RESULTS OF OVARIOTOMY, BEFORE AND AFTER ANTISEPTICS.

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EVER since Mr. Lister showed me—now more than ten years ago—a large blood-clot organised in the wound of a compound fracture, I have followed his antiseptic treatment through its various stages in my daily surgical work. Time has only convinced me of its value. In those early days of antiseptics—I speak of ten or twelve years ago—it did not seem possible that any method could be devised whereby the antiseptic principle could be properly carried out in the removal of abdominal tumours. Yet, in the hope that a certain amount of carbolic acid introduced into the abdominal cavity might prevent or retard the putrefaction of the red serum that is apt to stagnate in the pelvis after ovariectomy, a two or three per cent. watery solution of carbolic acid was freely used in sponging and cleaning out the cavity; antiseptic ligatures, first of the finest silk and then of catgut, were used, and all instruments were rubbed with carbolic oil. Towels were soaked in the watery solution, and sometimes held against the wound, in the vain hope of keeping the air pure as it rushed in when the peritoneal cavity was opened. Carbolic acid was wasted in every possible way. The floor and walls of the room in which the operation was to be performed were sponged with it, and the air was charged with the vapour driven off by heat. For nearly three years—from 1869 to 1871—this practice was more or less carried on. The results, which for that time had hitherto been good, did not improve, but rather the reverse, and, after two or three mysterious-looking deaths, in cases that should have done well, this carbolic-acid treatment was thrown aside. It had brought nothing but disappointment and vexation of spirit.

For the next five years, though I continued to use it as usual in ordinary work, no carbolic acid whatever, nor any antiseptic, was made use of in my ovarian operations. Unable, though believing in it as much as ever, to carry out the antiseptic principle, and thus find protection from external agencies, I thought this operation one in which it would be better to trust to care and cleanliness alone. Sponges were simply wrung out in hot water, long boiled, and if any carbolic acid were used in the cleaning of them it was washed away before an operation was begun. Beyond a purgative, nothing of the so-called "preparation" of the patient was made. No restrictions were put upon visitors, except that they must not have come directly from a dissecting-room, or from visiting a case of erysipelas, and they were requested not to touch the sponges. These I always cleaned and took charge of myself. The friends who assisted me—all busy men in large obstetric and general practice—took no special precautions against infection. Sometimes, on putting the question, it was found that almost every kind of infectious disease had been already visited that morning; once only was there a suspicion that mischief was carried, for one of my friends himself took severe erysipelas a few days after he had assisted me at an operation. The patient recovered after a slow attack of blood-poisoning. The regulations made in some hospitals, that every visitor must sign his name in a book, declaring that he has not for a week visited any case of infectious disease or attended a *post mortem* examination, before being admitted into the operating-room, has always seemed to me to be meant for a sort of *plaisanterie*. For my own part, when a case goes wrong after an operation, I have seldom to look far beyond myself for the cause of failure—something done, something not done. This is a lesson hard to learn: we blame persons, things, accidents, and circumstances, rather than ourselves.

During the operation, the abdominal cavity was more freely exposed than I have ever seen it done by another operator. It was also cleaned more thoroughly, and there was no haste in closing the wound; half an hour's waiting was time well spent. Every oozing point was secured by the finest of ligatures, always Lister's, or by the cautery. Large lumps of cellular tissue were not tied, only the bleeding points. The clamp was gradually displaced by the cautery, and when ligatures were required to the pedicle, very fine soft iron-wire or catgut was used; I never used the very thick silk, which I have often seen left in the abdomen, of a thickness and strength sufficient to hang the patient. Even very fine silk, I had long discarded. That I was fortunate in having done so, the recent results given in Mr. Wells's Surgical Lectures prove. Of 157 cases in which he employed silk ligatures to the pedicle, sixty died, or 38 per cent., whereas of my first fifty cautery operations per-

formed under similar circumstances, where from the thickness or shortness of the pedicle, or both, the extra-peritoneal method could not be used safely, there were only four deaths, or 8 per cent. Then drainage, by a large perforated glass tube passing to the bottom of the pelvis, became the rule in severe operations. Finding that the red serum, that enemy of the ovariologist, would not lie safely in the abdomen by the addition of a little carbolic acid till absorption had taken place, it was got rid of every three or four hours by a tube and syringe as it collected in the pelvis. Doubtless this was a troublesome process, but it lessened or entirely prevented the absorption fever, and that it saved lives I am sure. Judging from the large quantities—pints sometimes, once 146 ounces—of broken-down blood-clot and serum got away during the first few days after severe operations in feeble women, no one will convince me that drainage thus practised in those days was of no use, whatever it may now be in operations performed under antiseptics.

