been lessened by their benign influence. Upon you devolves the responsibility of carrying out the noble aims which their genius has achieved, and of winning fresh victories in the domain of the healing art. Keep therefore, I warn you, your minds ever awake, your eyes ever open, and your ears ever on the alert; so that, perchance, it may be vouchsafed to some of you to uplift the filmy veils behind which some of Nature's most important medical facts and laws are no doubt still tantalisingly masked.

In striving to carry out your divinely-inspired mission with honesty of purpose and with the golden rule for your guide, do not be discouraged although all men should not speak well of you. You have heard the story of the painter of olden time, who exposed his picture to public criticism, and left a paint-brush close at hand so that anybody might blot out any particular feature of which he disapproved. Of course, the ingenuous artist soon found that everybody had some fault to find; and, bit by bit, his unfortunate picture was totally obliterated. Just as it was with the picture, gentlemen, so it is with the life-work of the majority; somebody will be pretty sure to take a crooked and distorted view of your character and of your actions, however meritorious they may be; some will do this wilfully and maliciously, and others through misunderstanding. But good, honest, persevering work in any sphere of duty will assuredly win its way in the end, and bring with it its own exceeding great reward.

The aphorism of the Father of Medicine, written upwards of 2,000 years ago, still holds true—"Life is short and the art long." The span of life allotted to each of us is too long if it be devoted to the pursuit of evil ways, and too short if our object be to follow in the right path, and to leave even a single "footprint on the sands of time." "The golden moments in the stream of life rush past us, and we see nothing but sand; the angels come to visit us, and we only know them when they are gone." Avail yourselves, then, of all the opportunities which may be offered to you, not only during the rest of your curriculum, but in your professional life, of acquiring knowledge and of doing good to your fellow men. If you allow these opportunities to slip, they will pass you beyond recall. Ere many years are passed, you, like the rest of us, will be called upon to give an account of your stewardship; and, assuredly, the members of the healing art will be amongst those to whom ten talents have been given. If you use these aright—and you will have ample opportunities of doing so—you will not fail to be numbered amongst the good and faithful; but if you fail to turn them to good account, you will richly deserve the title of unprofitable servants.

COMPARISON OF THE CÆSAREAN SECTION WITH PORRO'S OPERATION.

Read in the Section of Surgery at the Annual Meeting of the British Medical Association held in Dublin, August, 1887.

By SIR SPENCER WELLS, BART., F.R.C.S.,
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FIFTY years ago, when I was a student in Dublin, the comparative danger of Craniotomy and the Cæsaean section was the subject of warm discussion. Montgomery, Beattie, Churchill, and many others argued the question with great ability, with wide diversity of opinion, but with the perfect good temper of friendly rivals anxiously seeking for truth, and with the earnest desire to benefit mankind. At that time the operation which Porro described as "utero-ovarian amputation completing Cæsaean section" had not been seriously considered. Ten years before my student days in Dublin, that remarkable man, James Blundell—always far in advance of his time—had said to the students of Guy's Hospital, in 1828: "In speculative moments, I have sometimes felt inclined to persuade myself that the dangers of the Cæsaean operation might be considerably diminished by the total removal of the uterus. Perhaps this method of operating may prove an eminent and valuable improvement."

Blundell and other operators in Germany, Italy, and Russia proved by experiments on rabbits, sheep, and bitches that the uterus is not at all necessary to life; but it was not until 1869 that there is any record of amputation of the gravid uterus having been attempted in a living woman. In that year, Dr. Storer, of Boston, performed Cæsaean section, without any idea of doing more. But the uterus was the seat of a fibro-cystic tumour; severe bleeding occurred, and Dr. Storer removed the uterus as the only means of stopping bleeding. It was not until seven years after this, that Professor Porro performed the first premeditated operation which is now known by his name.

This was in 1876, and within eight years after that time Dr. Godson was able to bring before the Obstetric Section of this Association, at the meeting in 1884, not only a case of his own performed in 1882, successful both to mother and child—the first in the United Kingdom—but to give particulars in tables, admirably arranged and compiled with rare industry, of 137 cases of true Porro's operations, and of 5 other cases of utero-ovarian amputations during pregnancy, before the fœtus was viable; and of 6 cases where the fœtus was removed from the abdominal cavity by laparotomy, and the ruptured uterus was amputated. Dr. Godson afterwards published a supplement to his tables, bringing the historical record up to the latter end of 1884, and the number of true Porro's operations to 152, with a result to the mother of 66 recoveries to 86 deaths, a mortality of 56.5 per cent. Excluding the children who only lived a few hours, 96 were living. Thus, the number of women who recovered, 66, added to the 96 living children, makes a total of 162 lives saved by 152 operations.

My own experience of Porro's operation is limited to one case, so is my experience of the Cæsaean section, with one case where I excised a cancerous uterus which contained a fœtus of about the sixth month. I fear that, although the three women all recovered, I can do little more than offer a few suggestions for consideration, and invite discussion upon questions which still wait for authoritative decision.

