Towards the end of July, he was able to place his foot on the ground, perfect bony union having taken place between the tibia and astragalus. From time to time several superficial sinuses formed, which were duly laid open, and healed from the bottom with salicylic acid lotion.

On the 27th of September, he was able to put on a soft leather boot, with a cork heel about an inch and a half higher than that of the sound one. By great caution he gradually brought himself to bear his full weight on the foot, and now, a little over five months since the date of operation, he is in the following condition. His general appearance and health are vastly improved; from being listless, pale, and anæmic, he has become bright and intelligent. There is perfect union between the tibia and astragalus. There is no pain when the foot is pressed or struck. The swelling in the neighbourhood of the joint is gradually subsiding. The wounds of operation are perfectly healed, and, with one exception, so are the original sinuses. He can flex and extend his toes; he has regained the power of flexing and extending the knee, which at one time was contracted from carrying the leg in a bent position. He is able, with the aid of a crutch, to walk up and down stairs, and, with a soft leather boot which has a raised heel, is able to get about on level ground with great facility.

The illustrations represent the portions of bone (natural size) removed in this case. No. 1, the lower end of the fibula, was firmly adherent to

the tibia, and required considerable force before it could be removed. No. 2 is a thin slice of the tibia, and No. 3 the upper surface of the astragalus, so thin and brittle that it accidentally broke in two on removal.

With regard to the operation which was performed on this patient, much difficulty is generally experienced (at least I have found it so) in removing the upper articulating surface of the astragalus, as, unless great caution be observed, the articulation between the astragalus and scaphoid may be opened; or, if the saw be not held at a proper angle, the articulation between the astragalus and os calcis may be interfered with, either of which might compromise the ultimate results of the operation. There is difficulty in fixing the foot to saw the bone. To obviate this, I hold the heel of the foot in the left hand, and press the upper surface of the astragalus against the cut end of the tibia, so as to fix it, an assistant holding the leg firmly on and a little over the edge of the table. By this means, and with a long firm narrow-bladed saw, the surgeon has it in his power to regulate the amount of bone he wishes to remove, and to do so without injury to the other parts.

REMARKS ON OVARIOTOMY.

By THOMAS WHITESIDE HIME, B.A., M.B.,

Medical Officer to the Hospital for Women, Sheffield; Lecturer on Diseases of Women in the School of Medicine; Surgeon-Accoucheur to the Public Hospital and Dispensary; etc.

THE practical and suggestive remarks of my old teacher and friend Professor von Nussbaum on this subject have brought vividly before my own mind difficulties and dangers which I have met with in connection with ovariectomy, some remarks on which may be of service.

Firstly, with regard to preparatory treatment, it is very desirable that for some time, not only the regular, but also the complete, evacuation of the bowels be attended to. A patient may have her bowels moved every day for months, and still have scybala retained high up in the intestine to be a source of trouble and danger afterwards. A patient on whom I performed ovariectomy a month ago illustrates this. Previously to the operation, her bowels had always been regular. After her admission to the hospital, she had purgatives and enemata preparatory to the operation. On the fourth day after the operation, she was doing as well as any patient could; but in the night she was attacked by rigors and vomiting, her pulse and temperature ran up, and she became excessively weak. After taking five grains of calomel and an ounce and a half of castor-oil, she had thirty-nine copious fluid motions in twenty-four hours; and after all this had come away, she parted with a scybalum as large as a hen's egg, hard, dry, and smooth, and all the bad symptoms at once disappeared.

Her subsequent history is noteworthy. After three weeks, she exhibited all the symptoms of intestinal obstruction, with great debility, flatulent distension, and evacuation of nothing but bloody mucus from the rectum. The anus was gaping and the rectum distended and empty, and enemata were returned immediately after injection. An obstruction could be plainly felt high up in the rectum, above which it was impossible to pass a bougie. Ultimately, eructated flatus smelled stercoraceous. Purgatives were useless. Within a few days she took, at various times, fifteen grains of calomel, three ounces and a half of castor-oil, six minims of croton-oil, in pill, with aloes, one ounce of sulphate of magnesia, in addition to cataplasms, inunctions, etc., but without producing a motion, though there was violent straining. Having succeeded in passing an O'Beirne's tube beyond the obstruction, I allowed a quart of warm water and one ounce of castor-oil to gravitate into the bowel, through three feet of elastic tube and funnel (fig. 1). This plan, which I have frequently adopted with success, also was ineffectual, neither the water injected nor feces escaping. Subsequently, I attached six feet of elastic tube to the O'Beirne's tube, and by this means introduced two quarts of water, with one ounce of sulphate of magnesia, in solution, into the bowel, letting it gravitate slowly in from a height of six feet. I then withdrew the O'Beirne's tube, passed a wire through it, fastened a small piece of sponge to one end of the wire (fig. 2), and connected the other with one pole of a faradaic machine. After some time, I passed this tube fourteen inches up the rectum, as one pole of the battery, and the other pole I applied to the abdominal wall. Violent straining and working of the bowels began as soon as the battery was set in action; but no other result followed for twenty minutes, after which time fluid feces began to flow in large quantity through the tube (not through the rectum). The patient subsequently did well.