Since 1876, every operation has been performed with all Mr. Lister's care, under the carbolic acid cloud, and I shall never go back to the old way. But before giving my impressions of ovariectomy thus performed, I wish to tell you exactly the results that can be got after this operation, by simple carefulness, without antiseptics. There is no mystery in ovariectomy. It is not a difficult operation. Is there any surgical proceeding that is? It is often an extremely simple one, yet it requires care; in bad cases it takes time, and may present a fertile field for bad surgery; yet any one, who is not in a hurry and takes the trouble, will get as good results. It is now more than sixteen years since I did my first ovariectomy. Beginning with seventeen deaths in the first hundred operations, the mortality year by year diminished, till at last, of the twenty-six operations before the use of the spray, there was but one death, the tumour removed in that case being a malignant one. Now, as the results of a single year may be accidental, I take the whole number performed during the five years immediately preceding the use of the spray. Including two cases of return of the disease in the other ovary, there were in all ninety-four operations, eight being double. Twenty-four of these were performed in the patients' own homes, or in lodgings, or in the country; seventy, in a small top flat, where the hospital patients were taken for nearly ten years. Though I had for a time, some years ago, the sanction of the managers to do ovariectomy in the Royal Infirmary, the only room then available for me in the old crowded building was a small old fever ward at the top of the house, next the scarlet fever and small-pox wards. I soon found it better for the good of the patients, no less than for the credit of surgery, to have all the hospital cases placed near my own house, where they could get quiet, cleanliness, and perfect nursing; and after being threatened by an interdict from the Court of Session, I was allowed to pursue my surgical experiment in peace. Of the ninety-four patients operated on during these five years, nine died, four of the private cases (two being malignant tumours), and five of the seventy hospital ones (one malignant). No result approaching this—one in fourteen of hospital cases—had hitherto been anywhere obtained in any hospital or in any private practice, over a series of years or in any single year. I wish, for the credit of my small hospital, which I carried on almost entirely at my own expense, to make this statement of results distinctly; and I would not make it prominent now, but that year after year the authorities of the Samaritan Hospital proclaim in their reports, in the largest of Roman letters—though one of the surgeons tells me that he has objected to the statement in vain—that the results got there are always the best that have yet been obtained,—the mortality of the Samaritan Hospital down to the end of 1876 being nearly one death in every four operated on; of the last five corresponding years, one in five.

Of the nine fatal cases that occurred during the five years preceding the use of the spray, in three the tumours were cancerous. One death arose from obstructed intestine, and another from old kidney disease. These five were probably hopeless under any conditions. Three of the others might have recovered with earlier operation or with drainage; only one was a simple operation with moderate adhesion. It was a large tumour complicated by an uterine fibroid. I unfortunately removed a pediculated out-growth which seemed to be in the way. I have little doubt that antiseptic treatment would have covered the errors committed during that operation.

I had not performed ovariectomy half a dozen times, when I felt sure that it would become, perhaps, the safest of all surgical operations; for in the rapidly absorbing powers of the peritoneum—though in these lie at once both the danger and the safety of the patient—the surgeon has an advantage, if he make right use of it, that he has in no other. At the end of 1876, this safety-point seemed almost within reach. The mortality was steadily decreasing, that of the last hundred operations being under ten per cent., while of the cautery cases it was little more than seven per cent. The results obtained were almost free from avoidable mortality. There was no death for nearly seven years after

an operation for a non-adherent simple tumour; in a large proportion of the fatal cases, the tumours were of a cancerous nature, some with secondary affections of the peritoneum—a class of cases which, thanks to the investigations of Dr. Foulis, to be afterwards referred to, can in future be always recognised, and in certain of them operation avoided as useless.

