November, 1894. If I had known then as much as I do now I might at a much earlier date have looked upon this method as an operation of election. In that case it was one of necessity.

It was a case of pyosalpinx of long duration. The woman was extremely emaciated and pulled down by the disease. There was a large tender swelling above and behind the uterus. This I attempted to remove by abdominal section on November 21st, 1894, but on opening the abdomen I found the whole of the pelvic inlet shut off by coils of intestine densely adherent to one another. It was absolutely impossible to separate them so I closed up the abdomen. Four days later I tapped the mass from the vagina and drew off only about 2 drachms of pus. Her condition did not improve, and I felt certain there was more pus there. Under an anæsthetic on November 29th I made an incision behind the cervix, and cutting upwards behind the uterus I opened Douglas's pouch; with my fingers I could separate to a slight extent the adhesions between the floor of Douglas's pouch and the pyosalpinx. I then cut into the pyosalpinx and about 3 ozs. of pus escaped. I enlarged the opening and packed it with gauze. This I removed in 48 hours, and employed irrigation for the next few days. The cavity soon granulated up, and her recovery was complete.

I was so firmly impressed with the idea that the tube should have been removed through the abdomen that although she was cured I looked upon the case as one in which I had failed to perform the ideal operation. It was a failure on my part not to have seen that this very treatment to which I was driven as a matter of necessity was the very method that I ought to have adopted from the beginning. I have no doubt now that when I tapped her I simply tapped a small abscess in Douglas's pouch.

What we should do instead of insufficient tapping, is to make a free opening into Douglas's pouch behind the cervix. It is very easily done with scissors curved on the flat, keeping the point of the curve towards the uterus. If the pyosalpinx is very adherent to the floor of Douglas's pouch it will be opened straightway, if not the exact relations of the parts, using if necessary gentle bimanual examination, can be made out. When the pus sac has been defined it must be incised and the pus let out. Then the opening is enlarged and the cavity explored. If in doing this bimanual examination is employed I do not think any pus sacs will be left unopened. After this iodoform gauze packing is all that is required, followed afterwards by daily irrigation and in some cases by light repacking. This is the procedure I have adopted with the happiest results. The cases are few in number, but it does not necessitate a large number of cases to convince one of the advisability of a new procedure, if it did there would never be any attempt however slight at improvement. I do not pretend for one moment that this method is original. My first case was certainly done before I knew of such a proceeding having been adopted by anyone else, but as I have said I did not learn the lesson from it that I ought to have learnt. This method has been largely practised by French and American surgeons and to some extent in this country. I believe, however, that it is not sufficiently known that patients distinctly in a bad condition to stand a prolonged abdominal section can be not only relieved but cured by an operation that takes only a few minutes, that does not involve exposure or fouling of the general peritoneal cavity and which therefore must entail less risk of peritonitis and be followed by an easier convalescence.

I repeat that I do not set this up, nor has it been set up, except by a few enthusiastic Americans, as in any way a rival to removal by abdominal section as the treatment for pyosalpinx. It is to my mind a valuable auxiliary operation; one which will, I think, enable us to save lives which otherwise would be lost. This method of treatment may be extended even further, and in 2 out of my 6 cases I have succeeded in completely removing both pus tubes by the vaginal route. In these 2 cases removal would have been effected more easily from above. They were both rather stout, they both absolutely refused to have the abdomen opened, but consented to an operation by the vagina. I expected to have some difficulty in incising and draining the pus sacs in these cases, as they were not large enough to fill up Douglas's pouch. They were, however, low down, and after opening Douglas's pouch I found I could remove them. Removal of the appendages *per vaginam* is not an easy operation in any case, and where adhesions have to be separated and a soft, friable tube and ovary pulled down into the vagina great care is required.

I am not prepared to discuss now the performance of vaginal hysterectomy as part of the operative treatment in

cases of double pyosalpinx. I do not consider that we have sufficient evidence yet to show clearly whether the climacteric disturbances are greater after hysterectomy than after removal of the appendages or *vice versa*. As long as we can cure our patients either by removal of the appendages through the abdominal incision or by vaginal incision and drainage, or even by removal *per vaginam*, then I think myself that the cases which will call for vaginal hysterectomy are very few. I grant that I have one in my few cases treated by the vaginal route.

