skigram, were removed from adjoining calices. A probe was passed down the ureter, which was patent. A tube was inserted into the pelvis of the kidney through the cortex, and the remainder of the wound in the kidney was closed with catgut sutures. The incision in the loin was then closed, a small drain being left in the perirenal space.

On Nov 8 the patient was discharged to an auxiliary hospital, the wound being healed. He was much improved in general condition, the urine containing only a trace of pus. On two occasions since the operation he passed small calculi per urethram. No further calculi could be detected in either kidney or bladder.

Fig. 403 shows the stone, three-quarters of the actual scale, which weighs just over $1\frac{1}{2}$ ounces, and, even when dried, has still a trace of smell. It appears to be composed of phosphates, and forms a complete cast of the pelvis and calices and the upper $1\frac{1}{4}$ inches of the ureter.

HÆMATEMESIS AND MELÆNA CAUSED BY A PIECE OF METAL FROM THE ŒSOPHAGUS PERFORATING THE AORTA.

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On May 8, 1917, the writer was called in consultation by Dr. C. W. Crawford to see a woman, age 60, suffering from severe shock following hæmatemesis. The history and progress of the case were briefly as follows —

The patient, a trained nurse, was found during the previous afternoon lying on the floor in a pool of blood. Twice during the next eighteen hours she vomited a quantity of bright red blood, which showed no characters to indicate that it had come from the lungs. The patient was placed under morphia, all nourishment by mouth was interdicted, and rectal salines with 5 per cent glucose were administered. The source of the hæmorrhage was thought to be probably from the stomach or duodenum. On the morning of May 9 the patient seemed somewhat improved, she had not vomited for twenty hours, but had passed two large stools of bloody material. She now complained of severe precordial pain, radiating down the left arm, and a constant desire to vomit. No history of previous trouble could be elicited, and fearing that in the absence of a definite history laparotomy would fail to discover the source of the hæmorrhage, the writer advised against operation. In this Dr. H. A. McCallum, who was called in consultation, agreed. Efforts were made to procure a donor for transfusion in case of further hæmorrhage. At 6.0 p.m. another large movement of blood was passed per bowel, accompanied by hæmatemesis. The patient became pale, and showed the clinical signs of a large loss of blood. As a suitable donor, had not been obtained, an intravenous saline was given, but the patient failed to respond, and died at 7.0 p.m., fifty-two hours after the first hæmatemesis.

Post-mortem Examination.—Permission for an autopsy was granted, which was performed by Dr. F. W. Luney, of the Institute of Public Health. The following is a brief summary of the findings —

Stomach.—On opening the stomach, three or four large blood-clots were removed. The mucosa is not thickened at any point, and there are no evidences of ulceration.

Duodenum.—The duodenum contains a mass of blood-clot, but there is no thickening of the walls or evidence of ulceration.

As there are no definite pathological findings in the abdomen, it is necessary to open the chest. On removal of the breast-plate, a large mass, about the size of a fist, is seen in the mediastinum just above the base of the heart. This is quite firm in consistency, and appears to involve the various structures of this region.

The heart, aorta, and œsophagus, including the mediastinal mass, are removed intact. The heart, aorta, and œsophagus are laid open. On the inner and anterior wall of the œsophagus, at a point opposite the arch of the aorta, there is found an irregular small opening a quarter of an inch in diameter. This opening is found to be filled with blood-clot, which becomes continuous with a large clot that is present in the œsophagus. This opening leads into the cellular tissue of the mediastinum between the œsophagus and arch of the aorta. Examination of the arch of the aorta reveals a small irregular opening an eighth of an inch in diameter, situated $1\frac{1}{2}$ inches to the left of the great vessels that go to the head and neck. This opening also is found to lead into the same cellular tissue as the opening in the œsophagus. The involved cellular tissue, which constitutes a mass between the œsophagus and arch of the aorta 2 by $2\frac{1}{2}$ inches in diameter, is infiltrated with blood-clot. Further examination reveals, lying in this space, a flattened piece of metal, $1\frac{1}{4}$ inches in length, and sharpened at both ends.

Post-mortem Diagnosis.—Hæmorrhage from injury produced to the walls of the œsophagus and aortic arch by a piece of metal.

The accompanying figures (*Fig. 404*) illustrate the autopsy findings and the cause of the clinical picture. The perforation of the aorta allowed blood to pass into the œsophagus; this trickled into the stomach, and after collecting, either passed into the intestine, giving rise to mælæna, or was vomited.

FIG. 404.—Specimen showing the wounded œsophagus and aorta. A, œsophagus. B, Aorta. C, Left ventricle. D, Opening through œsophageal wall. E, Opening in aortic wall. F, Space in mediastinal tissue filled with clot in which the piece of metal was found. G, Probe indicating course traversed by the piece of metal. ($\times \frac{1}{3}$.)

Piece of metal causing the wounds.
(Actual size.)