ered from the exhaustion consequent upon the loss and the increase of her sufferings when she was ill again. She had been under the hands of quite a number of specialists both here and in London; and after reading up her case, and comparing the opinions expressed about it, and having come across one of my cases of spaying, she came to me deliberately, to ask me if I thought I could spay her, and, if I could, if I thought it would do her good. She had been told that the womb was bent backward, but that there was a tumor on either side of it. The tumors in question I found to be enormously enlarged and very tender ovaries lying behind and below a retroflected and retroverted fundus, which felt so large that it really might have been a question whether or not there was a myoma in it. From my previous experience, I was of opinion that fundal enlargement was due merely to chronic fundal metritis, though I was quite prepared to find a myoma at the operation.

I had no difficulty, in such a case as this, in recommending the removal of the ovaries, for the mere names of the gentlemen under whose care she had previously been, without benefit, were sufficient guarantee that everything short of that had been tried. Moreover, the patient, a clever, intelligent woman, knew all about her case, and told me pretty accurately all that had been done. I had, besides, the advantage of the history given by one of her medical attendants.

The immediate arrest of the hemorrhage, which had been uncontrolled even by hypodermic injection of ergotin, would alone have been a sufficient warrant for the ovariotomy, but there were numerous other reasons in its favor. I therefore performed it on April 9th, and found the fundus enlarged from chronic fundal metritis only, the ovaries enlarged from chronic interstitial inflammation, and the displacement as I have described it. I removed the ovaries and stitched the uterus up to the wound as in the previous case. She made an uninterrupted recovery, and has never menstruated since. She is now full of color, stout, and well in every respect but one. She went through the early stage of the climacteria without much suffering, and these disagreeables are passing off rapidly. For six weeks after the operation she was absolutely free from the terrible pain in the back; but as she began to get about it came back, and for a time was as bad as ever, despite the uterus being absolutely normal in position and speedily regaining its normal size. This pain in the back still continues in a modified form, and is, I believe, slowly fading away; and I have not the least doubt it will entirely disappear in time. Why it has returned, and why it has lingered so long, I do not know, for there is no physical reason

for it perceptible. In every other respect the results of the operation fully justify its performance.

In very many cases such as these, there will be found no incident in the history from which it can be said that ovarian hyperæmia was transformed into chronic ovaritis. In others a distinct history can be given of an acute attack, from which the chronic suffering can be dated; and my belief is that the two classes may be more carefully defined by further observation, and that their pathological features are wholly different.

So far as I know, acute ovaritis is the result of four conditions only:

1. Injury;
2. Gonorrhœal infection;
3. Septic poisoning in the parturient condition;
4. Exanthematic fevers and acute rheumatism.

In one woman I diagnosed acute ovaritis following injuries inflicted by her paramour kicking her; and though it may have been general pelvic peritonitis, yet the uterus never became fixed as it does in that condition, and the subsequent permanent disturbance of menstruation, accompanied by other signs of chronic ovaritis, confirmed me in my opinion.

Acute ovaritis from gonorrhœa is a common result of the infection, and is a frequent cause of sterility. It seems to be precisely similar to the acute epididymitis of the male, as was first pointed out by Bernutz and Victor de Méric. In this affection the patient is found with an anxious face, agonizing pelvic pain, generally only on one side, the knees drawn up, and all the signs of a severe inflammatory attack. The patient can lie with comfort only on the back, and micturition and defecation are productive sometimes of excruciating pain. It is often impossible to make a vaginal examination without an anæsthetic, and this had better be used at once, for it is a matter of consequence to diagnose between acute ovaritis and pelvic cellulitis. In the latter the tumor will be found attached to the uterus, and moving with it and with the whole roof of the pelvis, and will be found to be more or less fixed; while in ovaritis the enlarged ovary may, as a rule, easily be made out. The treatment should consist in leeches to the perineum, a blister over the ovary, diuretics, and small, frequent doses of opium. The rectum should be well evacuated by an enema, and the bowels kept quiet for a few days. The great risk of the disease is that of its spreading into general peritonitis. In the event of the attack appearing to threaten the life of any patient under my care, I would not hesitate to open the abdomen, cleanse out the cavity, and possibly

remove the diseased organs. When an ovarian tumor is gangrenous or suppurating, we serve the patient by promptly removing it, and I do not see why this principle should not be extended. The result of the disease is nearly always to destroy the functions of the glands, and therefore, in prospect of a fatal issue of the disease, the argument against an operation, that it will unsex the patient, need not be considered.