This was a case of large left pyosalpinx plus an interstitial myoma of the uterus. Before I performed vaginal hysterectomy I had attempted removal of the appendages from above, but in trying to separate the bowel adherent to the top of the pyosalpinx I nearly tore it across. As there were several other adherent coils of intestine, I contented myself with suturing the tear in the bowel and closing the abdomen. Some weeks afterwards I performed vaginal hysterectomy and drained the abscess cavity of the pyosalpinx through the opening made in the removal of the uterus. She made a good recovery.

Before concluding, I wish to repeat that it is only in a limited number of cases—in those which may be considered as of the severest kind, having as a rule a long-standing history of gonorrhœa—that I advise operation by the vaginal route. I may have to alter my views again. I can imagine that we shall find some day that all cases of pyosalpinx should be treated from the vagina. I can also imagine—though I hope it will not be so—that the closed pus sacs, tubal or tubo-ovarian, may some day give rise to further trouble, and we shall wish we had removed them entirely. If so, then I shall stand convicted of making a mistake now. But if I am told that they will fill up again with pus because the sacs which were tapped years ago refilled, I shall not believe it. This laying open of the sac and drainage is a very different thing to tapping.

Because I wish for this method of treatment to be adopted for the class of case that I have mentioned, I have not lost my admiration of the work done by the men who laid down the foundations on which the treatment of pyosalpinx is built. Without their experience, their teaching, and their boldness of treatment it would never have entered into the mind of anyone to remove these pus sacs through the vagina.

ON THE VALUE OF GLOVES IN OPERATIVE WORK, WITH A NOTE ON THE CLEANSING OF THE HANDS.*

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I PROPOSE in this short communication to place before the members of this Branch the impressions gained by the wearing of gloves in general operative surgery since February, 1898, and trust they will be of some interest and value.

"The use of gloves is of high antiquity," for it is recorded that Cyrus, King of the Persians, about 2,500 years ago, went without his gloves.

The end of the nineteenth century has seen the introduction of gloves into "certain kinds of manual labour" after the fashion of the ancient Greeks and Romans, but history does not relate what particular kind and form of glove were used by them.

The costumes which were worn by our forefathers to keep away the plague were not complete without the gloves, and the *fin de siècle* surgeon tries to ward off his plague—the pathogenic organism—by putting the final touch to his costume by wearing the microbeless glove.

When one of our great authorities on gloves stated that "yarn, thread, silk and cloth gloves are of comparatively little importance," he little dreamt that these despised articles of wearing apparel would so soon come to play an important part in the saving of human life.

The whole aim of the modern surgeon is to prevent his ubiquitous foe from establishing an "effective occupation" within his sphere of influence, and an old-fashioned custom

* Read at Aberdare before the South Wales and Monmouthshire Branch of the British Medical Association.

of challenging to fight has been reversed by the surgeon by his taking up the glove instead of throwing it down.

It is now a little over nine months since I took to using gloves in aseptic operations, and for this purpose I have tried gloves made of silk, taffeta, thread, and cotton, and I like best the buttonless thread gloves, because they are closely woven, fit well, stand any amount or method of sterilisation, and cost but a few pence per pair. Since August last I have also taken to wearing gloves in septic cases, and for these cases there is only one type of glove that can be of any use—namely, a non-permeable one of the rubber type. The ones I use are sold by surgical instrument makers under the name of the patent film P.M. gloves.

The subdued sense of touch caused by the wearing of gloves does not in any way interfere with the due performance of the numerous manipulations required in operating. The only fault that I have to find is with the rubber gloves, because they are liable to be torn in tying ligatures and are very expensive, costing 6s. to 9s. a pair. I do not think it necessary to have gloves made with gauntlets, because it is extremely rarely that the forearm comes even into temporary contact with a wound.

En passant I would remark that up to the present time I fail to find any reason for wearing a respirator or a sterile cap during operations; the experienced mountaineer breathes through his nose when climbing, and the surgeon should copy him when operating.

From conversations with a few of the London surgeons in June last I gathered that practically no one in the metropolis had taken kindly to gloves in operative work, and it is on that account that I venture to record my short experience.

I think the consensus of opinion is that when one is called upon to do an operation for a condition which does not in itself immediately threaten life, and which does not also show any signs of inflammation, the surgeon ought to be able almost to guarantee that union of the wound will be complete within a fortnight. I am referring of course to such cases as diagnostic incisions into the abdomen and skull, radical cures of hernia, varicocele, etc.

I wonder how many of us could state without hesitation that not even a suture abscess would appear in the skin after such operations, and when one does appear I think we ought to realise that we have not observed all the details of the ceremonial of surgical cleanliness.

