*Final Summary of Dr. Willius's and Royal Victoria Hospital
Figures.***Inversion of T Wave in Lead I alone:**

Dr. Willius	...	...	mortality 63.4% in 8.5 months	...	115 cases.
R.V.H.	...	...	89% in 12.7	...	19 "
Control (Dr. Willius)	...	...	26% in 10.8	...	93 "

Inversion of T Wave in Leads I and II:

Dr. Willius	...	...	mortality 65.3% in 12.7 months	...	49 cases.
R.V.H.	...	...	84% in 9.7	...	19 "
Control (Dr. Willius)	...	...	17.5% in 28	...	40 "

Inversion of T Wave in Leads I, II, and III:

Dr. Willius	...	...	mortality 62.5% in 12.7 months	...	40 cases.
R.V.H.	...	...	55.5% in 28	...	9 "
Control (Dr. Willius)	...	...	20.5% in 18	...	39 "

Inversion of T Wave in Leads II and III:

Dr. Willius	...	...	mortality 50% in 11.2 months	...	149 cases.
R.V.H.	...	...	58% in 10	...	17 "
Control (Dr. Willius)	...	...	22.3% in 19.2	...	110 "

We wish to thank Dr. S. Picken for having accomplished the difficult task of following up the Royal Victoria Hospital patients. We cannot submit figures of a control series, but would mention that Dr. R. Marshall with one of us followed up about an equal number of Royal Victoria Hospital patients suffering from auricular fibrillation and found the mortality 68 per cent. in twelve months.

REFERENCES.

¹ Keith Lucas: *The Conduction of the Nervous Impulse*. ² Electrocardiography and Prognosis, *Arch. Int. Med.*, October, 1922, pp. 434-450.

CONSERVATIVE GYNAECOLOGY.*

BY

ARTHUR E. GILES, M.D., B.Sc., F.R.C.S.

In discussing some of the lines along which operative gynaecology is proceeding it may be well at the outset to emphasize the fact that preservation of organs is of little use unless it goes hand in hand with preservation of function. Two examples will make my meaning clear. Thus, conservative treatment of pus tubes might be praiseworthy in a woman of 20, but it would be futile in a woman of 50. A myomectomy for uterine fibroids is a desirable operation in a young married woman, but it would be uncalled-for in the case of a woman, whether old or young, who had had a double ovariectomy performed on her.

The function that stands out most conspicuously as one to be preserved whenever it is possible is that of child-bearing. The next in importance is the ovarian function. We do not know fully the part that is played in the economy of the body by the ovary as an organ of internal secretion, but there is every reason to believe that it is a considerable part. Two other functions are to be regarded as of secondary, though still definite, value; they are the menstrual and the marital functions, and we may dispose of these first.

The marital function is, of course, primarily bound up with the purpose of child-bearing. But it may happen in the case of a married couple, still young, that the wife has to lose her uterus on account of fibroid tumours. Pregnancy is no longer to be looked for; but it may be very conducive to domestic happiness, or even essential to it, that married life should still be possible. If the vagina can be left unaltered, by doing a supravaginal hysterectomy, the object aimed at is more likely to be attained than it would be if a total hysterectomy were done, involving a shortening and narrowing of the vaginal vault. Conservative gynaecology would therefore choose the former operation, other things being equal. So also, in a case of total procidentia, requiring plastic operations on the vagina: in the case of a widow or a woman advanced in years, it does not matter how much the vagina is narrowed, and, for the purpose of the operative result, the narrower the better. But in the case of a woman who is called on to lead a married life, the operation must be sufficiently conservative to allow of this purpose being fulfilled.

In regard to menstruation, a man might suppose that any woman would be only too glad to be relieved of such an

* An address delivered at the North-East London Post-Graduate College, Tottenham.

inconvenient phenomenon. But if he did, it would mean that he did not fully apprehend the feminine psychology. For while no doubt many women would gladly escape the inconvenience and pain of menstruation they would be conscious that they were not as other women. So it may be desirable by proceeding on conservative lines to preserve this function even when there is little or no hope or prospect of its leading to its natural corollary, pregnancy. For example, a woman of menstruating age may have a bilateral pyosalpinx, of a type necessitating the removal of both tubes. If an ovary can be preserved, or even a portion of one, menstruation will go on and the patient will be saved from the sense of mutilation; moreover, the internal secretion of the ovary will also, in some measure, be preserved.

For the rest of our subject it will be convenient to approach it from the operative standpoint, and to review in turn the conservative surgery of the ovaries, of the tubes, and of the uterus.

Conservative Surgery of the Ovaries.