Gonorrhœal ovaritis is an extremely treacherous disease, or rather, perhaps I ought to say that gonorrhœa is a disease which in women may be fraught with the most serious and unexpected consequences. Some years ago a gentleman who had been a short time married, visited a neighborhood where he unfortunately met a friend of his bachelor days. Within forty-eight hours he came to me in terrible distress, with the initial symptoms of gonorrhœa, but with the still more terrible dread that he might have conveyed it to his wife, for intercourse had taken place a few hours before his symptoms appeared. Of course I at once cautioned him to refrain absolutely from intercourse with his wife—advice which I have no reason to believe that he disregarded. His gonorrhœa proved very trifling, and passed off entirely in less than a week. Wishing to take his annual holiday, he brought his wife to me to make sure that she was free from disease, and I could not find the slightest trace of vaginitis. I therefore sanctioned their travelling to a considerable distance. But within three days I was summoned to her, and found her suffering from a most severe attack of inflammation of the left ovary. After some weeks she got well, though the ovary could be felt, both by rectum and vagina, as large as a small orange, firmly fixed and exquisitely tender. Suddenly the right ovary became similarly affected; and after a most severe illness, during which she seemed frequently at the point of death, she recovered, with the right ovary similarly enlarged and fixed. She never menstruated after this second illness, and she now lives a semi-invalid life, hardly ever free from pain, and unfit for any great exertion, though as time goes on her sufferings seem to obtain slight amelioration. She is quite unable to endure marital intercourse, and the best thing that could be done for her would be removal of the uterine appendages. She belongs, however, to the better ranks of life, and we find that patients of this class very often prefer a chronic invalidism to the risks of an operation. They can pay for any amount of luxury and medical attendance, and they do what is best for their doctors in a pecuniary sense, but not what is best for themselves.

The history of such a case is undoubtedly that the poison has permeated the uterus and Fallopian tubes, alighting on the ovary

from the tube probably at the time that the fimbriæ were in association with it; but it is somewhat surprising that there was never any trace of vaginitis.

A case of alternating ovaritis, for which I have been unable to discover any cause, has been for some time under my care in hospital practice. The patient, J. K——, aged twenty-five, came to the hospital with well-marked acute inflammation of the left ovary. She had been married for three years, and had never been pregnant. There was nothing in her history to make me suspect that she had suffered from gonorrhœa, nor did she know of her husband having so suffered. The left ovary recovered in a few weeks, but remained somewhat enlarged and very tender, and it was also somewhat fixed. In about two months she came back with the right ovary quite as severely involved, and has since been several times under care with recurrences on one or other side; but both ovaries have never been attacked together, and none of the attacks have been associated with menstruation, which, always irregular, has been gradually getting rarer and more scant. The most probable explanation of this curious case is, that she is exposed every now and then to some infection which travels up her Fallopian tubes, and attacks the ovaries without giving any indication elsewhere of its presence. The possibility of such an event must always be borne in mind, and as a guide to future directions it may be advisable to ask cautiously into the history of an attack of acute ovaritis. Whatever be the explanation, it must ever be borne in mind that ovaritis is a disease peculiarly liable to relapses, and cautions upon this point must be given to the patient.

Of acute ovaritis in childbed from septic causes, as distinguished from general septic peritonitis in which the ovary is involved, my experience is limited to one case in which, like those recorded by Simpson, Bernutz, and others, an abscess resulted. The infection occurred after a miscarriage in the wife of a medical man, and was distinctly limited to the two ovaries, as was readily determined by an examination under an anæsthetic. An abscess formed in the right ovary, and I tapped it in the early stage by means of the aspirator, with a completely successful result. The general symptoms were pain, elevation of the temperature, night-sweats, drawing up of the knees, inframammary pain, and pain shooting down the thighs and legs. The chief remedies employed were counter-irritants, such as turpentine stupes and blisters, and the internal administration of quinine and opium. The aspiration was, of course, performed through the vagina.

Of this disease, Dr. Mathews Duncan describes a case in

which "the right ovary was swollen, renitent, as big as a walnut, and when cut into was found to have its healthy tissue everywhere utterly destroyed, and converted into a yellow, purulent, almost diffluent mass. There was no lymph in Douglas' space. Bladder and uterus normal; no general peritonitis. Of such ovaritis, with suppuration, examples are not rare, because puerperal pyæmia is not rare."

