much stress is laid by some writers, as the all-important factor in the genesis of gouty symptoms.

CONCLUDING REMARKS.

From the results here indicated as to the excretion of uric acid during the attack, in conjunction with the similar results referred to early in the paper, and from Levy's observations as to the alkalinity of the blood and the relative amount of uric acid present in the blood during the attack as compared to the interval, it would appear we must abandon the theory at present based on Garrod's original observations. In other words, the following points would appear to be established: (1) The alkalinity of the blood is not diminished during the attack; (2) the excretion of uric acid is not diminished during the attack but the reverse; there is therefore no ground for the supposition that there is temporary diminution in the capability of the kidneys to excrete uric acid; (3) the amount of uric acid in the blood is not greater during the attack than in the intervening period; and if these points be accepted we must start *de novo* in search of the cause of the acute paroxysm. In this connection it would, I think, be well if much less attention were centred on the excretion of uric acid alone as the all-important factor in the disease, whether in its acute or chronic form. The results obtained by the line of investigations here followed suggest the advisability of more attention being devoted to the histochemical characters of the blood, the ratios of uric acid to other important products of metabolism, and, if opportunity be afforded, an examination of the bone marrow.

Since the foregoing was written, an interesting paper has been published by Bain⁶ on the excretion of uric acid and P_2O_5 in a case of gout. One of the concluding statements of that paper is "that the phosphoric acid varies directly with the uric acid excretion, the patient being on a fixed diet." It is I think doubtful if that conclusion can safely be arrived at from the record and figures given in his paper. The figures in this paper would rather tend to negative that conclusion, but much further investigation is necessary before any conclusion can be formulated. I may add that a more recent investigation of another case of gout has revealed the presence in the blood of the peculiar cells referred to, and tends also to indicate that the ratio between uric acid and phosphoric acid is not the constant one referred to by Bain.

In conclusion, I must express my indebtedness to Dr. Bramwell for kindly allowing me to investigate and record the case, to Dr. Ballantyne for the examination of the stained films, and to Dr. Milroy for valued assistance throughout the investigations.

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THE UNIMPORTANCE OF THE PRESENCE OF A TRACE OF ALBUMEN OR NUCLEO-ALBUMEN IN URINES OF EXTREMELY LOW SPECIFIC GRAVITY.

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I WILL at once explain that by "urines of extremely low specific gravity" I here refer to urines of practically the same specific gravity, when freshly passed, as ordinary tap water. The urinometer sinks to zero, but when the urine cools it may rise a degree or so. In the case of a "limpid urine" of this kind I believe that no conclusion of any value for diagnostic purposes can be drawn from the detection of a "very faint trace of albumen." The test for albumen which I have regularly employed in these cases is to boil the upper part of the column of the urine in a test tube and to add a few drops of acetic acid. When there is a faint but distinct cloudiness of the boiled portion (the two portions being compared with each other against a dark background) one may conclude, I think, that a trace of albumen or nucleo-albumen is present, for I do not see that the reaction can be due to anything else.

Some would even say that nucleo-albumen by itself cannot give rise to the reaction. Anyhow, the presence of such "a trace" is of very frequent if not of usual occurrence in urines of extremely low specific gravity.

I will take an illustrative case of ordinary occurrence. About midday a man hurries from his work in the City to an insurance office and is examined by the medical officer of the company. The applicant feels somewhat nervous; moreover, he may have had no time for lunch, and on the way to the insurance office takes perhaps a small glass of whisky and soda water with a sandwich. When he presents himself for examination the doctor probably finds the pulse rather frequent from excitement and hurry, the heart's action may be forcible, and there may be even a temporary systolic murmur, though possibly only of "cardio-pulmonary" nature. If in such a case I find the urine nearly colourless and the urinometer sink down to about zero, I almost expect to find a very faint trace of albumen (or nucleo-albumen) by employing the common and, as I believe, the most generally useful test, that is, the test which I have previously mentioned.

Has not this man got chronic interstitial nephritis? The urine is of extremely low specific gravity, and apparently contains the very faintest trace of albumen; the heart's action is somewhat violent. Moreover, if the specific gravity of the urine were higher, the "trace" might become a regular "cloud." In many such cases the breath of the person under examination has a faint but distinct smell, as if he had just had some alcoholic drink; but very little alcohol will produce this smell in some people, especially if taken on an empty stomach. I maintain that no positive conclusion of any diagnostic value can be drawn from the examination of the urine in such cases, not even that alcoholic drinks are frequently indulged in.

It seems, in fact, that in healthy persons, under certain more or less temporary conditions, a urine is passed containing hardly any of the ordinary solid constituents, but a faint trace of albumen or nucleo-albumen. In some very different cases, when the urine is of high specific gravity and loaded with urates, a trace of albumen may be discovered, which disappears when, by alteration of diet, etc., the urine becomes of lower specific gravity, and free from precipitate on cooling. These two classes of urine may be contrasted with each other. In the latter class the kidneys, when overworked (from a variety of causes) allow a trace of albumen to pass together with large quantities of urea and uric acid salts. In the former case, under some temporary influence, a large quantity of urine is passed, containing a faint trace of albumen, or nucleo-albumen, but hardly any urea or urates or other solid constituents.

INJURIES PRODUCED BY A SIX-POUNDER HOTCHKISS SHELL.

By MAJOR J. R. DODD, F.R.C.S., R.A.M.C.

(Communicated by the DIRECTOR-GENERAL, Army Medical Department.)