The simple apparatus (fig. 1) will be found very useful for giving enemata, washing the bladder, and, indeed, any cavity, etc.; but care must be taken to prevent air from being passed with the fluid into the bowel. Some air adheres to the tube.

Fig. 1.

Fig. 2.

I have been in the habit of giving all my cases for some time before the operation sulphocarbonates in considerable quantity, including the salts of iron, quinine, sodium, calcium, etc. Being a strong believer in the efficacy of the antiseptic treatment of wounds, which I first employed in ovariectomy in 1876, it has seemed to me desirable to administer internally such drugs as present at least the probability of checking, i

not preventing, the septic process. It has been shown by experiment that the flesh of animals killed after a short course of sulpho-carbolate of sodium showed a marked tendency to resist putrefaction, and that urine from a patient similarly treated resisted putrefaction. Further, the odour of carbohc acid has been detected in the breath of patients taking sodium sulphocarbolate.* It seems certain, therefore, that this salt is quickly absorbed and carried through the system of living animals, the double salt being decomposed in the blood or tissues, and the carbohc acid eliminated by the lungs, and probably also in part by the kidneys. Thus, a large quantity of carbohc acid can be introduced into the system, amounting in large doses to as much as 100 grains in twenty-four hours. To administer this quantity of acid in direct doses would be impossible; and further, the salts of iron, quinine, etc., are in themselves very often indicated for patients suffering from ovarian dropsy. It seems to me, therefore, that these drugs are well deserving of a trial. My own experience is strongly in their favour. It is often advisable to employ nutrient enemata, in addition to feeding by the mouth, in the case of emaciated patients being "made up" for operation. Liebreich's pepsine-essence will be found very valuable in assisting gastric digestion. The usual enemata of beef-tea, milk, etc., thrown into the rectum with an ordinary enema-apparatus I have found useless. I now invariably use Leube's† formula, letting the fluid gravitate far into the bowel above the rectum, by means of the apparatus (fig. 1). By this means, digestion, absorption, and the evacuation of healthy motions may be secured, and patients fed for weeks, even when nothing can be taken by the mouth. The advantages of the gravitation-method over all instruments I have ever seen are very great. Even when the rectum allows everything injected into it to escape, if the fluid be allowed to gravitate slowly into the bowel through a tube passed high up, it will generally be retained.

I have added to the spray-producer I employ (which has three jets, and produces a fine spray more than three times as large as the ordinary Lister's apparatus) a second gas-burner, in order to be able to warm the fluid which is to be atomised. The cooling produced by the exposure of the intestines and peritoneal cavity to an ordinary spray during an ovariectomy, which may last two hours or more, is a serious source of danger. I think the second burner is, therefore, an improvement, as it considerably raises the temperature of the spray. I have, in my last three cases, used thymol, in spray, solution, and gauze, and with the best results. I have used solutions of different strength, freely introducing it into the abdominal cavity on sponges, etc., without any ill effect. In general, it is best to make the incision in the *linea alba*, which, however, is not always in the median line of the body. Should the incision have been made into the rectus muscle, it will be much better to keep to it than to spend time in searching for the *linea alba*, and, by poking about in the muscle, probably lead to the formation of an abscess and the burrowing of pus along the sheath of the muscle. Indeed, Storer considers that there are advantages in making the incision through the muscle rather than in the *linea alba*, as being more likely to heal *per primam intentionem* and form a sound cicatrix. It is better to cut through the abdominal wall with a free hand, thus securing cleaner cut edges to the wound than will be got by more careful dissection. Should the cyst-wall be adherent to the peritoneum in the line of the incision, great trouble may be experienced in distinguishing and separating them. By extending the incision upwards, one may get beyond the line of junction of the two, and be able to commence their separation from this point; but, should the cyst have been opened in the line of adhesion between the cyst-wall and the peritoneum, it will be best first to remove its contents, as the adhesions will ensure that no part of the contents can then get into the abdominal cavity. This should be carefully avoided, although Kœberlé thinks that in small quantity blood or cyst-contents in the abdominal cavity are not so dangerous as generally supposed. He employs chiefly napkins instead of sponges for the toilet of the peritoneum.