It has long been known that, in certain zymotic diseases, especially in mumps and scarlet fever, male children are apt to suffer from orchitis, and I remember seeing a statement somewhere that such inflammation of the testicle was likely to be followed by atrophy and loss of its function. I cannot, however, verify my recollection by producing the reference.

In 1870 and 1871, and still more in 1874, my attention was drawn to the occurrence of acute pelvic peritonitis in women after attacks of scarlet fever and small-pox, these attacks leaving indications which showed clearly that the mischief began in the ovaries. Accident enabled me to trace the subsequent history of two such cases, and I found that in both the menstruation became greatly diminished in amount, that it was accompanied by severe dysmenorrhœal symptoms, and that in one of the cases it entirely disappeared. From these cases I began to suspect that the attacks were primarily due to inflammation of the uterine appendages, and that this had some kind of relation to the zymotic diseases which preceded it.

The terrible outbreak of small-pox from which this town suffered between 1872 and 1874 gave me the opportunity of following out this line of research, and in the second edition of my Hastings Essay on the "Pathology and Treatment of Diseases of the Ovary" I sum up my conclusions upon this subject, and, up to the present time, I have seen no reason to modify them:

"The occurrence of acute ovaritis in certain of the exanthemata, or as a sequela to them, has never yet, so far as I know, been placed in sufficient prominence. I have already alluded to it, but I wish here to record further experience gained from an epidemic of small-pox of considerable severity, which existed in Birmingham from 1872 to 1874. Though practising exclusively as a gynecologist, it is somewhat curious that I was called in consultation to four cases as instances of pelvic ailment which ultimately proved to be cases of small-pox. One of these gave the clinical features of the exanthematic ovaritis with great clearness. She had been married four years, and had been confined twice. She was pregnant for the third time in September, 1873, when she was seized with a sudden rigor, followed by severe pyrexial symptoms. These rapidly became localized in the

pelvis, the patient complaining of excruciating pain in each iliac fossa. I saw her on the fourth day of her illness, and found her suffering from double acute ovaritis and threatening abortion. She aborted on the fifth day, and then showed a papular eruption of small-pox, which rapidly became confluent. She made a very protracted recovery, and has never menstruated since. The fundus uteri is fixed down on the sacrum, and both ovaries are enlarged and tender, the left being firmly fixed alongside the uterus.

"In hospital practice I met with a large number of cases, of which the following is a good example: H. A——, aged twenty-two, began to menstruate a short time after she was fourteen, and was quite regular till August, 1872. At that time she had an attack of small-pox, which she says was not severe, and which has not left any deep marks. Up till the time of that illness she was strong and robust, and never knew what illness was. During the attack she had a very profuse menstruation at an irregular time, and this was followed by severe abdominal pain, which was treated by hot fomentations. She did not get rid of this pain entirely for some months, and since then she has menstruated at long intervals, the discharge being very scant, and accompanied with great pain. She is now very anæmic, though still stout, is short of breath, and has a loud systolic hæmic murmur at the base. The ovaries are not to be felt at all, and therefore it is probable that they have become atrophied. She obtained considerable relief from small doses of iron, combined with chlorate of potash. I have no doubt that she had an attack of acute exanthematic ovaritis, which has led to atrophy of the organs.

"I have repeatedly seen, on post-mortem examination, cirrhotic atrophy of the ovaries in women who had by no means reached the usual climacteric period of life, but had prematurely ceased to menstruate. In one case only could I get a history of the menstrual life of a patient, which was to the effect that she had not begun to menstruate till twenty years of age, and had ceased before she was thirty; and about that time she had an illness which probably was scarlet fever. The ovaries were small and shrivelled, and a stained section showed that nucleated and banded fibres constituted the bulk of the glands. Here and there, in small loculi whence the bands seemed to radiate, a small group of cells served to indicate the site of a Graafian follicle, but no perfect follicles could be found. This extreme instance was the result probably of two factors—insufficient development and exanthematic atrophy. I think that in such cases it is likely that future observation will establish the existence of an intersti-

tial oöphoritis, distinct in character and perhaps in origin from the ordinary acute inflammation of the peritoneal covering of the ovary, to which latter we might more appropriately give the name of peri-oöphoritis. The results in the two classes seem to be different; for in the second, menstruation does not seem to be suppressed, but, on the contrary, it is sometimes excessive; while, as a result of the supposed interstitial form, we have ovarian atrophy and amenorrhœa of an incurable form; and when it occurs in puerperal women, superinvolution of the uterus."