Then, in the other fatal cases, with one exception, the operations were extremely severe. It was in such cases of large adherent tumours in feeble women who had come late in the disease that some assistance was wanted. I seemed to have got to the end of my resources. Drainage, and all the care I could give, did not sometimes prevent the blood-poison; for even the feeblest of those operated on rarely die from shock or exhaustion, but from rapid septicæmia. This help I hoped to find in antiseptics now properly applied. Yet, after my former experience of the carbolic acid treatment, I hesitated long ere I used the spray. Its effects in prolonged operations were as yet unknown, the instruments were not very perfect, and the results one heard of, of operations done under it, were not encouraging. Several cases operated on by friends here with all possible care proved fatal from blood-poisoning. So did one or two done in Glasgow. In London, the only case I knew of was done at the Samaritan Hospital by Mr. Thornton, who sent me the notes of it. It was a clear case of death from septicæmia, with some brain-symptoms towards the end. The method was blamed for this result, and in consequence the spray was thrown aside and was not again used there for many months, when its employment in ovariectomy had elsewhere become comparatively common. By this time, the German surgeons had settled the question of safety, though their results were still not much to boast of. Mr. Wells, in his sixth lecture (July 1878), tells us that he had just then received a letter from Dr. Oldshausen of Halle, giving the results of his own practice and those of Esmarch, Hegar, and Schroeder, with and without antiseptics. Without, there were 65 cases and 33 deaths—1 death in every 2 operated on, results so dreadful that they seem simply incomprehensible. Of 155 cases done antiseptically, there were only 33 deaths, or nearly 1 in 5—a mortality still more than double that of my cases for more than five years without antiseptics of any kind.

Without antiseptics, my results over fourteen years give a mortality of almost 1 in 7. Of the five years preceding the use of the spray, nearly 1 in 10½—of the last of these five years 1 in 21. To what, then, are these results to be attributed? Why should my results without antiseptics be nearly six times better than those of these German surgeons (33 deaths of their last 65 cases—6 of the last 70 of mine), and so much better than those of Mr. Wells, or those of the Samaritan Hospital, in an operation that requires no special surgical skill. Leaving out of view some huge counteracting influence in the German operations, I think they are due—1. To drainage of the abdominal cavity in severe cases by a large perforated glass tube going to the bottom of the pelvis. It is to Kœberlé that I am indebted for the idea. He kindly gave me two of his small tubes in 1866. These were soon found to be too narrow and too short. They got easily choked with clot or lymph. For the last ten years, I have used the large glass-tubes now in common use. Till I had learned in what cases to drain, the tube was used in alternate cases of the severe operations. I am as certain as I am of my existence, that had I used them earlier and oftener the mortality would have been less by one-third. These tubes I supplied to ovariectomist friends in all parts of the world, though no one used them, so far as I know, till attention was called to drainage by the vagina by Dr. Marion Sims—a method which seems to me to be one calculated rather to give rise to blood-poisoning than to save the patient from it. It is remarkable that the only year in which the mortality of the Samaritan Hospital fell to 10 per cent. was in 1876, when drainage by these glass-tubes was first generally used. 2. To the use of the cautery in dividing the pedicle, as proposed and practised by the late Mr. Baker Brown. How the lesson given by his last results has been so systematically ignored in London has always been a marvel to me. 3. To the employment of Kœberlé's compression forceps, in large numbers, whereby loss of blood is prevented. His model is still the best, notwithstanding the clumsy imitations of it lately invented. 4. To the substitution of ether for chloroform in my last 230 operations, whereby the after-vomiting is avoided, and the risk of hæmorrhage when the wound is closed diminished. All these things have, I think, helped to lessen the mortality, but the drainage and the employment of the cautery in the division of the pedicle have contributed most.

So much for ovariectomy and its results before antiseptics. I have now done forty-nine operations as carefully as possible under the spray. Two of the first eight died, the rest—forty-one in number—all recovered. At first the results were disappointing, for I expected too much. After two or three ordinary cases that would have got well