Since I have taken to gloves I feel greater confidence in prophesying with regard to the healing of wounds than I did before adopting them.

Surgical operations from a glove-wearing point of view may be divided into the septic and aseptic classes. In the (1) aseptic cases one may state that gloves are worn to prevent the possible contamination of the field of operation by the hands of the operator, his assistants, and nurses; and (2) in septic cases to protect their hands from being contaminated by the field of operation.

I will not bore you with what Mikulicz, Manteuffel, McBurney, A. Wölffer, and others have written about this subject of gloves, as it properly belongs to the surgical history of the closing days of the nineteenth century.

I have used the thread gloves in such cases as the screwing of old mal-united tibiae, nephropexy (Vulliet's), gastro-jejunoscopy, gastrostomy (Hacker-Frank-Witzel's), ovariectomies, appendicectomies, radical cures of hernia, thyroidectomies, and in amputations; and the rubber gloves in such cases as psoas and perityphilitic abscesses and rectal operations, so that a variety of complex manipulations have been performed with the gloved hands, and I can say that the wearing of gloves has not in any way interfered with the due performance of the various manipulations required.

On the other hand, I find it easier to operate with the gloved hands in such cases as the radical cure of hernia and varicocele and hydrocele on account of the firmer grip the thread-gloved hand gives, and the same remark holds good with regard to the use of borers, reamers, and screwdriver in repairing mal-united or ununited fractures according to Lane's method.

I believe it is now generally granted that the chief danger of infection in aseptic operations is from the hands of the operator, his assistants, and nurses, because instruments, dressings, and other requirements can be rendered sterile

with an absolute certainty before starting operating, but it is otherwise with the hands, and it is on that account that some surgeons do not touch wounds with their hands, but endeavour to perform every possible manipulation they can by means of instruments alone.

The contact-surface of hands may be clean enough at the beginning of a prolonged operation, but it seems reasonable to assume that by the time one is ready to put in a screw at the end of an operation that requires such an appliance, the contact-surface of the hands is in a very different condition, on account of the attrition, friction, and stretching of the skin caused by the coarse muscular movements performed; hence the protective influence of gloves.

The most striking result from the wearing of gloves in the aseptic cases has been the total disappearance of suture abscesses, and even of the suture blush in every case except two, and in both these cases which were operated upon on the same day septic silk from a new reel caused serious suppuration, as it was inadvertently assumed to be sterile when received from the instrument makers. Another, and by no means an unimportant, advantage of wearing gloves is that one does not carry "the smell of operations" about into drawing-rooms and dinner parties; and besides, one can let one's finger-nails grow to a respectable length.

The antiseptically sterilised fingers of some surgeons look very much like those of a washerwoman who is constantly biting her nails. Gloves prevent all the above troubles, and dry sterilised thread gloves can be put on as easily as driving gloves on dry hands, but it is otherwise with wet gloves.

The wearing of gloves in my opinion is the simple observance of the scientific ritualism of Lister's gospel of surgical cleanliness, and the prejudice with which I was once possessed against their adoption "in certain kinds of manual labour" now *non est*.

In the next place I would venture to draw your attention for a few moments to the method usually employed in the washing of hands in the majority of our large metropolitan and provincial hospitals. Briefly, the commonest method is as follows: The hot and cold water are mixed in a basin, the testing for the right heat of the water being performed by means of an unsurgically clean hand; there is a plug of a mysterious pattern in the basin to prevent the water running away, there is also an overflow outlet of a mystic significance, but, behold, there is no means by which one can sterilise the basin and plug. To be consistent with the ideal conception of surgical cleanliness such conditions ought not to exist, and I think the adoption of pedal taps, etc., is simply the substitution of an unsatisfactory and expensive mechanism which does not in any way meet the necessary conditions for rendering our hands pure and clean. It is true that Dr. Kelly, of Baltimore, has detachable basins which can be rendered sterile, but such elaborate appliances are faulty, and besides quite unnecessary, because after the first scrubbing of our hands in the water in the sterile basin, the rest of the cleansing takes place in contaminated water until the basins are again washed, sterilised, and refilled. The whole procedure is evidently not the final, but an evolutionary, step towards a simpler but higher state of cleanliness.