The views which I have expressed in these sentences have now been fully confirmed by my own experience and further investigations, and I have no doubt now that there is a special form of oöphoritis associated with certain exanthemata, more particularly scarlet fever and small-pox, and that in its results it differs altogether from the form of ovarian inflammation to which I prefer to give the name of peri-oöphoritis.

The most important result of this specific form of ovarian inflammation is that it leads to a cirrhosis of the ovary which may or may not be characterized by general atrophy. It always is indicated, as I have said, by atrophy of the true gland-structure and excess of the fibrous element. How this may be brought about is not yet clear; but, as I shall show you immediately, the facts are fully established, and my own explanation is that it is due to the absorption of the gland-elements after the inflammation, while the fibrous elements are left, just as is said to occur in the contracted kidney and in other instances of cirrhosis.[1]

Whatever be the process, there is no doubt that it is sometimes associated with atrophy of the uterus, resulting in what is known, and was first described by Simpson, as superinvolution of the uterus. At page 119 of my book on "Diseases of Women," I hazard the following explanation of this condition:

"Of superinvolution of the uterus, it must first be said that it is an extremely rare affection, and that all we know about it is due to Simpson. It is a condition perfectly analogous in its details to arrest of development of the uterus, with the difference in history that the superinvolved uterus has at one time been so large as to be pregnant. How the normal involution is

[1] Dr. Saundby, Pathologist to the Hospital for Women, who has given much care and personal work to this subject, tells me that it is still a *questio vexata* of pathology how far the connective tissue of cirrhosed organs is derived from retrogressive transformation of the pre-existent more highly organized elements, *e.g.*, glandular epithelium, etc., into spindle-cells and fibres, and how much is due to cell-migration from the blood-vessels and proliferation of the connective-tissue corpuscles. It is probable that the first of these processes plays a more important part than has been assigned to it in the doctrines which have found most favor during the past few years.

carried on to hypererchesis we do not know; and, so far as I can discover, we have only one description of the post-mortem appearance of a uterus so affected—that given originally by Simpson. The patient was twenty years of age, and had never menstruated after her first delivery; but no history is given of any febrile illness to which might have been attributed the abnormal absorption of the uterine substance. After death the uterus was only an inch and a half long, and its walls were less than half their normal thickness, their tissue appearing dense and fibrous. The ovaries were also much atrophied, and their dense fibrous tissue presented no appearance of Graafian vesicles. In this case it is, of course, doubtful whether the process was truly one of ovarian atrophy, followed by atrophy of the uterus, in obedience to the usual law that all useless organs tend to disappear. Several cases of what I have had reason to believe was true superinvolution of the uterus have come under my care, but in every one there has been some febrile illness, generally of a zymotic character, which occurred at, or soon after, a labor or miscarriage: and my impression is that, of all the cases, those in which a miscarriage was the origin of the trouble were in the majority. In fact, I am strongly disposed to regard superinvolution as a result of an atrophic inflammation occurring at the time when involution is going on. Thus, in a case which I published in the *London Obstetrical Journal* for May, 1873, and which certainly was the most pronounced case of superinvolution I have ever seen, the patient had had scarlet fever during the first week of her convalescence from her second labor. She came under my care in 1871, seven years after the fever, and has remained under observation ever since. When I first saw her the uterus was perfectly infantile, the vaginal portion of the cervix being represented only by a pimple. Her menstrual periods had disappeared, and were replaced by severe epileptiform seizures, as will be found detailed in the journal. I succeeded in getting menstruation restored, and the uterus increased in size by the use of galvanic pessaries, and as her periods became re-established the epilepsy disappeared. But when I discontinued the use of the pessary the menstruation slowly disappeared and the fits came gradually back, and this therapeutical experiment has been several times repeated with uniform results; and that the fits are epileptic is made certain by the severe injuries the poor woman inflicts upon herself during the attacks. Looking back on this case and others, and aided by the evidence of other facts referred to under the head of exanthematic ovaritis, I am led to believe that superinvolution is explained by the occurrence of inflammation, followed by atrophy, during the puerperal month;

