certain extent. If all the coats of the intestine are divided, the edges of the wound will gape from the retraction of the cut muscles, and the lax mucous coat is forced through the opening by the peristaltic movement as far as its attachments will permit and curls back over the edges of the wound through the action of its elastic fibres. Once over the edges of the wound, the membrane is not retracted again and in a few hours it develops inflammatory adhesions in its new position. Besides the new position and relations of the mucous coat, there is a slight thickening of all the coats immediately in the neighborhood of the wound from an infiltration with serum and new cells.

In a rupture or perforation from ulcer, the protrusion of the mucous membrane would not occur, because in these cases the mucous coat is extensively destroyed and fastened to the muscular coats by inflammation before the outer layers of tissue yield.

THE DIAGNOSIS OF BLOOD-STAINS BY THE MICROMETRIC METHOD.

Dr. J. G. Richardson, whose enthusiasm upon the subject is well-known, gives the following as a summary of his observations on the micrometry of red blood-corpuscles and their bearing on the diagnosis of blood-stains.¹

(1.) That in unaltered blood-stains, as ordinarily produced by the sprinkling of drops of blood upon clothing, leather, wood, metal, etc., we can, by tinting with aniline or iodine, distinguish human blood-corpuscles from those of the ox, horse, sheep, and goat wherever the question is narrowed down by the circumstances of the case to these limits.

(2.) By the method of the author we can measure the size of the corpuscles and apply the two corroborative tests of tincture of guaiacum with ozonized ether and of spectrum analysis, to a single particle of blood-clot weighing less than one fifteen-thousandth part of a grain, a quantity barely visible to the naked eye.

(3.) Hence when an ignorant criminal attempts to explain suspicious blood-spots upon his clothing, weapons, etc., by attributing them to the ox, pig, sheep, or goat, or to any of the birds used for food, we can under favorable circumstances *absolutely disprove* his false statement and materially aid the cause of justice by breaking down his lying defense, even if twenty years have elapsed.

(4.) But if the accused person ascribes the tell-tale blood to a dog, an elephant, a capibara, or any other animal in Dr. Woodward's list, it is useless to attempt to dispute his story on microscopical evidence as to the size of the blood-corpuscles.

(5.) In cases of innocent persons wrongfully accused of murder and really stained with the blood of an ox, pig, or sheep, testimony of experts founded upon the measurement of the corpuscles would be valuable, but less conclusive, because under certain circumstances human blood-corpuscles may *shrink* to the size of those of the ox, while under no known conditions do ox or pig corpuscles *expand* to the magnitude of those in human blood.

(6.) In order to do away with ingenious objections of lawyers that the murdered person may have been affected with some disease which altered the size of his blood-disks, or that the articles of clothing, etc.,

upon which the stains were deposited had produced chemically or otherwise some similar change in their magnitude, it is very important promptly to obtain stains from the fresh blood of the victim made in the presence of witnesses upon portions of the prisoner's clothing or upon weapons analogous to those upon which suspicious red spots are found when he is arrested. When this cannot be done, spots of the murdered person's blood sprinkled on white paper, and fragments of his lungs and kidneys should be carefully preserved, the former by rapid drying, the latter by preservation in diluted alcohol. These precautions may, in any instance, prove to be of infinite importance.

Hospital Practice and Clinical Memoranda.

A CASE OF HÆMOGLOBINURIA.

BY F. GORDON MORRILL, M. D.

A. B., aged thirty-nine, consulted me October 19, 1881. His previous history is as follows:—

He enjoyed good health until 1877, when he went to California, and assumed charge of a placer mine in a malarious district. During the next four years his life was one of exposure, and attended with great mental strain and anxiety. He soon contracted malaria, and more than once was obliged to leave his business and seek medical advice in San Francisco. Two years ago he had an enlargement of the spleen, which disappeared under treatment. From time to time he took large quantities of quinine. A few weeks previous to my first seeing him he came to Boston, and soon after arriving here began to present the symptoms which led him to consult me. His general aspect was thin, sallow, and very anæmic, and he complained of chills at irregular intervals, with headache, nausea, and general malaise. His pulse was 110, temperature 101° F. No enlargement of the spleen was detected. Two grains of sulphate of quinine four times a day were prescribed, with the result of stopping the chills, and obtaining some improvement in the general symptoms. November 3d he stated that he had passed (for the first time in his life, so far as he knew) "bloody urine." This had occurred several times on the previous day, but at night the urine was perfectly clear again. Tincture ferri chlorid., in twenty-drop doses, was ordered in addition to the quinine, and he promised to bring me a specimen of his urine should he notice any discoloration. November 12th he brought me a phial containing six ounces of urine of a dark-red color. He stated that he had had another attack during the interval succeeding his previous visit, but being very much occupied had kept about town all day, and found upon his return to his home in the afternoon that the redness of the urine had entirely disappeared. The specimen was found to be albuminous, specific gravity 1025. Reaction faintly acid. A dark-brown deposit showed amorphous granular matter, but no blood corpuscles or crystals of calcic oxalate under the microscope; occasional granular casts were seen. Each attack had been preceded by a slight rigor and considerable pain in the back; on one occasion the feet were wet and cold. The same treatment was continued, and when last seen (December 15th) the patient was apparently quite well. His color and general appearance

¹ Medical News and Abstract, April, 1881, page 244, from the American Medical Bi-Weekly.

were good, and he had had no further symptoms of urinary trouble.