R. B., a workman in the Royal Laboratory, Woolwich Arsenal, was admitted to the Arsenal Hospital at 3 P.M. on September 14th, 1899, suffering from the effects of the explosion of a six-pounder quickfiring Hotchkiss shell. He was engaged in removing the shells from the cases in some old ammunition which had been returned into the arsenal unused, when one of the cartridges exploded in the extracting machine from some unexplained cause. He was found to be suffering from the following injuries:

The right eye was burned, and the surface of the globe abraded and blackened, but there was considerable power of vision. The left eye was collapsed and absolutely destroyed, evidently by lodgment of a large foreign body. There was an incised wound about 3 inches long extending from the middle of Poupart's ligament on the left side towards the umbilicus. From this protruded about 2 feet of small intestines and a small amount of omentum, and in the intestines were two penetrating wounds, each about 1 inch long, and each about 1 inch from the mesenteric attachment. The semi-solid contents of the gut were escaping from both wounds.

In the middle of the right thigh, opposite the apex of

Scarpa's triangle, was a jagged wound about 1 inch long, through which the finger could be passed to a depth of about 3 inches, and copious venous bleeding at once commenced, showing wound of the femoral vein. Hæmorrhage could be easily stopped by pressure. At the bottom of this wound a piece (about $1\frac{1}{2}$ inch long and weighing $1\frac{1}{8}$ oz.) of shell was found and extracted.

Fig. 1.—Fragment of shell removed from wound in thigh; A, concave, and B, convex aspect.

In the right groin was another wound 1 inch long, leading to a large cavity superficial to the fascia lata, but containing no foreign body.

The left hand was blown into a blackened mass of mingled blood, bones, and tendons, and both bones of the forearms were broken about the middle. In addition to these injuries the whole of the face, head, and arms were scorched and blackened, and the moustache was burned off.

The patient was perfectly conscious, the pulse good, and his only complaint was of intense pain in the abdomen. Morphine, one-third of a grain, was given hypodermically, chloroform was administered, and the wounds in the intestines were sewn

Fig. 2.—Fragment of brass cartridge removed from abdominal wound; C, concave, and D, convex aspect.

up with catgut Lembert's sutures, about six being required to completely close each. The bulk of the exposed intestines

were kept covered with towels wrung out of hot weak perchloride lotion while the intestines were being sutured. The abdominal wound was enlarged upwards and explored, a piece of the brass cartridge case being found deep down in the groin, and evidently being the cause of the injury. The intestines were well washed with water recently boiled and cooled down to 100° , and returned into the belly; the omentum was ligatured and removed, being bruised and dirty, and the wound in the abdominal wall closed by strong aseptic silk sutures, which included peritoneum, muscles, and skin. By this time the pulse was failing, and ether was substituted for chloroform. Ether was injected hypodermically, and large enemata of hot water, salt, extract of beef, and brandy were administered, partly as a restorative and partly as a form of transfusion, patient having lost a good deal of blood. The left forearm was then amputated just above where the bones were broken, but it was considered wiser to postpone removal of the destroyed eye till collapse had passed off. Both eyes were therefore merely cleaned and dressed with iodoform ointment.

The patient was about three hours and a-half under anaesthetics, and on recovery of consciousness expressed himself as fairly comfortable, but very thirsty. The enemata were ordered to be repeated every three hours, and only sips of iced milk allowed by the mouth. The patient gradually sank, and died eight hours and a-half after the accident.

The case illustrates the terrible effects of modern shells even when so small, and filled with black powder, and it shows, also, how vast will be the amount of work thrown upon the medical officers after a serious engagement with modern arms of precision and high explosives.

It also illustrates the almost hopelessness of our efforts to deal successfully with such cases in the field, when all the resources of a well-equipped hospital, to which the patient was removed within half an hour of the accident, were unavailing.

PRIMARY NEPHRECTOMY FOR RUPTURE OF KIDNEY.

By WILLIAM ROGERS, M.D.,
Lamplugh, Cockermouth.

PERHAPS I may be allowed to add another to the short list of primary nephrectomies for rupture of kidney a case that came under my care while I had charge of the Riverton (N. Z.) Hospital in 1894.

History.—The patient, a girl, aged 15, was walking along an unfinished jetty, and while stepping from sleeper to sleeper missed her footing, and fell between two, striking her abdomen on the edge of one of them. Very little discomfort was complained of at the time, and the girl was only brought to the hospital the following morning. As I had left for a long country journey, I did not see her till evening, about twenty hours after the accident. The girl was then in a very serious condition, blanched, with feeble pulse and sighing respiration, and was passing almost pure blood. A fulness could be made out in the right lumbar region, slightly tender on pressure.

Operation.—The lumbar route was the one chosen. The kidney was found surrounded by about a pint of blood clot; this was removed, the renal vessels and ureter ligatured, the kidney cut away, and the wound quickly stitched up, a drain being left. During the operation, brandy and warm water were injected into the rectum. The operation was done under some difficulty with the help of the porter and housemaid (no skilled assistance being available), and by the feeble light of an oil lamp.

After-History.—The patient twice passed urine; the first time slightly tinged with blood, the second time clear, but she never recovered from the shock of the operation, and died the following day.

The kidney was found to have a double rent, diverging from the hilum, the part between being much lacerated.

PROFESSOR MIKULICZ of Breslau, who belongs to the old Polish nobility by birth, has had his nobility recognised in Prussia, and will in future be known by the style and title of von Mikulicz-Radecki.