

at the Gorbals of Glasgow. Some hospitals were founded much earlier, even more than two hundred years before the Glasgow institution. Of course, these hospitals were not like modern hospitals, numbering their inmates by hundreds; but still so general was this disease in the kingdom, and so much was the necessity of isolation considered a duty and safeguard to the community, that there were about one hundred leper hospitals in England and Scotland, which were under strict regulations, and the most stringent rules were enacted to prevent the sick from mixing with the well. In some, under certain precautions, the inmates on certain days were allowed to leave to buy provisions. In others, the inmates were punishable by death if they left the hospitals; and, to emphasise this regulation, a gallows was erected in front of the leper-house. With regard to the Glasgow house, in the burgh records for 1573 we find that the then magistrates ordered four persons supposed to be lepers "to be viseit, and gif they be found so, to be secludit of the town, in the hospital at the Brigend". In the Parliament held at Perth in 1427, the following is a clause from an Act then passed:—"Item, that na lepper folke sit to thig (beg), neither in kirk nor kirk-yaird nor other places within the burrowes, but at their own hospital, and at the fist of the towne and other places outwith the burrowes." The Act afterwards tells us who were the then sanitary inspectors. The third clause is as follows:—"That the bishopes, officalles, and deanes inquire diligentlie in their visitation of ilk Paroch Kirk gif one be smitted with lipper, and gif any sic (such) be found in that they be delivered to the king if they be seculares, and gif they be clerkes to their bishoppes, and that the burgeses gur keepe this statute under the paine intimet in the statute of beggers . . . and quhat leprous that keepis not this statute, that he be banished for ever off that burgh quhair he disobeis, and in likewise to landwart." After the Reformation the kirk sessions took upon themselves the duty of looking after lepers. Of their dealings with them, records may be found in their minutes of meetings. Some of the hospitals had ample endowments, but most of them had but scanty permanent support, and derived a precarious income from alms, which were sometimes deposited by passers by, they being invited to do so by some one or other of the inmates soliciting them by loud cries. Occasionally the lepers were allowed to beg in person (with this protection to the public), that they were obliged to use a clapper to warn people to keep from contact with their person. Another curious source of support was from confiscated food. The Scotch Parliament in 1366 enacted:—"Gif ony man brings to the markit corrupt swine or salmond to be sauld, they sall be taken by the bailies, and incontinent without any question sall be sent to the leper folke, and gif there be no leper folke, they sall be destroyed alluterlie." This shows also that there were inspectors of food in those days.

The regulations for the separation of the plague-stricken were quite as complete and stringent. The sick and their families were obliged to remove out of town. Their friends, under the charge of an officer, could visit them after 11 o'clock. Anyone going before that hour was liable to death. The houses were cleaned, and the clothing of the infected was boiled in the open air. The parties who discharged these duties, and those who were employed as bearers of the dead, were obliged to wear a grey gown, with a white St. Andrew's cross before and behind. The bier was covered with a black cloth, with a white St. Andrew's cross. A bell was also attached to it, so that it might ring as it passed along, to warn any person to get out of its way. In September 1584, the authorities of Aberdeen built ports to prevent the entrance of people who might bring the infection. This does not appear to have been successful, for we find that in May next year the magistrates erected gibbets, "ane at the nearest cross, ane other at the brig of Dee, and the third at the haven mouth; that in case any infectit person arrive or repair by sea or land to this burgh, or in case ony indweller of this burgh receive, house, or harbour, or give meat or drink to the infectit person or persons, the man to be hangit and the woman to be drownit". As recently as 1645, two lads who had received change at a public-house, which was shut up on account of the plague next day, were at once isolated from the family and shut up for a fortnight, their food, etc., being handed to them. The pocket with the change was cast into the fire. Seeing how stringently these diseases were isolated, it is surprising that equally strict but more humane rules were not enacted as regards the prevention of other diseases, such as smallpox, etc. But time will not permit any inquiry on this head; neither, for the same reason, can I point out the present defects in the administration of State medicine.