A few surgeons have been bold enough to take a hint from the modern barber—perhaps a lineal descendant of the barber-surgeon—and adopt an appliance which is at once simple and efficacious for the purpose of hand-washing. I refer to the shampooing tap. All you have to do is to fix the tap at a convenient height over a sink with an open outlet—which of course possesses neither a mystic plug nor a patent overflow—and turn the handle to the right place to get the requisite heat, and the ceremonial of handwashing is then performed in clean running water from beginning to end. A supply of sterile cloths or a metal key is kept in the carbolic lotion in which the nail-brush and nail-cleaner are also kept in order to turn the handle of the shampooing tap. A brisk scrubbing with alcohol, which is allowed to dry on the hands, prepares the hands sufficiently for the gloves.

I know of no disadvantage to the general adoption of gloves and shampooing taps in every large operating theatre, but in private practice one is compelled to admit that one is perforce compelled to forego the luxury of a shampooing tap in preparing for an operation; but since I have taken to carrying

three pairs of sterilised thread gloves in the tin containing the gauze mops and make my unknown assistant and nurse wear them, I feel that the risk of wound contamination is very greatly diminished because the deterrent effect of the gloved hand upon the unsurgical mind and hand is most marked and salutary, as their unfortunate owner does not feel impelled to feel the patient's pulse or open a door or window during the trying vicissitudes of any long operation in private practice.

REFERENCE.

¹ *Encyclopædia Britannica*, Ninth Edition.

CASES OF GENERALISED SEPTIC INFECTION TREATED WITH ANTISTREPTOCOCCUS SERUM.

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OUT of the 4 cases recorded below, 2 had a fair trial of this special treatment, the one taking 60 c.cm. in four days and the other 180 c.cm. in nine days. These 2 cases have been recorded more fully as possessing some interest apart from the special treatment they received. The 2 last cases only received each a single dose, but have been added to make the series complete.

CASE I.—J. H., aged 56, engineers' labourer, was admitted on February 22nd, 1898. He had suffered from some indisposition during the previous six weeks, which had not been sufficient to prevent his working, and eight days before admission he crushed his thumb with an iron bar. He applied friar's balsam, and subsequently had medical advice. He suffered a good deal of pain in the thumb, but it apparently healed without suppuration. On the night of the accident he had several shivering fits, and next day, about twenty-four hours after the accident, took to his bed. On the third day after the accident he complained of tender lumps in the left groin, but there was then no redness of the skin. On the following day they became more painful and swollen, and a scarlet blush was noticed over them, which spread rapidly up the left side of the trunk and towards the middle of the thigh. On the next day the redness and pain had increased and red blotches came out all over the body, but they were not tender. He was delirious on the third night and every subsequent night. He had no more shivering fits after the first night. He was admitted seven days after the accident, under Dr. A. J. Harrison (by whose kind permission I am publishing this case).

Condition on Admission.—The pulse was 100, regular, and fairly strong; the respirations 36; and the temperature 103° F. The heart and lungs were normal; the urine was normal. The wound on the thumb was quite healed. There was no wound on any other part of the body. A large number of vivid scarlet patches, of varying size and irregular in shape, were seen all over the body, particularly over the hands, arms, and legs. The patches were not raised, nor indurated, nor tender. They partially disappeared on pressure, leaving a brownish stain. Some patches surrounded small suppurating areas deep in the skin, which did not seem to be connected with hair follicles. The patches gave the patient an extraordinarily mottled appearance, contrasting as they did with a sallow skin. There was a large, painful, brownish-red area on the trunk, most intense in the left groin, and extending from thence as far as the eighth left rib, and round into the loin, and on to the buttock, and a third of the way down the thigh. The glands in the groin could not be differentiated, but red, painful lymphatic cords were running up to painful glands in the left axilla. The edge of the inflamed area was fairly defined and indurated, but not inflamed. No fluctuation was detected.

Treatment.—He was given calomel, and subsequently four hourly doses of sulphocarbolate of soda, and hot fomentations were applied to the abdomen. At 10 P.M. 10 c.cm. of antistreptococcus serum were injected under antiseptic precautions, after which the temperature fell from 102.4° to 101.4° F. A cultivation was made from the blood. On February 23rd, after a bad night, he was restless and delirious, and had slight diarrhoea. The pulse was weaker (104); the respirations 40; and the temperature 102° F. The tongue was dry, caked, and tremulous. The brownish area on the trunk had extended markedly in all directions. At 2 P.M. 20 c.cm. of serum were injected without effect on the temperature. He was ordered 8 ounces of brandy daily. On February 24th the pulse was 108, the respirations 32, and the temperature 102.4° F. The tongue was hard and caked, and the brownish area had spread to the axilla, above, and below to the knee, involving the genitals. He was ordered perchloride of iron with quinine. At 10 A.M. he was given 10 c.cm. more serum, and the same again at 8 P.M. He was ordered a pint of champagne daily. He was very delirious all night, and next day erysipelas was commencing in the cellular tissue around the left eye. It spread visibly in two hours. The patch on the trunk had extended considerably, and large areas of skin were black. Two or three large bullæ contained thin bloody fluid, and over some parts the skin had come away, leaving a wet, slippery, blood-stained surface. He answered rationally when spoken to, but passed his time in low muttering delirium. Urine and feces were evacuated involuntarily. The heart sounds were inaudible. There was no emphysema about the inflamed area, nor was the odour particularly offensive. Death occurred soon after midday on February 25th.