in any way, five patients presented themselves at the same time, whom I would gladly not have seen till I had more experience of the spray in ovariectomy, though just the kind of cases in which assistance was hoped from antiseptics. 1. A young woman who had been nine months in bed from a large, burst, dermoid cyst. She had had double phlegmasia dolens, the œdema extending over the trunk into the axillæ. For months she lay poisoned, often apparently dying, with great pain and vomiting, yet she, after nine tapplings, rallied, and was able to be brought into town. She was against operation, feeling sure that she would not recover. I urged her to have it done, telling her of all I hoped from this new method. Instead of closing the wound as I ought to have done, I went on and completed the operation after three hours and a half. Both ovaries were universally adherent, and a mass of bone, hair, and fat, that had become encysted in the upper part of the abdomen, was dissected out. Time was lost in replenishing the spray-producer, and when she was put to bed the temperature of the body had fallen to 92 degs. Eight hours after operation it had risen only to 95 degs. No urine was secreted, and she died comatose thirty-two hours after. 2. Case of large semisolid tumour of 95 lbs. She was anæmic, and had often been tapped. She, too, was unwilling for operation, feeling that her strength was all gone. The same arguments as before were used, and she was encouraged to run the risk. The operation was as bad as could well be—adhesions everywhere—especially to liver, lumbar, and iliac regions. It was the old story—pain, vomiting, and death from septic peritonitis. 3. An old lady of 64, who declined assistance till she was in a typhoid state from suppurating cyst. There were sloughs on the sacrum. The cyst held 60 lbs. of pus, and there were extensive adhesions in the pelvis. The case was a most unfavourable one; yet, with much stimulation, she ultimately recovered, though she had a rapid pulse and high temperature for long after. 4. Case of old, burst, jelly cyst in a lady from Newcastle. There was very old thickening of the peritoneum, and the abdomen was full of jelly. Both ovaries were diseased. She did well for four days. Then came pain and fever. Two pints of horribly putrid red serum were removed by puncture behind the uterus. This had to be done again and again, and for six weeks there was a hard fight against the blood-poison. It was a continued effort to keep the pelvis free of putrid fluid. I believe that the whole abdominal cavity suppurated in this case. The difficulty of establishing a permanent drain was great. There were severe hæmorrhages after the incisions in the vagina, followed by severe rigors, and once Douglas's space was filled with blood-clot. She bore nourishment well, and drank brandy like water, and recovered perfectly. In this case, I think infection must have been conveyed by the cut Fallopian tubes close to the uterus, for, on the third day, there was some metrorrhæxia. 5. A case of bad pelvic adhesion. Here, also, fluid had to be evacuated from the abdomen, and discharge went on for many weeks. Thus, at first, through want of drainage, things seemed rather to get worse under the antiseptic treatment, reminding me not a little of my experience with the carbolic acid treatment some years ago.

At first, I tested the spray very severely. The operations were more hurriedly performed—that is, I spent shorter time over them, and did not sponge so carefully; neither was I so careful in securing every bleeding point, nor did I wait for the after-oozing in severe cases. I gave up also the drainage-tube, but soon found that the patients did not go on so well, and there was sometimes troublesome absorption fever. One case quite convinced me that the old carefulness could not, even with the spray, be dispensed with. I had operated on a patient of my friend Dr. Sidey, my *fidus Achates* in many a hard operation. It was a very bad case of acute suppurating cyst, with typhoid symptoms. I shut up quickly. There was some oozing going on from extensive parietal adhesions, and some purulent-looking ovarian fluid had escaped into the pelvis, and even this was imperfectly sponged up. He asked me to sponge this a little more. My reply was, that if the spray was worth anything, it would keep all sweet and the peritoneum would take care of it—purulent fluid or no purulent fluid. The patient got on badly, the typhoid symptoms became more marked, and she required much stimulation. On speaking to him one day about the high pulse and temperature, his reply expressed my thoughts of the last few days: "It is all your own fault. You should have sponged that belly better, and not left her to absorb the dirt you left behind. I wish when you try experiments again that you would not begin on my patients, but clean them up in the old way." Fortunately, in this case, the peritoneum was able to dispose of what had unnecessarily been thrown upon it to do.

The results of the spray cases are given in the accompanying table. The same arrangements are followed as have been done before, with the addition of the length of time the spray was continued in each case.

Table of Results of Ovariectomy before and after Antiseptics.