I conclude by remarking that medical science is taking a new departure, or, I should rather say, reviving an important and long-neglected branch of its art. For a long series of years the profession has looked upon the treatment of diseases as its one function. It is to be hoped that the time is not far distant when the prevention of disease

will be looked upon as by far the most important function of the mediciner. Never for a moment can we go back to the rude cruelties which were inflicted on the poor lepers and the plague-stricken, yet the separation and isolation of the sick from the well must be the first great step in any attempt to stamp out zymotics, which are a standing opprobrium to our science and art. A rule must be made that from the highest to the lowest immediate notice must be given to the local authority of every case of infectious disease, so that every possible means may be taken to prevent its spread. Some may say that this is an invasion of personal liberty. I am the last man to interfere with the liberty of the subject, still liberty must never be license, and the mere fancy or whim of an individual ought never to endanger the health of the community. It has been said that every man may do what he pleases with his own, but common sense steps in and says: No, you must not do anything that will endanger your neighbour. Suppose you wish to destroy your house, fire would be the most rapid agency you could employ, but you would not be allowed to do so, because other buildings in close proximity would be endangered. So a case of smallpox or other zymotic should be so isolated, that the risk of its spreading to others is minimised. Laying out and drainage of towns, water-supply, ventilation of dwellings, removal of organic *débris* of all kinds, regulation of workshops, schools, and every other place where numbers of people are congregated, these and a great number of other matters should all be under the supervision of a medical officer of health, who should in all cases be free from private practice, and devote his whole time to the duties of his office.

THE DIAGNOSIS OF MALIGNANT TUMOURS OF THE OVARY AND MALIGNANT PERITONITIS.

By JAMES FOULIS, M.D., Edinburgh.

IN his second lecture on the Diagnosis and Surgical Treatment of Abdominal Tumours, delivered at the Royal College of Surgeons of England on June 12th, 1878, Mr. Spencer Wells, in speaking of the microscopic examination of the fluids removed from the body, is reported to have stated as follows.

"Mr. Knowsley Thornton made a great addition to our knowledge in pointing out that, in addition to these cells of Drysdale, which are common only in simple or innocent ovarian tumours, in malignant tumours you have these very characteristic groups of cells of different sizes. He describes them as large numbers of characteristic groups of large pear-shaped, round, or oval cells, containing a granular material with one or several large clear nuclei, with nucleoli, and a number of transparent globules or vacuoles. The cells composing the groups are many of them very large, but the great variety in size and shape is the marked feature of the group. If you will bear these different forms in mind, and these different cells, I believe you will find that they are characteristic and of great value in the examination of these fluids, putting us on our guard when we have to deal with tumours doubtfully malignant. If these large groups of cells be seen, one may be pretty certain the tumour is malignant of some kind; or if they be found in fluid removed from the peritoneal cavity, probably a sort of infecting process has been going on in the peritoneum from rupture of an ovarian cyst of a malignant character; these cells may have planted themselves upon some part of the peritoneum and multiplied."

On February 3rd, 1875, I read a paper on the Structure of the Ovary in relation to Certain Forms of Disease of the Organ, before the Medico-Chirurgical Society of Edinburgh. A long abstract of this paper was published in the *Edinburgh Medical Journal* for March 1875, and the paper itself was sent, at the end of February, to the editor of the BRITISH MEDICAL JOURNAL for publication, and appeared in that journal on June 25th, 1875. As my published observations in connection with the important subject of the diagnosis of malignant ovarian tumours do not appear to have been noticed by Mr. Spencer Wells, I beg to direct his attention to that paper. In it he will find the history of two cases of malignant tumour of the ovary recorded, which were under my observation during the months of September, October, November, and December 1874. On February 3rd, 1875, I gave a description of certain little masses of sprouting epithelium, which were found in great numbers in the ascitic fluid in both cases; and I showed the large malignant ovarian tumour, removed after death, from the body of the woman, case II. The following extracts from my paper bear directly on this subject.

"It may be said that this patient's belly was full of such sarcomatous growths. Besides the tumour itself, there were thousands of little masses of proliferating epithelium floating free in the ascitic fluid, set-

ling down everywhere on the peritoneal surface, taking root, and giving rise to little nodules of sarcomatous growth; and yet this patient had no external signs of such extensive disease existing internally."

