

and is admirably adapted for inhalation. For prolonged inhalation a few drops may be put in a suitable respirator, and will be preferred by most patients to other inhalants. For short steam inhalations ten to twenty drops may be put into any common inhaler half full of water at 150° to 160° F. and the vapour inhaled. It is, however, much better to diffuse the oil through water by magnesia, powdered silex, or prepared talc in the proportion of 40 to 60 minims of oil to a scruple of magnesia and an ounce of water. A teaspoonful of this mixture added to half a pint of cold water is to be stirred in the inhaler, and then half a pint of boiling water being added, a convenient temperature is obtained; as it cools, a little more boiling water can be added if it is desired to prolong the inhalation. This medicament will be found much milder than the vapor olei pini sylvestris (B.P.), and may therefore be employed when the official formula is found too irritating. It is a very mild stimulant to the mucous membrane, and an agreeable remedy for inhalation in relaxation, congestion, and chronic catarrhal affections of the respiratory tract. Oleum pini pumilionis is also an excellent addition to other inhalations, such as creasote and various essential oils. It disguises the disagreeable odour¹ of some and imparts its own fragrance to others. It also mixes well with eucalyptol and other inhalants. *Internally*, the ordinary dose is from one to five minims. Small doses can be taken in lozenges or on a lump of sugar, as terebine is often taken, or a mixture can be made with tragacanth &c., or larger doses may be given in capsules. In the stomach it acts as a carminative. It is quickly absorbed, and probably behaves in the blood and tissues like other terebinthines. It is eliminated chiefly by the lungs, kidneys, and skin. It is its action on the bronchial membrane during excretion that renders it valuable in disease of this surface, being a stimulant, expectorant, and disinfectant, hence indicated in chronic bronchitis, dilatation of bronchi, bronchorrhœa, some states of phthisis, and other affections. The effect on the kidneys should not, however, be forgotten. The violet odour of the urine is produced as with some other terebinthines, and small doses seem diuretic, but its use in diseases of the urinary passages manifestly requires care. *Externally*, sprinkled on flannel, or, better still, on spongio-piline, the oil is a cleanly, prompt, and useful stimulant and counter-irritant, and sometimes appears to possess slight anæsthetic properties.

2. *Terpin Hydrate* affords a curious contrast to oleum pini pumilionis. It has but a slight taste, is rather insoluble, has no odour, and is solid. It may be seen as small needles when it spontaneously crystallises from a mixture of turpentine and water, or may be obtained in large rhombic crystals by allowing alcohol (three parts), turpentine (four), and nitric acid (one) to stand in shallow dishes three or four days. Terpin hydrate is only dissolved in small proportion by cold water or turpentine, but is taken up more readily by hot water, alcohol, and ether. For this reason it is best given in pills or wafer paper. For small doses pills containing two grains each are convenient, and one can be taken every three or four hours. For larger doses, which should not be repeated so frequently, wafer paper is better. An emulsion may also be made, but this is not an agreeable method. The hydrate may, however, be dissolved in warm glycerine, and after solution an equal quantity of some syrup may be added. This makes a suitable linctus. From sixteen to twenty-four grains in the ounce gives two to three grains to the teaspoonful, and this dose can be taken every three or four hours. It is well to begin with these small quantities, as they are often found sufficient to affect the bronchial membrane, and they act on the kidneys. Germain Sée, Hausmann, Ferreira, Chéron, and others, have given much larger doses—ten grains, and in some cases fifteen. It is obvious that such doses might have a serious effect on the kidneys, and large quantities given to animals have been followed by hæmaturia. A dose of ten grains in wafer paper produces a feeling of fulness and heat at the epigastrium, and a sense of cerebral stimulation which in sensitive individuals may amount to giddiness. The effects of both small and large doses are analogous to those of other terebinthines, and it is as a tasteless, odourless substitute for them that it is most useful. In restraining the cough and secretion of bronchitis, and stimulating the membrane to more healthy action, perhaps also disinfecting the sputa, it will be found useful. Germain Sée

also found full doses restrain the copious sputa of some cases of phthisis, and he met with no gastric irritation after long continuance of the drug; but others have not been equally fortunate. In some instances small doses seem to increase bronchial secretion. It has also been employed successfully in hæmoptysis. Its diuretic effect has been utilised; and, in short, it has been tried in most cases in which the other terebinthines are useful, including neuralgias. Dr. Royland seems inclined to credit hydrate of terpin with some hypnotic property, but perhaps the sleep may be attributed rather to the rapid relief to the cough, which, in the cases he reports in the *New York Medical Record*, so constantly followed the administration of the remedy.

ON THE SUPRA-VAGINAL AMPUTATION OF THE CERVIX UTERI FOR MALIGNANT DISEASE.