No.	Medical Attendant.	Date.	Age.	Duration of Spray.		Adhesions, etc.	Result.
				Hours.	Min.		
230	Mrs. Bruce, Dundee	1877, March	73		30	Parietal adhesions; 22 lbs.	Recovered
231	Dr. Croom	March	58		50	Parietal adhesions; 17 lbs.	"
232	Mr. Covey, Puckeridge ..	March	60	1	10	No adhesions; 43 lbs.	"
233	Dr. Sidney	March	67	1	15	Very extensive parietal and pelvic adhesions; 60 lbs.	"
234	Dr. MacLagan, Dundee ..	April	19		40	No adhesions; 16 lbs.	"
235	Dr. M'Kenzie, Larkhall ..	April	26	3	30	Adhesions universal; burst dermoid cyst; both ovaries removed	Died
236	Dr. Brown, Dunfermline ..	April	21		45	Very extensive and firm parietal and omental adhesions; 47 lbs.	Recovered
237	Dr. Loraine, Castle Douglas	April	53	2	15	Very extensive parietal, omental, intestinal, and to liver; 95 lbs.	Died
238	Dr. Wilson, Gateshead ..	May	41	1		Burst jelly cyst; pelvic; 19 lbs.; both ovaries removed	Recovered
239	Dr. Edmond, Stonehaven ..	May	40		45	Very firm and general pelvic adhesions; 27 lbs.	"
240	Dr. Montgomerie Bell ..	July	61		20	No adhesions; 40 lbs.	"
241	Dr. Dick, Harrington ..	July	54	1	15	General parietal; 17 lbs.	"
242	Dr. Dobie, Ayr	August	57		40	No adhesions; about 20 lbs.	"
243	Dr. Gordon, Linton	September	22		20	No adhesions; 28 lbs.	"
244	Dr. Gemmil, Kirkmaiden ..	September	24		50	Parietal adhesions; 10 lbs.	"
245	Dr. Gemmil	September	57	1	15	Very firm and general parietal adhesions; 26 lbs.	"
246	Dr. Bell, Kingskettle ..	October	28	1	30	Extensive omental, parietal, and pelvic adhesions; 18 lbs.	"
247	Dr. Johnston, Stirling ..	October	48		40	Fibroid uterus; pelvic and parietal adhesions; 34 lbs.	"
248	Dr. De Vitre, Lancaster ..	October	53	1	30	Very firm adhesions to uterus, and in pelvis; 28 lbs.	"
249	Dr. Cullen, Alexandria ..	October	20	1	20	Omental; sarcomatous tumour, 7 lbs.; ascites, 25 lbs.	"
250	Dr. Dickson, Carnoustie ..	November	27		45	Parietal and omental adhesions; 25 lbs.	"
251	Dr. Moir	November	55		30	No adhesions; 12 lbs.	"
252	Dr. White, Perth	December	33		40	Parietal adhesions; 29 lbs.	"
253	Dr. Menzies	December	62	1		No adhesions; semi-solid; 8 lbs.	"
254	Dr. Dobie, Chester	December	19		45	No adhesions; about 12 lbs.	"
255	Dr. Muirhead	December	62	1	15	Omental; burst cyst; both ovaries removed; 55 lbs.	"
256	Mrs. M'Turk, Liverpool ..	1878, January	51	1	10	Very extensive omental and pelvic adhesions; 27 lbs.	"
257	Dr. Scott, Ilkley	February	20		40	No adhesions; 35 lbs.	"
258	Dr. Curror, Kirkcaldy ..	February	53		25	No adhesions; 19 lbs.	"
259	Dr. M'Culloch, Dumfries ..	February	35		45	No adhesions; 15 lbs.	"
260	Dr. Moore, Glasgow	March	38	1	25	Very extensive parietal and omental adhesions; 16 lbs.	"
261	Dr. Paterson, Carnwath ..	March	55		40	Pelvic adhesions; both ovaries removed; 20 lbs.	"
262	Dr. Clark, Cullen	March	52		50	Extensive omental and parietal adhesions; 14 lbs.	"
263	Dr. Priestley	March	25		55	No adhesions; 25 lbs.	"
264	Dr. Gardner, Bombay ..	April	44	1	40	Adhesions universal; suppurating cyst; 15 lbs.	"
265	Dr. P. Young	April	53	1	20	Very firm parietal and omental and intestinal adhesions; 20 lbs.	"
266	Dr. Dunsmure	April	57		50	General parietal and omental; 15 lbs.	"
267	Dr. Burn	May	26		25	No adhesions; 10 lbs.	"
268	Dr. Lumgair, Largo	May	63	1	15	Burst cyst; extensive intestinal, mesenteric, and pelvic adhesions	"
269	Dr. Underhill	May	21	1	30	Very firm omental and mesenteric and posterior adhesions; 30 lbs.	"
270	Dr. Wallace, Greenock ..	June	56	1	45	Very firm general parietal and pelvic adhesions; 60 lbs.	"
271	Miss F., Aberdeen	June	25		30	No adhesions; 14 lbs.	"
272	Dr. M. Duncan	June	38		40	General parietal; 24 lbs.	"
273	Dr. Carlyle, Langholm ..	July	42	1	30	Firm omental and intestinal; cæcum and general in pelvis; 28 lbs.	"
274	Dr. Erskine, Ayr	July	60	1	10	Omental and parietal adhesions; 32 lbs.	"
275	Mrs. Marshall, Gourrock ..	August	56	2		Very extensive omental; to bladder and in pelvis; 41 lbs.	"
276	Dr. M'Culloch, Dumfries ..	August	41	1	35	Intestinal and mesenteric; generally in pelvis and to uterus; 35 lbs.	"
277	Dr. Whiteford, Greenock ..	September	54		35	No adhesions; 13 lbs.	"
278	Dr. Kerr, Dumfries	September	12		50	Semi-solid tumour; 8 lbs.; ascites	"