"I have given these two cases somewhat in detail, because I wish to direct attention to these little masses of proliferating epithelium in ascitic fluid, as a means of diagnosing malignant peritonitis and malignant ovarian disease."

"On reading over the cases operated on by Mr. Spencer Wells, Dr. Keith, Dr. Atlee, and others, for the removal of ovarian tumours, one cannot help remarking how common so-called cancer of the ovary is; and it appears to be a fact, that of patients who have recovered after the operation for the removal of an ovarian tumour, some, it may be in the course of weeks, months, or years, return affected by malignant peritonitis. Have we not an explanation of this in the peculiar anatomical structure of the ovary, and in its liability to take on disease by excessive proliferation of its structural elements and in the fact that, in many forms of the diseased ovary, these structural elements, escaping from the diseased ovary and lodging in the peritoneal cavity, take root, and, sooner or later, give rise to exhaustive peritonitis?"

"It is well known, as a pathological fact, that the cysts of an ovarian tumour frequently burst and liberate their contents into the abdominal cavity, ascitic fluid is then poured out, and the intestines and peritoneum in such cases frequently present a marked granular appearance. If it should happen that epithelial elements have been derived from the epithelium of cysts, which is in a thickened and villous condition, then it is likely that such epithelial elements will proliferate and produce nodules of a sarcomatous nature on the surface of the peritoneum at a future date. The whole tumour may be removed apparently, but the seeds have been left behind, and time only is necessary for their growth into nodular masses on the peritoneum, which, by constant irritation, will ultimately exhaust the patient."

"I have seen cases in which, on examination of the tumour after death, I discovered the epithelium of the cysts in a thickened and villous condition. If the cysts of such a tumour have remained whole and there has been no escape of epithelial elements from it into the peritoneum, then there need be little fear of malignant peritonitis arising in that patient in the manner we have described."

"We make it a rule now to examine very carefully the sediment obtained from ascitic glands, never mind what the nature of the tumour may be. Malignant ovarian tumours are in most cases surrounded by ascitic fluids; and if, in ascitic fluids, such little masses of proliferating epithelium as I have described are found, then in these cases we may, I hold, with certainty diagnose malignant peritonitis."

In the *Medical Times and Gazette*, April 10th, 1875, Mr. Knowsley Thornton published a paper on Unilocular Ovarian and Extra-Ovarian Cysts. After describing the anatomical differences between such cysts, he proceeds to the question of their diagnosis by means of a microscopical examination of the fluids obtained from the cysts by tapping. He recommends great caution in tapping ovarian cysts, because "the lining membrane of the ovarian cyst may give rise to papillomatous or villous growths", and as the result of careless tapping or bursting of such cysts, portions of the villous epithelium may escape into the peritoneum and give rise to growths and peritonitis. He goes on to state, "that true ovarian cysts have always, or even frequently, this form of growth in their interior, I do not contend; on the contrary, in more than one hundred ovarian tumours which I have carefully examined, I have found it only a few times, but I have seen it in tumours of apparently recent growth and in very young subjects."

"In conclusion, I would urge the immediate removal by ovariectomy of any tumour in which this growth is detected by a careful examination of the fluid, its presence being always certain when groups of proliferating cells, similar to those in fig. 1, are found."

Now, in this paper, Mr. Thornton does not say one word about the necessity of examining microscopically the deposit in ascitic fluids, as a means of diagnosing malignant peritonitis and malignant ovarian tumours; but on referring to my remarks on the subject, it will be found that I have drawn special attention to the fact, that surrounding malignant tumours of the ovary ascitic fluid is generally present; and in this ascitic fluid one is sure to find those little masses of sprouting epithelium or proliferating cells which are characteristic of malignant peritonitis and ovarian tumour. On the other hand, it is my experience that the finding of such little masses of villous epithelium, such as Mr. Thornton figures, in the fluids of ovarian cysts, obtained by tapping, is of little practical value.