Post-mortem Examination.—The examination was made twenty-four hours after death. The patches of erythema had disappeared, leaving brown stains, with here and there small foci of suppuration in the skin. The large area was of a deep chocolate red, with scattered bullæ and necrotic areas. An incision into this area gave exit to some thin bloody pus, not

offensive, from the deeper intermuscular layers. The examination of the various organs showed no changes beyond the general appearance commonly seen after death from septic blood diseases. There was no visceral or joint abscess, and no thrombosis of veins. The old injury to the thumb had healed soundly.

Bacteriology.—On February 24th, at 8.30 P.M., cultures were taken from the blood from the finger with control from the skin from the same site. After forty-eight hours at a temperature of 38° F. the blood culture remained sterile; the control showed one colony. On February 25th, at 11.30, a culture was made from fluid blood in the bullæ. This, after twenty-four hours' incubation, showed about twenty colonies of *staphylococcus pyogenes aureus*, a few of *staphylococcus pyogenes albus*, and a fine ground work which proved to be composed of fine streptococci, individuals very small, and about five to seven in the chain. On February 25th, at 2 P.M., three-quarters of an hour after death, cultures were made from the thin pus from the abdominal wall. After twenty-four hours' incubation they showed a general thin greyish film, consisting of numbers of exceedingly minute colonies, which consisted of very minute cocci in groups of three or four, and chains of like number. Cultures taken at time of the necropsy, twenty-four hours after death, from (a) blood in the right auricle, (b) splenic substance, after twenty-four hours at 38.4° F., showed (a) a copious grey film, consisting of exceedingly minute colonies, which proved to be minute streptococci, three individuals to a chain, and a few small *staphylococci*; (b) forty small grey colonies resembling those of streptococci in naked-eye appearance, which proved to be composed of very small cocci, chiefly in small groups, and some small short streptococci.

CASE II.—A. T., a labourer, aged 37, was admitted on July 22nd, 1898, under the care of Dr. J. Michell Clarke, by whose kind permission the case is published.

History.—He had rheumatic fever 22 years before, and had had occasionally slight edema of feet since. He had been a heavy drinker till quite recently. He stated that on July 15th he felt cold, and after getting into bed had a severe shivering fit. He went to work next day, but gave up in two days because of the aching of the legs, which had persisted since. He had had considerable sweating, particularly at night. The chief seats of pain were the right knee, calf, and ankle.

Physical Examination.—He was pale and anæmic. The pulse was 88, collapsing. The respiration was 40; the temperature 102.5°. The tongue had a brown fur; the lungs were normal; the heart's apex was in the fifth intercostal space, an inch and a half outside the nipple line, and the first sound not quite clear at the apex. There was a well-marked soft diastolic murmur in the aortic area, conducted down the sternum and heard at the tricuspid area. The heart dulness extended a little beyond the apex beat. There was pulsation in the vessels of the neck, and capillary pulsation was obtained. The abdominal organs were normal. On the abdomen and chest were small red-brown spots. The urine was normal.

After-History.—He was treated with digitalis and cardiac stimulants and salicylates. On July 25th he felt better, but the temperature kept up, and there was a little diarrhoea. On July 27th the pulse was 100, the temperature 102° F., and the respirations 30. He complained of pain in the calf of the left leg, but there were no signs of thrombosis. Three small purpuric hæmorrhages were seen over the left knee-joint. On August 1st the heart's action was still rapid, a soft systolic murmur was heard at the apex, and the aortic diastolic persisted. On August 3rd injections of antistreptococcus serum were commenced; two doses daily each of 10 c.cm. The spleen was tender and enlarged. On August 4th there was loss of resonance over the base of the left lung, moist râles, and harsh breathing. The Public Health Office reported the appearance of two colonies of cocci