and that the uterus merely follows in the steps of the ovary, carrying the process farther, however, because it had been already in action, and stopping it only when, perhaps, there was no more muscular tissue left to absorb.[1] I do not suppose that the exciting ovaritis need necessarily be exanthematic, but peri-oöphoritis, or inflammatory action affecting only the covering of the ovary, does not seem to affect menstruation; it rather inclines to induce sterility only. These views would explain many facts which are otherwise irreconcilable, and, what is most of all remarkable, the rarity of superinvolution. First of all, exanthematic or other interstitial ovaritis, such as leads to ovarian atrophy and is not fatal, is very rare in puerperal women, the great majority of such cases ending in death. The few who recover are likely to suffer from superinvolution. Again, numbers of non-puerperal women who suffer from ovarian atrophy, the result of inflammation, do not at the same time have atrophy of the uterus, because when the ovarian process began the uterus was not already undergoing involution. This explanation is quite in accordance with the history of, and the appearances in, Simpson's case, and also in harmony with the general principles of uterine physiology. Its practical bearing is, that though in such cases we may get temporary relief from the galvanic stem, that relief will cease with the use of the instrument, or when, as sometimes happens, its stimulus becomes insufficient."

The case now referred to is one of so much importance that, at the risk of being tedious, I shall give its history fully from my first acquaintance with the patient. The former part of the case I take from the *Obstetrical Journal* of May, 1873.

"E. E——, aged thirty-five, came under my care in November, 1871, at the hospital. She had been married twelve years, and had two children, the last of which was born seven years ago. She had scarlet fever after this labor, and the menses were long in reappearing. When they did come they were scanty and very painful, and occurred irregularly at intervals of from five weeks to three months, lasting only one day, or two at most. About four years previous to her first visit, slight attacks of an epileptiform nature occurred at each period—almost imperceptible at first, but getting gradually worse as the periods got more irregu-

[1] It is not to be supposed for a moment, however, that the uterus ever can be so absorbed as to disappear altogether, even though it may be so thin that a sound can be passed through it, as in the case recorded in the British Medical Journal for 1872, p. 408, by Mr. Whitehead, of Manchester. At p. 465 of the same volume I offered the more feasible explanation that there had been formed a metro-peritoneal fistula.

lar and scantier. For some months previous to applying at the hospital she had two or three severe fits at each period, each fit leaving her insensible for some hours, and often with severe injuries. On November 5th she had had a period and a very severe fit; 9th, ordered five-grain doses of the bromide of potassium thrice daily, and an aloes and iron pill twice a week. Examined on the 16th, and the uterus found quite infantile; ovaries normal. The uterus was so small that I failed to get anything into its cavity. On the 30th I doubled the dose of the bromide. December 7th, menstruated for one day, and had increased flux and no fit. Menstruated January 4th and 5th, with slightly increased amount, and one severe fit on second day. Had a severe fit on 22d, without any menstrual flow—the first time this has happened. Menstruated February 1st and 2d; no fit. March 11th and 12th, menstruation without fit, but a severe seizure occurred almost immediately after the flux ceased. On the 18th Mr. Jordan kindly put her under chloroform for me, and I got a small tangle-tent into the uterus. I at the same time discovered that there was considerable anteflexion. March 25th, passed in No. 8 tangle-tent, and on the 29th I got No. 8 galvanic stem in. April 5th, got in No. 12 stem; 7th, 8th, and 9th, menstruated more profusely than she has done for years, and without a fit, though one occurred on the 16th. She still wears the stem, and menstruates regularly and profusely, but has no fits."

From this point I continue the case from the hospital record.

On April 26th, 1873, I introduced No. 16 galvanic stem, the largest I have ever used, and from May 3d to 7th she had a period more profuse than she had ever had since her confinement. On June 4th she again menstruated for four days, again in July, and also in August and September, during which time she wore the large stem, and had not a single fit.

The stem was removed at the end of September, having been worn five months with most satisfactory results. In November she menstruated for one day only, and in December there was no appearance of it at all, but a fit occurred at the time it was expected. During the whole of this time she was taking sixty grains of the bromide each day. The fits recurred at each period when menstruation ought to have appeared, so that on May 16th I had recourse again to the galvanic stem. She menstruated from the 20th to the 24th without any fit, and she wore the stem with only very occasional fits, and with perfect and regular recurrency of menstruation, till November, when the stem was removed. By the following March, 1874, the fits had reappeared, and the menstruation was again in abeyance, and just as it disappeared the fits were re-established.