Professor von Nussbaum's remarks as to the danger of gut-ligatures slipping from the sunken pedicle are no doubt true; but I think I meet the difficulty by tying the arteries in the pedicle separately, as well as the pedicle itself, in cases where the vessels in the pedicle are unusually large, or by mishap I have divided the pedicle too close to the ligature. I think that instead of, or in addition to ligatures (of gut) round the whole or portions of the pedicle, it would be well, in cases of broad pedicle, to employ a strong drawing-stitch ligature, knotting the ends securely. Like Professor von Nussbaum, I have freely used carbohc acid solution within the abdomen. In one case, with bad adhesions in the pelvis, I poured warm five per

cent. solution into the abdomen, afterwards sponging it carefully out. The patient walked away from the hospital in three weeks, although one day her temperature sank to 94 deg. Fahr. Oozing from the abdominal wall I have stopped more than once by free application of ice, without any bad effects. As to the posture after the operation, I think it is a mistake to keep the patient very flat on her back all along. The greatest relief is generally felt when she is raised up on several pillows; and flatus is often expelled from the stomach readily in this position which otherwise causes much trouble. The worst symptoms I have met with arise from vomiting; and I have not found any means of readily checking it, though I have tried most. Absolute starvation for twenty-four hours is a serious remedy for, mayhap, an emaciated patient. I think it best to give some nourishment, if necessary *per anum*, and I always give the patient a good meat-breakfast on the morning of the operation. If five or six hours intervene before the operation, the patient will be in a fair way of getting the benefit of it; whereas if, as is commonly the case, the patient has nothing between her supper at 8 P.M. and the operation next day, except a cup of tea and dry toast, she must suffer from twenty-four or forty-eight hours' additional starvation, whether compulsory or unavoidable (from sickness).

I have always been surprised at the length of time during which many ovariectomies allow the patient's bowels to continue unmoved. Any trouble I have ever had in this respect has arisen from following this practice; whereas, whenever my patient has had a motion, natural or induced, on the third or fourth day, I have seen good results. In several cases, I have found the urine alkaline on the fourth or fifth day, continuing so for even ten days. Usually, acidity returns sooner. I have always washed out the bladder with a weak solution of carbohc acid after the second day if the alkalinity continue, employing the little apparatus (fig. 1). Nearly all ovariectomists recommend the complete emptying of the sac before it is withdrawn from the abdomen. I think it will be found advantageous where there are adhesions only to draw off part of the contents, and then remove the trocar and tie the orifice, so as to prevent the escape of fluid. The sac is then to be by degrees withdrawn; and I feel convinced that there is much less difficulty in recognising the details of adhesions, especially if intestinal, when the sac is thus partially full of fluid than when it is completely empty and hanging in loose folds. When the sac-wall is very thin and weak, it will rarely be possible to empty it with a trocar; and I believe it will be found the best plan to incise it freely with a knife, and turn the patient on her side and let the contents run out. Much valuable time will thus be saved, and, in the end, with care, less fluid will get into the abdomen than in the ineffectual attempts to withdraw it by a trocar, while the cyst-wall is tearing continually, and each attempt to attach it to the trocar only leads to additional tearing.

It cannot be so important to include the peritoneum in the abdominal sutures as Mr. Wells supposes, seeing that Kœberlé and other successful ovariectomists have never done so; and it must generally happen, when it is so included, that it will double up into the wound more or less, and prevent union throughout the entire thickness of the sides of the wound. Should it have been by mistake partially detached, it must of course be included. In a recent case, I united the muscular layers of the opposite sides of the incision by gut-sutures, only including these layers, using in addition only superficial gut-sutures, the former being thus left completely sunken in the wound. The case did well; but the gut did not become metamorphosed as usual, being of bad quality. This mode of closure, however, seemed to me very satisfactory, securing complete adaptation of parts, and avoiding the peritoneum.

I am sorry to say the antiseptic method* is not popular in practice, so far as my experience goes, with the profession. No doubt there are few who have not used remedies which contain carbohc acid, and there are many who profess to employ "the antiseptic method" who do nothing more. But, unfortunately, using the five or the three per cent. solution is not antiseptic treatment; and to get together half-a-dozen gentlemen acquainted with the method in its details and willing to take the trouble of carrying them out miu'ely is, in the provinces, not an easy thing. Undoubtedly, though the trouble of any operation treated antiseptically may be somewhat greater, the total trouble with the whole case will be infinitely less, as well as more satisfactory. Mr. Knowsley Thornton's late splendid successes with this method in ovariectomy, as well as Professor

* When I first used the spray in ovariectomy in 1876, I knew of no case similarly treated in this country. I was induced to employ it from the success von Nussbaum had with it in Munich. I had previously employed carbolic gut, solutions, and other antiseptic precautions. Mr. Newman was, however, undoubtedly the first to use the spray (*Medical Times and Gazette*, February 1872). Volkmann being the second (*Klinische Beiträge zur Chirurgie*, 1874), in March, 1873. Marion Sims, who claims priority, did not employ it until after my (unrecorded) case in 1876.