Perhaps the case which I have called one of Cæsaean section can hardly be considered as thus accurately described, for the child was not viable, but only a fœtus of about the fifth month. But the case is of some importance in its bearing upon the discussion invited to-day, and in the history of the Cæsaean section, as I believe it was the first case where the opening in the uterine wall left after the removal of the fœtus and placenta was closed by sutures. I published a full report of this case more than twenty years ago (*Medical Times and Gazette*, September 30th, 1865).

After removing an adherent multilocular cyst of the left ovary, weighing about 28 lbs., I tapped what I took for a cyst of the right ovary, and found it to be the gravid uterus. A quantity of liquor amnii and a fœtus of about five months' escaped, and I easily peeled off the placenta from the inner surface of the uterine cavity. I made a free opening into the vagina by passing my finger from above through the os, and when bleeding was arrested by uterine contraction, I brought the peritoneal edges of the opening in the uterine wall together by an uninterrupted suture of fine silk, one long end of which I had previously passed into the uterine cavity, and out through the os into the vagina. By seven or eight points the uterine edges were brought accurately together, and the upper end of the silk was brought out through the opening in the abdominal wall. Although this patient recovered and is still in good health, she went through a period of very serious illness—fever, pain, profuse discharge and protracted convalescence—in striking contrast to the two cases where I removed the entire uterus.

In the first of these two cases the fœtus was only about a week over the six months after conception. After opening the uterine cavity, and allowing the liquor amnii to escape, I removed the fœtus, and then the uterus and both ovaries, with a cauliflower mass limited to the cervix which may be described as a growth "midway between papilloma and epithelioma." This patient recovered as well as after an average ovariectomy, and remained fairly well for several months; but she died of intra-abdominal cancer about a year after the operation. The case was brought before the Royal Medical and Chirurgical Society in 1881.

The true Porro's operation is not an excision of the entire uterus. It is the completion of the Cæsaean section by supravaginal amputation of the uterus, and it was not proposed by him with reference to uterine cancer or any form of uterine tumour, but simply to save the woman from many of the dangers which follow the Cæsaean section when the uterus and ovaries are not removed.

In my case, a full report of which appeared in the *JOURNAL* last June, it is almost certain that the entire uterus was removed, although after recovery something like the lips of the os could be felt at the top of the vagina. The impediment to parturition was not deformity of the pelvic bones, but the presence of a large, solid, immovable fibroid tumour of the uterus, which rendered delivery by the natural passage impossible. Supposing the Cæsaean section only had been performed, the child and placenta removed, and the uterus with the tumour left undisturbed, it is certain that the patient would have been left in a position of considerable peril to life, and if recovery did follow, she would still have been left with her pelvis blocked up by a solid tumour. While this was an additional reason for preferring Porro's operation to the Cæsaean section, the presence of the tumour (which was afterwards found to weigh 9 lbs.) added considerably to the difficulty and danger of the operation.

In an ordinary case, where there is no uterine tumour, the uterus after removal of the child may at once be brought out through the opening in the abdominal wall, transfixed above the vagina and surrounded by an elastic ligature, or by a wire tightened by a screw. Then the stump would be secured outside the abdomen, with the peritoneum carefully closed around it, just as we used to treat the pedicle of an ovarian tumour when the clamp was used.

It would certainly appear, from a study of recorded cases, that the danger to the mother is much less than when the empty uterus is left within her, whether the opening in the uterine wall be closed by suture or not. In my case, although the presence of the large tumour, added to the time taken up by the operation, and to the size of the stump, and to additional care in separating the bladder and avoiding the ureters, recovery went on with surprising rapidity, and both mother and child have been, ever since the operation last May, as well as after an ordinary natural labour, the mother being saved from any risk of possible pregnancy hereafter.

I need not say more of a case which has been so recently published, but I shall be happy to give any further information which may be desired, and will only in conclusion invite discussion on the question under what circumstances in the future, when delivery of a child by the natural passages by craniotomy, evisceration, or any obstetric operation is impossible, the operator should be satisfied by the performance of the Cæsarean section alone, or should complete his work by removal of the ovaries and of the uterus wholly, or in part? It may be too much to expect that any rule can be agreed upon which should be obeyed in every case without exception; but it may perhaps be possible, by careful comparison of the dangers and advantages of the Cæsarean section alone, or as completed by Porro's operation, to arrive at some general idea of the true value of both.

Dr. IMLACH said he thought Sir Spencer Wells had wisely left the question of Cæsarean section v. Porro's operation an open question. His experience, like that of any individual, was sparse, and we had yet to collect sufficient cases. The improved or modern Cæsarean section was the preferable operation where the pelvic obstruction was not permanent, because the reproductive organs were saved and the mortality was low. Porro's operation was a much simpler affair; but, though of modern origin, it was an example of very primitive surgery. It had become a favourite, simply because its results were much more successful than those of the old form of section, and because its performance was comparatively easy. Twice over he had been obliged to perform Porro's operation, and both women recovered, though one died subsequently of cancer of the cervix, and one child was now a healthy boy four years old. In both of these cases the pelvic obstruction to natural delivery made the Porro's operation preferable. The modern Cæsarean section was very different from the old one, and required considerable technical skill. When it had become thoroughly developed he had little doubt it would be used in a modified form in some cases where hysterectomy for large uterine fibroids was now recommended. By this method of conservative surgery the tumour would be enucleated through the abdominal incision, while the uterus and ovaries would be saved. Where this was impossible, hysterectomy would still be available.