Mr. Thornton says he has carefully examined more than one hundred ovarian tumours, and has found this form of growth only a few times. I suppose Mr. Thornton means he has examined the fluid removed by tapping from more than one hundred tumours, and has detected the growth only a few times. This, too, is my experience. These masses

of villous epithelium are not often found in the fluid removed by tapping from ovarian cysts; but if Mr. Thornton had examined the epithelial lining in only a few of the cysts of a hundred ovarian tumours, I am quite sure he would have found numerous instances of villous epithelium, even in the cysts of tumours which to the eye appeared to be perfectly healthy, although it could not be detected in the fluids. As long as the villous epithelium is confined to the interior of the cysts of an ovarian tumour, it is not of much importance pathologically, except as an indication that the removal of such tumours should not be delayed too long. In the same tumour, one or more of the cysts may contain villous or thickened epithelium, while in other cysts the epithelium may be perfectly healthy; and in tapping a large cystic ovarian tumour, the fluid may be withdrawn from a perfectly healthy cyst, while a cyst having in its interior villous epithelium may escape the tapping, and thus a wrong diagnosis as to the healthy condition of the tumour may result. I have frequently discovered villous and papillomatous growths in the cysts of tumours after ovariectomy, the patients from whom the tumours were removed several years ago being at this date in excellent health. We must not pay too much attention to the presence of little masses of proliferating epithelium within the cysts it is when they are formed in ascitic fluid surrounding ovarian tumours, that they become objects of the greatest importance.

A most important fact to be borne constantly in mind is, that malignant tumours of the ovary are often more solid than cystic, frequently they are solid. In proof of this statement, I may refer to Mr. Spencer Wells's book *On Diseases of the Ovaries*, to the "Cases in which an Exploratory Incision was made", and to "Cases in which Ovariectomy was commenced but not completed". (Page 464, 1872 edition.) In many of these cases, a solid or semi-solid malignant or papillomatous tumour surrounded by ascitic fluid was exposed. I do not hesitate to say that, had the ascitic fluid in these cases been examined microscopically, the nature of the tumours would have been discovered without operation. Tapping such tumours with an ordinary trocar is out of the question, but a great deal of valuable information may be obtained by aspiration, using a fine needle whereby a minute portion of the tumour, or some of the contents of the cystic cavities in the tumour, may be withdrawn for microscopical examination; but whether the tumour is solid or not, the ascitic fluid present should always be removed and placed aside for microscopical examination. The withdrawal of the ascitic fluid will also assist greatly the physical examination in determining whether the ovary alone, or other organ, is affected. If the microscopical examination of the deposit in the ascitic fluid discloses numerous masses of sprouting epithelium, malignant peritonitis may be with certainty diagnosed. The forms of these sprouting masses of cells are extremely various. In my drawing of them, which I showed at the meeting of the Medico-Chirurgical Society, on February 3rd, 1875, there were twenty-four different figures, and these represented only a few of them. Many of the larger masses may be detected with the naked eye; the microscope, however, is necessary to bring most of them into view. But whatever their form, the fact remains that they are found in great numbers in ascitic fluid surrounding malignant ovarian tumours: and if they are found in large numbers in *bloody ascitic fluid*, we may safely conclude that one or many villous or papillomatous growths are on the peritoneal surface.

One must not expect to find these sprouting masses of cells in every specimen of ascitic fluid. Their absence, however, is an almost certain sign of the absence of malignant peritonitis and malignant ovarian tumour. Ascitic fluid surrounding healthy ovarian and uterine tumours is common enough, but it should always be examined microscopically to see if it contain sprouting cells in various stages of growth; for very often we are thus able to ascertain that an ovarian tumour has burst and certain cells have escaped from the tumour and are free in the peritoneum in a sprouting condition.

The finding of ovarian granule cells and a few specimens of small masses of proliferating cells in ascitic fluid should not necessarily prevent the attempt to remove the ovarian tumour, because, as the result of experience, we have found that patients may remain perfectly well from whom such burst tumours have been removed; but where you find in the ascitic fluid a great number of large sprouting masses of cells, many of which are visible to the naked eye, it may be safely concluded that the peritoneum is seriously infected and probably the ovarian tumour has formed such adhesions with neighbouring parts as will prevent its entire removal.