During 1875 I saw her only occasionally, as it was only when she was worse than usual that she came for the bromide mixture. It was quite clear then that her mental qualities were becoming dulled, and she was rapidly taking on the characteristic face of an epileptic imbecile. During 1876 another effort to re-establish the periods by means of the galvanic stems was made, but with results less satisfactory than those made in previous years. On February 5, 1877, I was asked to see her at her own house, and found her in a condition of epileptic mania. I advised her removal to an asylum, but her husband and mother declined to act upon my suggestion, despite its being quite evident to them that the injuries she inflicted upon herself during the fits were of so serious a character as to endanger her life, and from her occasional violence during the delirium it was quite possible she might become a homicide. Every month the fits returned with increasing severity, and the attacks of mania fastened themselves almost wholly upon the week, during which a slight loss, lasting for a few hours, indicated that her menstruation should have occurred then. The bromide of potash was pushed to as much as two hundred grains a day without the slightest effect, and other drugs were tried equally without avail.

In July, 1879, her condition was so dreadful that her friends at last determined to send her to an asylum, and I saw her on the 28th. She was almost completely fatuous, her memory was almost gone, the fits seemed to miss only one week in four, the attacks of mania were irregular and continued for varying periods, and menstruation occurred at irregular times. Yet, on the whole, it was said by her mother that she was at her worst very regularly one week out of the four.

It occurred to me that, if my view were correct, that this was a case of menstrual epilepsy really depending upon exanthematic cirrhosis of the ovary, removal of the ovaries—an operation of very ancient date, and which I performed for the first time in this country in 1872—held out some prospect of curing this unhappy woman. At least it could not make her worse than she was, for, even if she died under it, the release would be a grateful one to all concerned. Her relatives, therefore, gave a ready consent to my proposal when I laid it, and the reasoning upon which I based it, before them.

I therefore admitted the patient to the Women's Hospital, and, with the concurrence of my colleagues, I removed the ovaries on August 11th.

This operation—according to my experience one of the most successful operations in surgery, and likely to prove of infinite

service to suffering women—was first performed in 1872 by Professor Hegar, of Leipsic, and he first published his proposal. Within a very few days after Professor Hegar's operation it was performed here by myself, some months before Professor Hegar's account of his case reached this country. Dr. Battey, whose name it is proposed to fix upon this operation, did not operate till after Hegar and myself, and his publication was also subsequent to both of ours.

The operation in the case of E. E—— was made somewhat difficult by her being extremely fat. A somewhat profuse catamenial flow set in on the third day after the operation, and lasted for three days, but without the slightest appearance of a fit. This pseudo-menstruation is very common after ovarian operations, and often recurs for two or three months after removal of both ovaries.

The stitches were removed on the 18th, and she sat up on the 23d of August, twelve days after the operation.

I went away for my holiday, and did not return till the 29th of September, when I found her an altogether different woman. She had had no fits, no more menstruation, was bright and cheer-

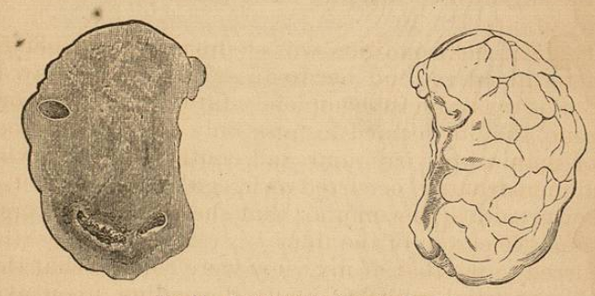

FIG. 24.—Exanthematic cirrhosis of ovary.

ful in her face, her memory returning, and she had altogether lost the dull, heavy, epileptic look which she had before.

I last saw her on October 13th, when she was about to go to her home in Peterborough, and she and her friends were satisfied as to her perfect recovery, and were as grateful as people could be for the improvement in the patient's condition.

One question of course remains: Will the improvement be permanent? I do not know. It seems almost too much to hope for, but I really think it will be. The description of the ovaries by my friend, Mr. Alban Doran, completely justifies my view of the pathology of the case, and my treatment is but a logical con-