* See *Disease-Germs: their Nature and Origin*. By Lionel S. Beale, M.D. London: Churchill.—*The Antiseptic System*. By A. E. Sansom, M.D. London: Gilman.

† Ueber die Ernährung der Kranken vom Mastdarm aus. Leipzig: Vogel.

von Nussbaum's, speak strongly for it in this serious operation. Some time ago, I was challenged at a medical meeting, where I related a case of ovariectomy which I had treated antiseptically, and I was asked why I was not content to follow the path Mr. Wells has so successfully trodden. Mr. Thornton's successes, under Mr. Wells's own eye, are a good justification, if such were needed.

THE ALBUMINURIA OF ADOLESCENTS.

By CLEMENT DUKES, M.D.Lond., B.S.Lond., M.R.C.P.Lond.,
Physician to Rugby School and Rugby Hospital.

BEFORE the British Medical Association at Manchester in 1877, Dr. Robert Barnes, speaking of pregnancy, said that the vascular system undergoes a remarkable development of growth and tension, and the nervous system a marked alteration; with this augmented nervous and vascular tension, there is an increased strain upon the entire glandular system, more manifest in the kidney, and we get albuminuria; but there is an increased hyperæmia everywhere.

A similar condition, though less marked, occurs at puberty; and this increased vascular tension, this increased forcing of the blood, often renders the kidneys hyperæmic, and there is albuminuria; sometimes a sudden change of temperature, sometimes an error in diet, sometimes excessive exertion, sometimes mental emotion, is sufficient to induce it. Then it may be persistent for a very long time, or it may entirely disappear and reappear, or may be absent at one time of the day, present at another.

In a discussion at the Royal Medical and Chirurgical Society in June 1873, Sir William Gull is reported to have said that boys about the age of puberty frequently have albuminuria, becoming languid, weak, and pallid, but he did not know the cause of it. At the same meeting, Dr. George Johnson said he was aware of the occurrence of albumen in young subjects; in most instances, it might be traced to scarlatina, diphtheria, erysipelas, or exposure to cold.

Having a very large number of boys under my medical care, this albuminuria has occurred so many times, that now a furred tongue and headache, with a firm pulse, not relieved by ordinary remedies in a few hours, makes me seek albumen.

The history of a case is this. A boy feels very poorly, out of sorts; he has a furred tongue, headache, disinclination for work or play, or food, irregular or constipated bowels; sometimes a slight cold is also present, but mostly not; sometimes facial dropsy, sometimes syncope occurs. I should add that, though stripped and examined most carefully, no other physical signs can be found; certainly no sore throat, nor desquamating skin and tongue, and no quick pulse. Being at a loss to account for the symptoms, I examine the urine, and find albumen, sometimes much; more often only a trace. This albumen continues for various lengths of time. In one it only lasts a few days and then disappears, though, with every subsequent chill or error in diet, for months to come, he gets headache, and, on examination, albumen is again found. In another, it is most persistent, except the patient be placed on milk diet, in bed and between blankets, when it disappears at once, but may reappear at any moment, on getting him up, and letting him have meat; though sometimes getting him up and giving milk only does not produce it, but if even a piece of bread be added to his diet, then down goes the albumen. After a time, when warm in bed, he can eat a full diet of meat, and yet not produce the faintest trace of albumen; though every drop of urine passed is examined. There is often, not generally, some anæmia; the anæmia of puberty, I think.

Bencke says, "that the development of the heart at puberty is to be regarded as a very important phase in its development, in regard both to the physiological and the pathological occurrences of this period of life." He says, also, "that the large arterial vessels attain their relatively narrowest condition at the time of puberty. Hence, with the increased development of the heart with relatively narrow arteries, we must get increased arterial tension."