The rarity of this affection would seem to warrant a brief review of facts resulting from observations of similar cases.

Of the various names suggested as appropriate to this disease, — hæmaturia, intermittent, periodic, paroxysmal hæmoglobinuria, and hæmoglobinuria a frigore, the last would seem the best, as will be seen when I refer to the pathology. First observed in 1864, it has excited considerable attention abroad, more particularly in France and England, during the past two years. The symptoms preceding and during an attack are usually more marked than in the case I have reported. Never fatal in itself, occurring almost always in males (one case only in thirty was that of a female), the attack is preceded by a distinct rigor, and is accompanied with nausea, pain in the back and legs, and a sense of weakness. Occasionally retraction of the testicle has been observed. In a space of time varying from a few minutes to two hours the urine begins to present the characteristic appearance I have described. This may last a few hours, very rarely more than seven or eight. The intervals between the attacks vary from one or more days to a year, so that one is never justified in pronouncing a patient well unless he has been under observation a long time, say several winters. The urine, in addition to the appearances I have described, usually shows crystals of calcic oxalate. The color may vary from being slightly tinged to the deepest red. The amount of albumen present in any given specimen is said to be proportionate to the depth of color.

The etiology of the trouble remains obscure, but certain facts have been so frequently observed as to warrant one in accepting them as fixed. Exposure to cold will excite an attack in a person who is already subject to the disease. Warmth (however obtained) immediately after the premonitory symptoms will prevent the discoloration of the urine, which is then found to be albuminous only. Hence attacks at night, when people are usually comfortably housed, are very rare. I have been able to find but one case reported. It is now admitted that the discoloration of the urine is due to the presence of hæmoglobin. This fact has been repeatedly demonstrated by the use of the spectroscope. The theory that the presence of this element can be accounted for by some peculiar condition of the urine which destroys the red globules, and sets free the coloring matter (thus changing what would otherwise be a hæmaturia into a hæmoglobinuria), is easily disposed of by the fact that blood disks placed in urine already containing hæmoglobin only, preserve their form as seen under the microscope. The idea that a sudden congestion of the kidneys from exposure to cold in some way destroys the corpuscles, and at the same time squeezes out the coloring matter in the tubuli uriniferi would seem disproved by the fact that the disease can be artificially produced by the inhalation of certain gases, and also (in people already subjects of the disease) by the application of cold to a very limited surface. When and how the change in the blood takes place is not known, but the evidence is not in favor of the kidneys. The peculiarly sallow hue of the patient is thought by many to be due to the circulation of free hæmoglobin. Exactly what condition of the system renders a person liable to the trouble remains uncertain, but that in some cases syphilis plays

an important part seems established by the fact that two cases have been cured by Murri by specific treatment. These two remained under observation several winters, and continued well. Murri states that there is only one other case of recovery recorded, and here in addition to quinine mercury was used. At the necropsy of a man who was subject to the disease, a syphilitic lesion of the liver was discovered. A connection between hæmoglobinuria and malaria is hinted at by nearly all writers, and there certainly seems ground for this assumption in the case I have reported, although the patient may have had syphilis and concealed the fact. Hence, so far as treatment is concerned, we may place mercury, quinine, and iron in the front rank of drugs likely to be of benefit. Astringent remedies in ordinary use for hæmaturia and pilocarpine given to relieve a supposed renal congestion have been found useless.

Reports of Societies.

PROCEEDINGS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

T. M. ROTCH, M. D., SECRETARY.

JANUARY 23, 1882. DR. J. C. WARREN presided.
DR. C. M. GREEN read a paper entitled

REPORT OF A SUMMER COURSE IN OBSTETRICS.

Vide page 99 of this journal.

DR. MINOT said that the more frequent employment of forceps of late years was not only a great saving of suffering to the mother, but rendered her convalescence more free from danger, and more rapid. He was accustomed to use forceps more frequently perhaps than most practitioners. In a series of 282 consecutive recorded cases in private practice he delivered the patients with forceps 92 times, or 32 per cent. of the whole number, equal to about one in three cases. He believed his results were as good as those of most practitioners. He had no death which could in any way be attributed to the use of instruments, and no unusual number of cases of laceration of the perinæum, flooding, etc. In respect to hæmorrhage, in 12 cases of a series of 151 labors, serious hæmorrhage occurred; in three of these cases forceps were used, but in each case for exhaustion, inefficient pains, or tedious and difficult labor. In the 92 forceps cases there were 53 male children (58 per cent.), and 39 female children (42 per cent.). In 19 cases (20 per cent.) the occiput was posterior, — 11 male children and eight female.

Dr. Minot had often incised the thin edge of the perinæum during delivery, in primipara, but, judging by the cases recorded in his notes, without much benefit, — in many instances it did not prevent a tear in the median line, sometimes to a considerable extent. In the treatment of hæmorrhage after delivery he desired to call attention to the fact that it was rarely fatal, and that the large number of remedies which were thought to be successful showed that probably the condition was not much influenced by any of them. He was accustomed to rely much on compression of the aorta, which was easily done, and, he thought, very efficient. Two cases, in which alarming symptoms had followed the employment of carbolyzed vaginal douches