It is only fair to add that this series of operations has, on the whole, been less severe, though there were many bad operations amongst them, and there is a larger proportion of non-adherent tumours. Neither were the tumours so large. Thus, in 50 cautery cases (*Lancet*, April 1876), 18 per cent. of the tumours were non-adherent. In the above table the number of non-adherent tumours is 30 per cent. But I find that in Mr. Wells's last published 50 cases, 42 per cent. of the tumours were non-adherent. Instead of, as in former years, advising against operation in cases of moderate sized tumours, which had not yet become a source of danger, all were operated on just as they came. Hence the number of simpler operations.

The spray is neither troublesome nor inconvenient. The instrument at present in use is Gardner's largest size. It has a double jet; and, when placed at a distance of eight or nine feet, the spray reaches the wound without any cooling current, and as fine as a London fog. That the spray is essential in ovariectomy to the perfect carrying out of Mr. Lister's principle is proved by my experience over so many years of the simple carbolic acid treatment. There can be no two opinions about this.

With antiseptics, some form of intra-peritoneal treatment of the pedicle will be found to answer best. The clamp has done good service, but it must give place to something better. The mortality attending its use is larger, and the convalescence slower, as a rule, than with the best of the intra-peritoneal methods.

The ligatures, when employed, were either catgut or fine soft iron wire. I have already stated that, of fifty-one cautery cases before antiseptics, there were four deaths; of thirty-one cautery cases with spray, all recovered. A method, then, which in the worst cases without antiseptics answered so well, must be a good one with them. What difference was there, then, in the cases that got well? Not much. Carefully prepared tables of temperatures of the two sets of cases show very little difference. There was, as a rule, the same moderate rise of temperature up to eight or ten hours after operation—more marked, per-

haps, in both sets of cases in young subjects, especially if in too good condition; then a fall by next morning, and again a rise in the evening to about thirty-four hours after operation. After that, almost a normal pulse and temperature, and a rapid convalescence, except in some of the cases where ligatures were left in the pedicles. In both sets of cases the wounds were dressed in the way I have now done for many years. Eight or ten folds of gauze soaked in an 8 per cent. solution of carbolic acid in glycerine, and over that a large cushion of cotton-wool. When there was no draining, this dressing was not disturbed for a week or more, and primary union was always got with or without spray. The patient was generally out of bed by the end of the second week, and home, often a long way, during the third. Yet, the convalescence was easier in the antiseptic cases. They suffered less from flatus, and slept better. The nurses also tell me that they had less trouble with them, and had themselves much more sleep.

Yet, in three cases, the temperatures were the highest I have ever seen a few hours after ovariectomy. In one it rose to 104 deg., but was down by next morning. In another, five hours after operation, it was 106.2 deg.; in another, 105.5 deg. eight hours after. These two were cases of burst cysts. In both, the adhesions were unusually great to intestine, mesentery, and in the pelvis. Both were long operations, and there was great exposure of intestine and mesentery to the action of the spray. Now, I have rarely—not more than twice, I think—seen a temperature of 103 deg. on the evening of the operation in any case, before antiseptics; and I cannot account for the rapid rise in these two cases. In the case where the temperature rose to above 106 deg. so soon after, a most unfavourable prognosis had been given, the chances being put as a hundred to one against a favourable termination. She was sixty-three years of age; was in a typhoid state after a burst cyst, and was quite comatose. This condition continued more or less for a fortnight, and she has now no remembrance of the operation-day, or even of having seen me. I have rarely met with high temperatures in ordinary ovariectomy, and nothing has so much sur-