Sir SPENCER WELLS, in reply to Dr. Imlach, said that it was the difficulty feared by surgeons after removal of the child by Cæsarean section which was the chief impediment to the general preference of Porro's operation instead of the older operation. After removing the child and placenta, it was comparatively easy to leave the uterus and close the abdomen. The subsequent removal of the uterus and ovaries was an additional difficulty, which many would gladly avoid; but really the difficulty was not very great. It was easy to bring the empty uterus and the ovaries outside the abdomen, and to secure the stump by pin and ligature. And the danger to the mother was probably much less than that which she must pass through when the uterus was left within, while she was saved all risk from subsequent pregnancy. With regard to the removal of uterine tumours by enucleation, either by abdominal section or through the vagina, general experience seemed to prove that enucleation was far more dangerous and less satisfactory than hysterectomy, and it seemed extremely probable that in many cases any severe surgical operation might be rendered unnecessary by the electric treatment practised and taught by Apostoli.

PRESENTATION.—Dr. Stark, on leaving England for Corsica, for the benefit of Mrs. Stark's health, has been presented with a coffee tray, a tea-kettle, a pair of three-light candelabra, a claret jug, and a salad bowl and servers, as a token of esteem and regard for the kindness and good feeling he had shown during his residence in Wantage.

REPORTS TO THE SCIENTIFIC GRANTS COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

REPORT ON CULTIVATION EXPERIMENTS WITH MALIGNANT NEW GROWTHS.¹

By CHARLES A. BALLANCE, M.S., F.R.C.S.,
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AND
SAMUEL G. SHATTOCK, F.R.C.S.,
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THE following research was undertaken with the view of determining whether malignant new growths, which have so many and such close analogies to the infective granulomata, have a similar micro-parasitic pathology. Our work on this subject is still in progress; and although we have established the fact by these experiments that no micro-organisms admit of being cultivated from malignant new growths on any of the chief media at present in general use, we hold, nevertheless, that the parasitic theory, in some form or other, is the most probable of any of those yet advanced.

Perhaps the chief advantage of it as a working hypothesis is that it admits of a clear and definite conception, which no other view (with the exception of Dr. Creighton's, a short criticism of which is noticed further on) can claim. Indeed, if the objectors to the parasitic theory are asked to furnish an alternative, the weakness of any other view as a working hypothesis becomes at once manifest.

We do not propose, however, in this paper to discuss the merits of this theory in full, having clearly done so in the *Pathological Society's Transactions*, 1887, but merely to state the reasons why we regard it as probable, so probable, indeed, that we contend that the burden of disproof is greater than that of its proof. The theory recommends itself as bringing the essential pathology of infective tumours into intelligible relation with other diseases, the parasitic pathology of which admits of demonstration; and it is hardly more than a legitimate or natural extension of the doctrine maintained by Sir James Paget—that cancer is a general specific disease comparable to other general specific infectious diseases. And as the micro-parasitic origin of some of these diseases has, since the time of Sir James Paget's lectures, been demonstrated, it is but a natural corollary to view infective tumours as having a similar minute pathology.

As regards the two factors in every specific disease, namely, the constitutional disposition and the micro-parasite, there are differences in value in different cases. In some cases, the constitutional disposition practically goes for nothing; all individuals admit, for instance, of being infected with the vaccine virus, the exceptions having been proved to be apparent only; the same appears to be true of anthrax. In other cases, the morbid effect of the virus may be overcome or weakened by the high standard of vitality possessed by the tissues. It is impossible at present to say (supposing that the parasitic theory is true) what is the relative importance in cancer of the personal element or disposition and the infective agent; but this obscure subject need not be further referred to for the present purpose.

In malignant tumours, beyond all dispute, it is the *infectiveness* that constitutes the important mark of the disease; and it is in this that malignant differ so widely in physiology from benign tumours. Not that there are no examples that lie in a sort of borderland between these two classes of growths, for here, as amongst all natural phenomena, no lines of absolute difference can be drawn. The character of infectiveness is plain in the local invasion of the tissues around by the morbid growth, in the secondary implication of the lymphatic glands in anatomical relation with the tumour, and in the general infection of internal organs. Some cases of rapidly disseminated peritoneal sarcoma are hardly distinguishable by the naked eye from those of tubercle.

That the secondary disease arises from the transference of elements from the primary tumour is shown in the likeness which the secondary growths bear to the first; squamous-celled carcinoma is squamous-

¹ The expenses connected with this investigation were in part defrayed by the Scientific Grants Committee of the British Medical Association.