No one, as far as I know, has drawn attention to these masses of sprouting epithelium in ascitic fluid as a means of diagnosis. Papillomatous outgrowths and thickened epithelium in the cysts have been often figured in works of pathology, but that such growths may escape from the ovarian tumours, and settle down on the peritoneum and grow there, was not recognised as of pathological importance until I drew

attention to the subject; and I should not have ventured to do so, had I not satisfied myself of the value of the observations by the most careful examination of the two tumours and the sprouting masses found in the ascitic fluid in the cases which I have recorded. Since those two cases, I have had many opportunities of verifying my observations.

Later investigations have convinced me that, while it is quite true that particles of sprouting epithelium do occasionally escape from ovarian tumours and grow on the surface of the peritoneum, after the manner of skin-grafting, yet it is equally true that masses of sprouting cells may grow from the peritoneum directly, as the result of chronic irritation, caused by a growing ovarian tumour, or by fluids which have escaped from ovarian cysts, and that even the pleural membrane may become involved in the irritation.

One cannot help recalling to recollection the beautiful plates of Klein, wherein he represents the little outgrowths from the peritoneum which appear as the result of chronic irritation of that structure. The microscopical appearance of these outgrowths resemble in a remarkable manner that of the masses of sprouting cells which I have so frequently found in ascitic fluid surrounding sarcomatous tumours of the ovary, and that of the nodules on the peritoneum. In my paper on the Development of the Ova and the Structure of the Ovary, I showed that the ovary is not invested by the layers of the broad ligament, as is described in many books, but that the stroma of the ovary is derived from, and is directly continuous with, the layers of the broad ligament, which is a prolongation of the peritoneum, so that we have a distinct connection between the stroma of the ovary and the peritoneum. This anatomical fact, I believe, will serve to explain how it is that we so frequently have nodular outgrowths from the peritoneum at the same time that the ovary is the seat of sarcomatous disease. The stroma of the ovary is probably first affected by the sarcomatous disease; and, by extension of the disease, and by chronic irritation, the peritoneum also becomes similarly affected. These sarcomatous tumours of the ovary and nodular growths on the peritoneum, do not readily affect the lymphatic glands in different parts of the body, as is the case with true carcinoma. If such tumours could be removed whole, the patients would have a good chance of recovery, but, unfortunately, sarcomatous tumours of the ovary have a great tendency to involve adjacent parts in similar disease, such as the uterus and broad ligaments, and the nodular growths on the peritoneum form adhesions with the intestines, and keep up a constant irritation, whereby ascitic fluid is poured out continually. Dr. Thomas Keith, at present, has under his care a poor hard-working woman, whose abdomen is full of sarcomatous growths, and yet enjoys fairly good health. More than four years old, I found in the ascitic fluid present a number of large sprouting masses of cells, which clearly proved that the peritoneum was seriously affected. Occasionally, this poor woman presents herself for tapping, but nothing else can be done for her.

When the peritoneum has become affected by a malignant ovarian tumour, the pleural membrane is often found to be similarly affected, as is the case with a lady under our care at present. Bloody fluid was withdrawn by tapping from the peritoneal and pleural cavities. In both fluids a great number of large masses of sprouting cells were found, the discovery of which has made sure the diagnosis of malignant pleuro-peritonitis and malignant ovarian tumour.

In the end of June 1875, I satisfied myself that a carcinomatous tumour of the omentum may, by infecting the peritoneum, give rise to large masses of free growing cells, which resemble somewhat the masses found in ascitic fluid surrounding malignant tumours of the ovary.

In the middle of June 1875, a single lady, aged about forty-five, was tapped by Dr. Thomas Keith, who drew off from the abdomen a large quantity of ascitic fluid. A large, flat, pancake-shaped tumour was then discovered in the omentum. In the ascitic fluid were large masses of sprouting cells, growing very vigorously, and immense large free cancer cells. In the absence of Dr. Keith from Edinburgh, the pleural cavity on one side was tapped by an Edinburgh surgeon; and in the fluid removed exactly similar growths and cells were discovered. After the death of the lady, I made an examination of the body, and found a large spongy tumour of the omentum and numerous cancerous nodules on the peritoneum; and in the chest, on the pleural surface of the diaphragm, were a great many small nodules of cancer growth. No doubt the lymphatics were the channels through which the cancer seeds reached the chest and peritoneum; and it is most probable that from the secondary nodules cancer cells escaped and grew vigorously in the ascitic and pleural fluids.