prised me as to read of the hyperpyrexia which Mr. Wells tells us is the rule after ovariectomy. I had never before antiseptics found it necessary to use ice to the head to bring down fever in the first days after operation. The ice cap was only used once in a case of acute septicæmia, and the temperature remained unaffected. Indeed, in all my cases before the spray, not more than five or six pounds of ice were got for the whole number, and the most of that was wasted. I attribute the hyperpyrexia to operating in women overfed, or in too full health with small tumours, or to imperfect cleaning, or not draining of the abdomen, thus giving rise to absorption fever. Many years ago, when I sometimes removed moderate-sized semisolid tumours from women in full condition, my practice was to let them lose ten or twelve ounces of blood from the pedicle before securing it. This prevented any undue blood-pressure and vascular disturbance. For long my practice has been to wait till the patient had suffered from her burden, and interference was necessary. Only once or twice has this rule been broken through, when some German or foreign friend wished to see the cautery used, and only some case of small tumour was at hand to show him. But then I generally had to regret it. Antiseptics will change all this.

What, then, have we gained by antiseptics in ovariectomy? 1. It has lessened the mortality. Take the results of the German surgeons. After the first trials even, the mortality fell at once from 50 per cent. to 20: thirty lives saved by the spray alone out of every hundred. When I add that my last forty-one have all recovered, enough has been said. No such successful series was ever got in the old way. Once Mr. Wells had twenty-seven successful operations in succession. But look at that wonderful list of eight hundred operations. How often did it happen that there was a run of deaths, too many and occurring too often to be merely accidental; frequently four or five in succession, once seven, then ten out of twelve, etc. With antiseptics there will be no *per contra*, and such a run of deaths will come no more. 2. This increased safety will encourage medical men to recommend earlier operation, which certainly few of them now do. That very large tumours and bad adhesion increase the mortality there can be doubt. For the last seven years, no death happened to me in non-adherent tumours, and the deaths that occurred during that period were, with a single exception, in cases when the local difficulties prolonged the operation for two hours or more. Certainly early operation, when a cyst bursts and fluid is thrown out in a large quantity into the peritoneum, cannot be too strongly urged. 3. With antiseptic ovariectomy the drainage-tube will not be nearly so often required. I do not think that it can be altogether dispensed with. No one has practised drainage so much as I have, yet I know well that it sometimes cannot be used without risk. Some patients give simply serum from the irritation of the tube; in others, after a short time the tube becomes enclosed in thick lymph, and it sometimes gets choked with this. In such circumstances, there must be a risk of some folds of intestine adhering at angles when the tube is removed. I have several times seen decided inconvenience arise from this, but never any fatal obstruction. With antiseptics the tube can be removed much earlier. Drainage is certainly a great trouble both to the patient and attendant. 4. Convalescence is rendered easier. 5. Antiseptics are a great comfort and relief to the operator. Speaking for myself, the difference is enormous; ovariectomy is not the operation it was fifteen or sixteen years ago, or even two years ago. The best results in the old way were difficult to get, and no one knows but who has experienced it the anxiety and weariness of spirit with which the struggle against the blood-poison was carried on in the early days of ovariectomy. It is something to think that no one will again have to suffer these experiences in the same degree, and it almost makes one envy the younger ovariectomist to whom the way in these days is made easy. Now there is a feeling of confidence and security; the constant fret and worry to get chemical cleanliness in one's hands, in the surroundings of the patient and her attendants, has passed away. The time is saved that was spent in cleaning the sponges, in passing the points of instruments through the flame of the spirit-lamp, and in other endless precautions. Above all, there is the feeling that the patient is protected from external agencies. Now, with an 1-in-20 carbolic solution and a nail-brush, with perhaps first a wash in turpentine to remove all fatty matter, I am safe to have my hands in any degree of putridity half an hour before an operation. Professor Schroeder tells us that he uses extraordinary precautions; that, on an operation-morning, he gets up early and washes himself all over; that his assistants wash themselves, and that the patient is all washed; that neither he nor his assistants see any patients till the operation is over. Surely all these washings are unnecessary, and have come too late. Had these precautions been taken before the days of antiseptics, I can imagine that the results of the German surgery in ovariectomy would have been something better than a 50 per cent. mortality. I have recently suc-

cessfully performed ovariectomy several times on poor women in their own homes, or in almost filthy lodgings, without any precaution whatever.

