after the salt solution. Her condition was so grave that Nov. 3, Dr. Hugh Cabot, at my request, performed direct transfusion from her son. She knew practically nothing about the operation and has no remembrance of it. Before transfusion the hemoglobin was 15%; white cells, 22,100; red, 760,000. An hour after the transfusion, hemoglobin, 60%; whites, 11,800; reds, 2,296,000.

She is now taking food in fair quantity without discomfort, and gaining strength, and seems to be on the high road to recovery.

ON THE EXCRETION OF LEAD.

BY WILLIAM F. BOOS, M.D., PH.D.

EXPERIMENTAL work by the author and others shows that lead is excreted chiefly in the bile, leaving the body with the feces. In the acute stages of poisoning traces of lead may usually be found in the urine as well; but they soon disappear, to reappear intermittently only, while the stools show lead from the first and then continuously until the metal has been entirely excreted. For the chemical diagnosis one stool, as a rule, is sufficient.

In the treatment of chronic lead poisoning, *fel bovis*, acting as a cholagogue, may hasten the excretion of lead. To prevent its reabsorption from the intestine the bowels should be kept open. *Pulvis glycyrrhizae compositus* is especially adapted to the purpose because the sulphur contained in this preparation insures the formation of insoluble sulphide of lead.

A detailed report of the research will appear in a future number of this JOURNAL.

ANEURYSM OF THE EXTERNAL ILIAC ARTERY.

BY FRANKLIN G. BALCH, M.D.,

Visiting Surgeon, Massachusetts General Hospital,

AND

FRED T. MURPHY, M.D.,

Surgeon to Out-Patients, Massachusetts General Hospital.

IN 1902 Rudolph Matas reported to the American Surgical Association 5 cases of aneurysm which had been treated by his method of intra-saccular suture.

His first case dated back to 1888, but until the publication of this method in 1902 operative interference had been confined to ligature, galvanopuncture and introduction of foreign bodies into the aneurysmal sac, such as wire, horse hair, needles, etc. To this list of possible operations may now be added the procedure of placing constricting bands advised by Halstead.

Certain anatomical conditions may without a question of a doubt indicate any one of the other operations as the one of choice in the individual case, but when the method of Matas is applicable, as it was in the case to be reported, his operation is unquestionably the one to be preferred. It is based upon sound surgical principles. The technic offers no great difficulty. The results are most satisfactory.

The operative technic demands that the aneurysm must be anatomically accessible and that the blood supply can be temporarily controlled. A sacculated aneurysm is the ideal condition for the operation, but a fusiform type may be infolded and the blood channel so re-

constructed as to offer the hope of future patency. With either type an obliterative operation can be done.

The steps in the operation are as follows: (1) Free exposure of the sac and the artery proximal and distal, (2) control of the blood supply, (3) opening of the sac and removal of the laminated clot, (4) closure of all openings into the sac other than the direct channel of the artery by interrupted or running sutures so that intima is strongly approximated to intima, (5) reinforcement of these sutures by infolding the sac wall, (6) closure of the soft parts with special care to kill dead space and give support to the blood vessel suture.

Technical points of significance are those emphasized by the work of Carrel, non-traumatization of the arterial wall by rough manipulation, the use of vaselined thread, vaseline smeared on the exposed wall, normal saline irrigation and the protection of the field of operation from the body fluids. Attention to these details insures the absence of thrombus formation.

The fusiform type demands the reconstruction of the artery over a rubber tube by drawing the sac walls together just as is done in a Witzel gastrostomy. After this first line of sutures the operation is the same as for the sacculated type.

Beginning in 1902 with a report of 5 cases, Matas has been able to tabulate the reported cases as follows: To 1905, 24 operations; to 1906, 34 operations; to June 3, 1908, 85 operations; and to date (personal communication from Dr. Matas) the number has increased to 101.

To June, 1908, the operation, including practically all the great blood vessels, in 85 cases in the hands of 52 surgeons, 49 American and 3 foreign, gave the very small number of 7 deaths, and if 5 cases, in which death was evidently due to causes other than the necessary operative risk, be eliminated, the mortality is reduced to 2.3%. Secondary hemorrhage was observed in 2 cases and gangrene in 4, in 2 of which the cause of the gangrene was really independent of the operation. Relapses were seen only in the reconstructive operations, 4 in 13.

The case here reported is the second in which an aneurysm of the external iliac has been operated upon with the Matas technic, the other case being one in which an obliterative operation was done by Levi Old.

The history of our case is as follows:

L. R. W., age eighteen, single, a wood-worker, entered the Massachusetts General Hospital, July 21, 1908.

Two years before admission he was struck in the right groin by a strip of iron which flew from a machine. A point on the end of the iron pierced the abdominal wall. This caused profuse bleeding and the patient was kept in bed ten weeks to give, as he says, "the inguinal artery a chance to heal." For more than a year there has been a swelling in the right iliac fossa which has gradually increased in size. Recently the increase in size has been more rapid. There is no soreness or pain at the point of swelling. The right foot has been swollen and the right leg has been weak.

The patient is a flat-chested, poorly-developed, sallow youth. Physical examination reveals, aside