In conclusion, I now call attention to the following statements, as being of practical value. Malignant ovarian tumours are generally surrounded by ascitic fluid. The ascitic fluid in all cases should be care-

fully examined with the microscope. If in such ascitic fluid we find a large number of masses of sprouting vigorously growing cells, some of which masses may be seen by the naked eye, we may safely conclude that the peritoneum is the seat of a most serious affection, and that there are numerous adhesions between the tumour and neighbouring parts, which will prevent its complete removal by ovariectomy. If these masses be found in bloody ascitic fluid, we may conclude that there are vascular villous growths on the peritoneum; and if, in addition, the glands in the groin, or in the abdominal parietes, or elsewhere, be enlarged, the tumour and peritoneal growths are certainly carcinomatous.

As an additional means of diagnosis, the tumour itself may be punctured, under antiseptic precautions, with a fine aspirator-needle, and a minute portion of the tumour, or some of its cystic contents, be withdrawn for microscopic examination. The finding of sprouting masses of epithelium within the ovarian cysts is not of much practical value, as such tumours are often removed without risk of future peritoneal affection; but if they be found in the cysts of a tumour, and in the ascitic fluid surrounding the tumour, it is almost certain that serious adhesions exist between the tumour and adjacent parts, and that there are nodular growths on the peritoneum.

ON CERTAIN FORMS OF NON-PUERPERAL UTERINE HÆMORRHAGE.*

By A. E. AUST LAWRENCE, M.D.,
Physician-Accoucheur to the Bristol General Hospital.

THE paper which I have the honour of reading before you this evening is founded upon a class of cases, the importance of which every one here cannot fail to recognise; for the symptom of hæmorrhage is always one that causes alarm to our patients, and not unfrequently anxiety to ourselves; and although hæmorrhage from a mucous membrane is not always accompanied by a local disease, yet prolonged, irregular, and repeated bleeding from the uterus, or in fact from any mucous surface, demands, in most cases, a local examination before its source can be diagnosed and the appropriate treatment applied.

With a view of bringing prominently before you the causes which produce uterine hæmorrhage in non-puerperal women, in order that suitable treatment may be adopted, I have analysed my hospital cases with special reference to this symptom; and I find that, out of a total of nearly seven hundred patients seen by me during the last three years, ninety came complaining of hæmorrhage, and it was only that symptom upon which they laid stress when detailing their troubles. The hæmorrhage in these ninety cases was found to be due to eleven different pathological conditions.

I have omitted cases where the hæmorrhage, although a complication, was not the symptom of which they came complaining, as also those cases where the bleeding was due to recent results of a miscarriage or confinement.

It will be seen that the cases show hæmorrhage either as excess of menstruation, or independent of menstruation. Some, however, show both conditions. We may take as our standard normal menstruation, as represented by the following description of Dr. Barnes, viz.: "*Fluid blood, somewhat glutinous, discharged gradually to the amount of two to four or six ounces, lasting over a period of two, three, or four days, at regular intervals of twenty-eight days or nearly so; beginning at the age of twelve, thirteen, or fourteen, and lasting to forty-five or forty-eight;*" any marked deviation will then be probably caused by some pathological condition. I say probably, but not always, as, both at the commencement and at the end of menstrual life, there is great irregularity—the most marked being (1) irregularity as to periodicity; (2) occasional excess of loss of blood. With these two conditions, there are associated alternate enlargement and subsidence of the abdomen, with pain and induration of the breasts.

With the absence of distinct local cause of hæmorrhage, and no organic disease detected elsewhere, these cases having the above four conditions may be classed as climacteric, and treated on general principles; but only after the following conditions have been excluded—conditions which have caused a hæmorrhagic discharge to be of such moment as to induce ninety, out of nearly seven hundred, patients to apply for relief on account of it alone. The following are the eleven causes, and the number of cases they each furnished.

* Read before the Bath and Bristol Branch.