That drawbacks may yet appear is quite possible. What I should be afraid of is the effect of very long-continued spray in severe cases in feeble women. I think I have noticed a greater depression immediately following some of the very long operations, and a necessity for greater stimulation during the first twelve or twenty hours. I confess I shall watch with some anxiety whether deaths in severe cases happen more quickly than they used to do.

One's pleasure in this operation is, however, greatly marred by the frequency with which malignant disease is found at the operation, or reappears soon after it, upsetting all one's calculations. In one-fourth of my deaths, the tumours were malignant; and, with very few exceptions, in those who have died since their return home after ovariectomy, some cancerous affection has been the cause of death. Thus, amongst these, five young and healthy-looking women have left me, all after severe operations, the pictures of health and happiness, and have died within a short time of peritoneal cancer. This is a subject of the greatest interest. Till quite recently, our knowledge of the microscopic appearances of the diseased ovary was in a state of hopeless muddle. Dr. Foulis, by his investigations of the anatomy of the ovary, has at length made its pathology simple. Healthy and malignant ovarian structure, simple ovarian and peritoneal fluids, as well as those of the uterine fibro-cysts, can now be recognised with certainty by the microscope alone. We know now that, in certain cases where free fluid in the peritoneum is present with ovarian tumour, there is no use in operating; in others, that we cannot interfere a day too soon; and in some we can predict a return of abdominal disease after successful operation. These researches of Dr. Foulis are of the utmost value, and I know well the time and labour that have been for several years spent upon them. I regret to have to add that, in his recent lectures at the College of Surgeons, Mr. Wells incorrectly gave the entire credit of these investigations to Mr. Thornton, who, to say the least of it, as ungenerously tried to claim it.

Not long after I began ovariectomy, one of the heads of the profession here—the best and most honest of men, an old teacher, and one whom I looked up to as a professional father—said to me: "Fellows like you should simply be handed over to Mr. Lethian." Now, Mr. Lethian was the public prosecutor. By simple care, and by giving heed to the old surgical principles that my good master James Syme taught, I am now able to show you that the mortality of ovariectomy has with me got less and less every year since I began it, till in the year before antiseptics it had fallen to 5 per cent. Surely, then, if one's natural conservatism should have hindered anyone from adopting altogether a different procedure, such as the antiseptic principle involves, it should have prevented me. But there was no getting over the living blood-clot in the open wound of the broken leg. There was certainly disappointment at first, but only from my inability to carry out the principle, or from trying to carry it out in a wrong way. Now, the right way is got, and surgeons like Mr. Callender, or our own Mr. Spence, may take my word for it that, if they have reached already near perfection in their work, they will, by carrying out Lister's antiseptic principles, get still nearer it, and that, too, with greater comfort to their patients and with less anxiety and less trouble to themselves.

In his last edition on the *Diseases of Women*, Dr. West thus writes:—"I think, then, that we are now bound to admit ovariectomy as one of the legitimate operations in surgery; as holding out a prospect, and a daily brightening prospect, of escape from a painful and inevitable death, which at last, indeed, becomes welcome, only because the road that leads to it conducts the patient through such utter misery."

This long-despised operation is now the safest of all the great surgical operations, at least judging from these results: twelve deaths of the last one hundred and fifty-six, three of the last seventy-five, and no death of the last forty-one operations.

I would fain expatiate for a little on antiseptics in general, but must bring this rambling paper to a close, feeling sure that, whatever may appear in the future of antiseptics in surgery, the name of JOSEPH LISTER, who put us on the right way, will not be forgotten.

On September 2nd, the Members of the Faculty of Medicine of the Calcutta University sent in their resignation, as they declined to act in concert with the gentleman who professed homœopathy. The result was that the Syndicate transferred Dr. Mahendra Lal Sarkar's name to another Faculty (that of Engineering), whereon the members of the Medical Faculty consented to resume office, and so the affair ended for the present.