The ovaries are the only organs that have a share in all the four functions under consideration. Their control of menstruation has just been referred to, and is quite definite: no ovaries, no menstruation. Their influence on sex instincts and sex feelings in married life is not so constant. Investigation of the after-results of double ovariectomy led me to the conclusion that if the ovaries are removed in girlhood, before the waking of sex, the sex feelings may remain undeveloped. But after a woman has arrived at her full maturity, the removal of the ovaries has not a constant effect. In some women desire and feeling disappear; in some they are diminished; in some they remain unaltered. But the last group is certainly in the minority; and so, if we wish to ensure as far as possible that a woman's sex feelings shall remain active, we must leave her at least some portion of ovarian tissue. That the ovaries are indispensable for the functions of child-bearing and internal secretion is obvious.

How then is surgery to adapt itself to these demands?

1. When the uterus has to be removed on account of benign conditions, such as fibroid tumours, fibrosis, or chronic metritis, healthy ovaries should always be left behind; a special effort should be made to retain at least one. In this case two functions have to go—pregnancy and menstruation; but two will remain—internal secretion and the marital function.

2. When the Fallopian tubes have to be removed, the ovaries may be so infected that they also have to go. But in many cases one ovary can be saved; this will mean the retention of the three functions of internal secretion, menstruation, and nubility. Pregnancy will not be possible, but at least its possibility will not have been destroyed by the operation, the disease itself having already settled the question.

3. There may be an ovarian tumour on one side, or a tubal pregnancy necessitating the removal of the ovary with the affected tube. The tube of the other side may be healthy, but the second ovary may be affected by cystic disease. Here it may be possible to resect the cystic part of the ovary leaving a small portion of healthy ovarian tissue. This will allow all the ovarian functions to be carried on, including pregnancy. I have records of several cases in which pregnancy occurred under these conditions.

4. Transplantation of the ovarian tissue can be included in our conservative procedure, though it is strictly reparative rather than conservative. The operation is still in the experimental stage, but cases have been recorded that have been successful not only from the operative point of view, but also in the matter of restoring the functions of menstruation and pregnancy.

Conservative Surgery of the Tubes.

The tubes are not essential for the performance of the menstrual and marital functions; and as far as we know they have no value in the matter of secretions. Their one function is to convey the spermatozoa up to the ovum, and the zygote or oöperm down to the uterus. By reason of occlusion at one or other end this function may be in abeyance, and the aim of conservative surgery is to restore communications. Obviously this is worth doing only under certain conditions: the patient must be of the child-bearing age and the uterus and one or both ovaries must be healthy. Three procedures are in vogue.

1. *Salpingostomy*.—As the result of a mild inflammation the tubal ostium may be sealed up, without evidence of other gross changes in the tube. An artificial ostium can be formed by making a longitudinal incision in the tube, as near to the ovary as possible, and oversewing the cut edges with fine silk to prevent reunion.

2. *Drainage of Pus Tubes*.—In cases of pyosalpinx the plan has been tried of laying the tube open from end to end and leaving it open to drain. This is done instead of removing the tubes. From the point of view of pregnancy, the chances can at least be no worse, as the result of drainage, than they were before; theoretically, they may be better. But it remains a question whether a tube that has been a pus sac for some time can ever regain its function. Personally I should not be at all sanguine about it; but only time can determine whether the experiment is sometimes worth trying. It may be found that the result as regards pregnancy is *nil*, and that the damaged tubes remain a source of danger and ill health. It would be necessary, when laying open tubes for drainage, to make sure that the uterine ostium of the tube was patent.

3. *Restoration of an Occluded Uterine Ostium*.—Where the tube is not too badly damaged but its uterine end is imperious, attempts have been made to restore this channel. The method adopted has been to pass a long straight needle, threaded with several strands of catgut, along the tube, through the isthmus, into the uterine cavity, and then across through the isthmus of the opposite side into the other tube. Another plan is to open the fundus of the uterus from the front and pass the strands of catgut from the uterine cavity into the tubes. The wound in the uterus is then closed. These ingenious methods are, of course, experimental; and here, again, time alone will show whether they have any practical value. If only one case of pregnancy followed the operation it would be worth while persevering with the attempts, since the alternative to operation is a hopelessly incurable sterility.

Conservative Surgery of the Uterus.

Perhaps the first warning that should be uttered in this connexion is against meddlesome surgery of the cervix. It is the fashion in some quarters to amputate the cervix for prolapse and procidentia. No doubt it happens occasionally that amputation is required for elongation of the vaginal portion of the cervix. In prolapse there is an appearance of elongation of this portion, and perhaps some operators have mistaken this for a true hypertrophy, and they have thus been led to do an amputation, with results that can only be regarded as very bad from a conservative point of view.

