which not only compared very

favorably with that following exteriorization (35 per cent in 945 collected cases), but effected a greatly improved morbidity record.

DR. AMOS R. KOONTZ, Baltimore: I would like to cite one instance of what an enterprising doctor can do under adverse circumstances, and without the benefit of modern knowledge. Dr. Poer's mention of the Greek soldier coming in carrying his intestines in his apron, in the time of Agamemnon, reminded me of this. Some years ago I had occasion to write a paper on traumatic rupture of the diaphragm, and in looking up the literature I came across Holmes' System of Surgery in the Medical and Chirurgical Faculty Library in Baltimore. This work comprised three volumes, and was published about 1870. The chapter on gunshot wounds was written by Dr. Hunter McGuire, who had been chief surgeon of the Second Corps of the Army of Northern Virginia, commanded by Stonewall Jackson. Dr. McGuire probably at that time knew more about gunshot wounds than any other man living. He had seen thousands of them in both Federal and Southern soldiers. Dr. McGuire made a reference to a case handled by two Doctors Amiss, which excited my curiosity, as I came from the same county in Virginia from which these doctors hailed. The doctors were Drs. Thomas B. and William H. Amiss. Mr. Fred Amiss, the son of Dr. T. B. Amiss, was still living in Luray, Virginia, so I wrote to him and asked if he knew anything about the case mentioned by Dr. McGuire. He wrote me substantially the following account of the incident:

Just after the battle of Cedar Mountain in 1862, Jackson's corps was on the march along a country road covered with about six inches of dust. The two Doctors Amiss, riding along this road, came across an officer lying beside the road. Superficial examination disclosed the fact that he had been disemboweled by a shell fragment, and his intestines were lying out on the ground, without any perforation, however. Cavalry, infantry and artillery had been marching along this road, so that the intestines were covered with a very thick coating of dust. One of the two doctors said to the other—"I reckon the only thing we can do with this fellow is to dig a hole and roll him into it." The wounded officer, much to their surprise, was conscious, and replied as follows—"If you damned doctors would do something for me I would get well. I had a hound dog who ran a mile once with his guts out. I sewed him up and he got well. I am as good as a hound dog, am I not?" The doctor then said—"This fellow is full of sand and grit in more ways than one, so we will see what we can do for him." They then had him moved to a nearby farm house, where they made up some salt solution, washed off his intestines, put them back into the abdominal cavity, and sewed up the wound. In three months the officer was back on active duty again. The officer was Colonel Snowden Andrews, of Baltimore, and the incident is briefly referred to in a footnote in one of the three volumes of Lee's Lieutenants, by Dr. Douglas Freeman.

MR. GUY BLACKBURN, Guy's Hospital, London, England: I am very much interested in the subject of this paper, and would like to congratulate Dr. Imes on his contribution. It takes me back to a Surgical Conference held in Rome in 1944, attended by British and American surgeons in the Mediterranean theatre, and presided over by Colonel Churchill. Wounds of the colon formed one topic of discussion, and one surgeon after another gradually confessed to intraperitoneal suture without exteriorization. At this time this was regarded by those in authority as unwise, but experience showed that it was safe in properly selected cases. For my own part I found exteriorization of the right side of the colon very unsatisfactory indeed, and went to any length to avoid it.

Like the other speakers, I have seen eventration of abdominal viscera, but I believe it to be prognostically of good significance. If viscera are immediately protruded and cannot be reduced spontaneously, it implies that the wound of entry is a small one. It is commonplace too that the intestinal damage in these cases is nearly always in the extruded gut without any intraperitoneal injury. Resection is usually necessary but results justified it.

Lastly, I should like to say one word about figures, and the folly of trying to com-

pare them in the two World Wars. Circumstances were so different, the types of wounds were quite different, the missiles were not the same. The principle was also recognized of bringing the surgeon to the wounded man, and not the wounded man to the surgeon. Operations, therefore, were done on the whole much earlier but not, I am sure, with any more technical skill. Nobody publishes rejection rates, and mortality rates without them mean nothing. Another factor, almost impossible to assess, is the interdependence of associated wounds, which account for as much as 15 per cent difference in complicated and uncomplicated abdominal injury.

I would end, Sir, by thanking you for your kindness in having me here, and Dr. Blalock in particular for asking me to such a delightful meeting of the Southern Surgical Association.

DR. DAVID HENRY POER, Atlanta, Ga. (closing): I appreciate very much the remarks of all the discussors. I am sure there are no real points of argument because the desire of all of us is the same, viz., to continue our efforts to lower the morbidity and mortality of this common type of injury, both in civilian and military experience.

Our civilian experiences were carried into the army, and now we want to reverse the procedure and bring back the things we learned in the army to our civilian work. In dealing with such a large number of cases many methods of treatment were carried out and we are now in a position to choose the ones that produced the best results.

I am familiar with Dr. Imes' experience in the 38th Evacuation Hospital where some primary sutures of colon injuries were done, and as mentioned by Mr. Blackburn, other surgeons in the British Army did the same with good results, but I think on the whole that in dealing with such a large number of surgeons of varying ages, experience and judgment, it was better to follow the policy of exteriorization, and the over-all mortality figures prove that right. Mr. Blackburn's comments regarding the advisability of doing a primary resection for injuries to the right colon are in agreement with our experiences.

In conclusion, I believe that the high mortality for perforating wounds of the abdomen which exists in most of our large city hospitals today is due to the following factors: (1) inadequate treatment of shock; not enough blood is given and treatment is not continued long enough after operation; (2) patients with active and profuse hemorrhage are treated for shock for too long before operation—operation must be started promptly in such patients; (3) chemotherapy is frequently inadequate, and (4) too much major surgery is put in the hands of a young and inexperienced house staff, with resulting prolongation of the operation and mistakes in judgment. The cure for these is obvious and within the reach of all of us.