WITH NOTES OF TEN CASES.

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At the present day, when we meet with a case of cancer of the cervix early enough to be able to remove the whole of the obviously diseased part, *plus* a surrounding shell of apparently healthy tissue (the broader the better), the right treatment is by the operation known as the supra-vaginal amputation of the cervix. This operation is of comparatively recent origin, and is not so generally known as it deserves to be. Before it was introduced operators were content with amputating only the vaginal portion of the cervix. When we remember that the vaginal portion is only about one-third of an inch long, while the length of the whole cervix is about one inch, it will be obvious that the supra-vaginal amputation, which removes the whole cervix (and sometimes a little more than the cervix), is an operation of a far more radical nature, and enables us to deal with cases for which amputation of the vaginal portion would be useless. It is often a nice question whether a particular case is a suitable one for supra-vaginal amputation, and in doubtful cases one that can only be settled by somebody in the habit of performing the operation. When malignant disease of the cervix is complicated by pregnancy, and yet the disease has not advanced too far for the case to be suitable for supra-vaginal amputation, the best plan is to induce abortion (as in Case 10), and allow an interval of two or three weeks to elapse, so that the vascularity of the parts may be lessened. Supra-vaginal amputation of the cervix is performed as follows:—

The patient being in the lithotomy position, a vaginal douche of some efficient antiseptic—e.g., iodine water—is given. Sims's speculum is then passed, and the cervix drawn down to the vulva.

Drawing down the uterus.—For drawing down the cervix, if the disease affects both lips, it is best to use some instrument that has its hold above the seat of the disease. The volsella is not well adapted for such cases, as it is apt to break from its hold on account of the brittleness of the tissues. A single strong hook answers well. It is passed up the cervical canal till we judge it to be well above the disease. It is then made to take a firm hold, and the cervix drawn down. It is very important that the traction should be as steady as possible, when once a good hold has been obtained. Double expanding hooks of the same pattern as Emmet's, but made much thicker in the shank so as to be less springy, are also good for the purpose, and are used in the same way. When only one lip of the cervix is diseased, a volsella with a catch like Spencer Wells's forceps, placed on the healthy lip, answers well enough, but usually the hook will be found better.

Anterior incision; separation of the bladder from the supra-vaginal cervix.—The cervix is carried well back towards the perineum, care being taken to keep it in the middle line. A sound is now passed into the bladder, and the limits of the bladder towards the anterior lip of the cervix ascertained. Guided by this information, a transverse incision is made through the anterior vaginal wall. There should be at least two-fifths of an inch of healthy mucous membrane in each direction between the incisions and the

¹ I have sometimes used oleum pini pumilionis to disguise the smell of iodoform; but the mixture should be freshly prepared, as after a few days decomposition takes place with the liberation of free iodine.

diseased area. Slightly curved blunt-pointed scissors are best for making the incisions. It is important to feel one's way frequently with the sound in the bladder during this step of the operation. There is an interval of comparatively loose connective tissue between the bladder and the supra-vaginal cervix, and when this interval is recognised most of the necessary separation can be effected with the finger. When we judge that we have cleared the cervix sufficiently in front, we proceed to the next step.

Posterior incision; separation of the peritoneum from the posterior aspect of the cervix.—The cervix is now carried well forwards towards the pubes; a transverse incision is then made through the posterior vaginal wall as close to the posterior lip as is consistent with keeping clear of the diseased part. We now dissect the peritoneum from the posterior aspect of the cervix as high as is necessary to correspond to the height to which the cervix has been cleared anteriorly. At this stage it is very likely that the peritoneal cavity will be opened, but this is not of much importance, and fear of doing it should not prevent a sufficiently high separation being made. When the disease affects the posterior lip extensively, it is indeed sometimes better, as in Case 10, to open Douglas's pouch freely, and remove the portion of peritoneum corresponding to the posterior aspect of the cervix.

Preliminary lateral incisions.—The ends of the transverse incisions should be joined by lateral incisions. These

cut edge of the posterior vaginal wall. Any Wells's forceps on big vessels may be left on for forty-eight hours. The vagina is once more douched out, and the patient sent back to bed. Frequent antiseptic douches should be used subsequently.

In the accompanying table particulars are given of the ten cases in which the writer has had the opportunity of performing this operation. It will be seen that in most of the cases the disease was not in an early stage when the patient first came under observation. All the cases recovered so far as the operation itself was concerned. It will be noticed that in two cases the operation is described as having been incomplete; only these cases are returned as complete where all the obviously diseased parts were removed, together with a surrounding shell of healthy tissue. It is obvious that the great desideratum is early diagnosis, and as the earliest symptom of malignant disease of the cervix is almost always the presence of a red discharge at some time other than the proper menstrual periods, it is evident that the mention of such a condition should at once lead to careful investigation of the whole case; and, above all, we should not be content with regarding such a symptom as menorrhagia or metrorrhagia, and treating it medicinally, but we should rather only be content to treat it medicinally, when we are satisfied the case is not one of commencing malignant dis-

TEN CONSECUTIVE CASES OF SUPRA-VAGINAL AMPUTATION OF THE CERVIX FOR CARCINOMA.