1. *Repair of a Torn Cervix*.—This is eminently a conservative and prophylactic measure. A deep bilateral tear of the cervix is unfavourable to conception, partly because it is nearly always associated with "erosion," and this in turn causes a muco-purulent discharge, which is noxious to spermatozoa. If pregnancy does occur it is very liable to end in a miscarriage. Repair of the torn cervix is favourable to pregnancy. It is also a sound prophylactic procedure, because such a cervix is in a highly favourable condition for the development of carcinoma.

2. *Uterine Fibroids: Preservation of the Uterus*.—There are many cases in which uterine fibroids can be treated by myomectomy instead of hysterectomy. Several factors must be considered when deciding between the two operations; but they may be summarized by saying that myomectomy should always be done when it is surgically possible in a woman of child-bearing age, provided that other conditions are favourable for child-bearing, and that the operation does not leave a battered and useless uterus. After the age of 40 to 45 myomectomy seldom has any practical value. Papers advocating the more frequent performance of myomectomy were read by Mr. Bonney and myself at the meeting of the Obstetrical and Gynaecological Section of the Royal Society of Medicine in October, 1922.

3. *Radium in Chronic Metritis*.—There are cases of chronic metritis that prove refractory to repeated curetting and to vaccine treatment, and it has been found necessary in the past to do a hysterectomy in order to overcome excessive losses or constant purulent discharge. In a woman under 40 one hesitates to resort to this extreme step, and an alternative plan is now offered by radium. A tube containing 110-115 mg. of radium is introduced into the uterus after a slight dilatation and left for twenty to twenty-four hours. Many good results have been reported. The treatment is not devoid of the risk of inducing permanent atrophy of the ovaries, in which case the functional results would be even worse than those following hysterectomy. But even where the ovaries

have been affected it has sometimes been found that this result is transient, and menstruation has been renewed after some months, showing that the ovarian activity has been restored. A course of repeated applications of α rays seems to have a more damaging effect upon the ovaries than a single application of radium.

4. *Preservation of Cervix in Hysterectomy for Benign Conditions*.—A reference has already been made to this. There are, of course, cases where the condition of the cervix necessitates a total hysterectomy. But I am convinced that when the cervix can safely be left the subtotal hysterectomy is a better operation; and this partly for the reason that the vagina is left unaltered and so is better adapted for the continuation of married life.

THE AFTER-EFFECTS OF CERTAIN INDUSTRIAL INJURIES, AND THEIR TREATMENT

BY X RAYS.*

BY

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CERTAIN forms of industrial injury often result in limitation of function owing to the formation of an excessive amount of fibrous tissue during the process of repair. Examples of such injuries are those involving the tendons of the wrist or fingers after either primary or secondary suture; extensive lacerated wounds or burns of muscle, and even the less serious condition of teno-synovitis. One has only to recall the usual course of treatment in such cases—namely, a prolonged period of after-treatment in the massage and electrical department—to realize that there is a serious economic factor involved, for during this period the patient is being paid compensation and too often the end-results are not at all satisfactory.

It is apparent, therefore, that any treatment which will shorten this period of convalescence and which may possibly improve the end-results deserves to be widely known and extensively practised. The object of this paper is to urge the claims of radiotherapy in such cases. I venture to assert that the final results of suitable α -ray treatment are better and more quickly obtained than by the older and more usual methods of massage, movement, and negative electrolysis, all of which I have practised and have definitely discarded.

Whilst fibrous tissue is necessary for the restoration of function, the formation of such tissue in excess of actual requirements leads to that limitation of function which is so often a marked feature of these cases. The difficulty would be solved if we could change this scar tissue into a supple vascular tissue which would not interfere with function. This, I believe, is what is done by radiotherapy. I find that it is by no means uncommon for these cases to be discharged within a period of two or three weeks from commencing treatment. The treatment is carried out on three days a week only—in other words, an average of nine attendances of thirty minutes each is the only tax on the man's time. The more recent the injury the more easily will the final result be obtained. But the term "recent" is purely relative. It would be more accurate to say that the less fully organized, the more vascular the tissue, the more satisfactory the results. One case has been selected for a detailed report as it is a typical example of limited function resulting from just such an accident—namely, limitation of movement following on tendon suture and persisting in spite of two months' treatment by massage and movement. It was finally converted into an almost perfect functional result by eight treatments in the α -ray department spread over a period of two and a half weeks.

The patient had an extensive cut of the second finger of the left hand extending round the front and side of the proximal interphalangeal joint and severing the flexor tendons. The tendons were sutured and the patient was submitted to after-treatment in the massage department for two months. At the end of this time the condition was as shown in Fig. 1, the movement being limited and the finger thickened and painful.

* A paper read before the Yorkshire Branch of the British Medical Association, June 1st, 1923.