Is not this hypertrophy of the heart at puberty, and this increased arterial tension causing hyperæmia of organs, but a beautiful physiological example of pathological states, we very often see? At puberty, in most cases, we do not get albumen, unless we have some trivial exciting cause, as an error in diet; then the kidneys cannot bear the extra strain. Put that patient to bed, and let the skin help the kidneys, and we make the albumen disappear, as a rule, whatever diet we give, by diminishing their work, and lessening the arterial tension; but if the patient be up, this arterial tension is still further increased by taking food (which causes a hyperæmia of all glands), and so a greater hyperæmia of the Malpighian capillaries is produced, and the blood-

serum transudes, and our albuminuria is found. If we give milk only, the natural hyperæmia is so little increased, and the urinary solids are so little augmented, that we escape the albuminuria. Looking for a pathological example, is it not the increase of the impulse of the heart, and the number of its beats, *plus* the increased tension of inflammatory diseases and fevers, *plus* the increased amount of nitrogenous elements in the urine, that causes the albuminuria of pneumonia, pleurisy, etc.?

This albuminuria of puberty is often so persistent, and, even when it has disappeared, recurs again and again so often, that I fear many of the cases pass on to chronic Bright's disease—although this I can only surmise, as I lose sight of them; but long continued or often repeated hyperæmia is the cause of all kidney-disease.

The knowledge of these cases makes me, almost invariably, examine the urine of every patient I see; and I never omit to do so in the examination of cases for Life Insurance.

I have kept notes of several cases of various forms of albuminuria occurring in adolescents, all of which I give as examples.

CASE I. Mr. A., aged 16, had scarlatina in January 1876.—On February 1st, 1876, there was albumen in his urine, which occurs at times still.—On October 10th, 1878, there was a faint trace after a cold; no casts.

CASE II. Mr. B., aged 13, never had scarlatina; had acute tonsillitis with acute nephritis, and bloody urine on February 10th, 1877. The urine continued bloody for about two days, and albumen was found more or less until March 8th.—On March 17th, there was no albumen.—On October 20th, 1877, there was albumen in the urine, and a headache, which continued for a week.—On December 14th, albumen was again present.—On December 18th, the urine was free from albumen. He went home for the holidays.

CASE III. Mr. C., on March 20th, 1877, had puffy eyelids, headache, white face, furred tongue, and had albumen in the urine. He had scarlatina in 1871. The albumen continued on and off until April 2nd, when he left my care.—On September 21st, 1877, there was still considerable albumen.

CASE IV. Mr. D., aged 16, never had scarlatina.—On March 10th, 1877, he felt poorly, with headache, slight cold, and furred tongue. The tongue did not clean; I, therefore, examined his urine, and found albumen. On putting him to bed, it immediately disappeared, and his tongue cleaned. This case and Case iii were in the same room together, in beds side by side, and, during the three weeks they remained under my care, it was curious to have two cases at once that behaved exactly alike; *e.g.*, both in bed, no albumen; both up, and taking milk only, no albumen; both in bed, and having some bread and butter to eat, no albumen; both up, and having bread and butter to eat, albumen at once; both in bed, and having meat diet, no albumen; both up, and having meat diet, copious albumen. These examples occurred more than once, and the same diet given to each, always gave the same results; though Case iii always had more albumen than Case iv.—On September 21st, Case iv had albumen (he had just travelled to school), about one-fourth. He then returned home, and I have not had an opportunity of examining his urine since.

CASE V. Mr. E., aged 19, on June 12th, 1877, had slight cold, with furred tongue, headache, and albuminuria; this continued until June 29th.

CASE VI. Mr. F., aged 14, never had scarlatina.—On June 13th, 1877, had albumen, with headache, and brown furred tongue. He went into school well on July 4th.—On September 21st, there was no albumen.

CASE VII. Mr. G., aged 17, on June 13th, 1877, complained of headache and feeling out of sorts; he had furred tongue, no cold, he could not do his work. This continued until July 1st, when he fainted in chapel.—On July 2nd, as his headache was no better, and as he fainted the previous day, I stripped him and examined him thoroughly. I could detect nothing wrong, and, therefore, examined his urine, as the last thing in a complete examination, and then discovered albuminuria. This disappeared on his being put to bed and having milk only.—On July 23rd, he went home well; but, during August or September, albumen again appeared.—On September 21st, there was no albumen.—On March 6th, 1878, there was no albumen. He never had scarlatina.

CASE VIII. Mr. H., aged 15, on October 12th, 1877, had rigors and headache.—On October 14th, there were cedema of the eyelids, and albuminuria. He never had scarlatina. This albuminuria continued until October 20th. During January 1878, rigors frequently took place; and, always after a warm bath and bed, he seemed quite well again.—On February 10th, I chanced to see him, and saw cedema of the eyelids again, and albumen was found on examination. He was put to bed, and every drop of urine was examined until he left my care.—On February 10th and 11th, albumen was persistent, although