Case.	Age.	Date of operation.	Stage of disease.	Operation complete or incomplete.	Result.	Recurrence.	Place of operation.
1	29	July 27, 1885	Moderately advanced	Complete	Recovered	Remained well for 6 months, then recurrence in the pelvis	The London Hospital
2	43	August 6, 1885	Considerably advanced	Incomplete	"	—	"
3	41	February 12, 1886	Early	Complete	"	Is still quite well. (See full notes of case in text.)	"
4	33	July 20, 1886	Considerably advanced	"	"	Remained well nearly 12 months, then recurrence in the pelvis at a distance from the scar, which remained healthy to the last. (See full notes of case in text.)	"
5	39	January 7, 1887	Moderately advanced	Incomplete	"	—	"
6	42	March 17, 1887	Early	Complete	"	Is still quite well	"
7	51	April 5, 1887	Moderately advanced	"	"	Recurrence about 6 months later	"
8	52	Sept. 15, 1887	Moderately advanced	"	"	Not seen since leaving the hospital	"
9	65	December 6th, 1887	Moderately advanced	"	"	No evidence of recurrence at present	Private
10	39	Jan. 16, 1888	Considerably advanced	"	"	No evidence of recurrence at present. (See full notes of case in text.)	The London Hospital

should at first be only mucous membrane deep, and, in fact, only made to indicate where the actual separation is to be made when the time comes.

To guard against hæmorrhage.—All the large vessels are situated in the lateral attachments of the cervix, as yet undivided. To avoid the occurrence of hæmorrhage when clearing the cervix laterally we may either pass a strong silk ligature by means of an aneurysm needle, or strongly curved blunt pedicle needle, round the whole of the lateral attachment, and tie it tightly *before* cutting through the lateral attachments of the cervix; or we may clamp the lateral attachment in sections with Wells's forceps—clamping a piece, then cutting between the forceps and the cervix, then clamping another piece, and so on, till the whole of the lateral attachment has been dealt with. The latter plan is the better, as ligatures are very apt to become loose when applied in this situation—probably because the parts are more or less on the stretch (owing to the uterus being drawn down) when the ligatures are being tied.

Removal of the cervix.—The cervix has now been made clear all round; to remove it we incise the anterior wall till the lumen of the cervical canal is reached. The part of it exposed should be at the level of the os internum. We now stitch the anterior margin of the stump to the cut edge of the anterior vaginal wall with silver wire. We have thus a hold on the stump. We now complete the removal of the cervix, and stitch the posterior margin of the stump to the

ease. We are, of course, referring to the case of married women, in whom the disease most usually occurs. Several of the cases in which the disease had obtained a firm hold had been treated medicinally before coming under observation. It is noteworthy that amputation of the *vaginal portion* of the cervix would have only removed all the obviously diseased tissue in two of the cases. The superiority of the supra-vaginal amputation is obvious. Full notes are given of three of the most interesting cases in the series.

In the following case (No. 3 in the table) the patient remained free from any sign of recurrence for a year and two months after supra-vaginal amputation of the cervix had been performed; then recurrence took place on the anterior part of the stump and adjacent anterior vaginal wall; this was cauterised very freely with Paquelin's cautery, and now, two years from the date of the original operation, there is no evidence of disease to be seen, and the patient is quite well.

E. H—, aged forty-one, married twice, has had two children by her first husband, but no children by the second husband (to whom she has been married fifteen years). She has never had any miscarriages. She was admitted into the London Hospital on Feb. 6th, 1886, complaining chiefly of a thick yellow discharge, which she has had for four or five years; during the last six months, however, this discharge has been coloured red at times when she was not menstruating.

On examination, a soft papillary growth was seen growing

from the posterior lip of the vaginal portion of the cervix. The area occupied by the growth was about the size of a sixpence. The growth bled readily on touching it. The sound passed a distance of two inches and three-quarters.

On Feb. 12th, 1886, supra-vaginal amputation of the cervix was performed. The piece removed was an inch and a quarter long. The patient recovered without any bad symptom, and went home. Subsequently she came up regularly to the hospital, and nothing suspicious was seen till April 25th, 1887. On examination then, I found a red patch on the scar about one-eighth of an inch wide, immediately to the left of the entrance to the uterine cavity; it had not been there previously. This was watched carefully; it gradually increased in size, and on Oct. 8th the patient was readmitted. At this time there was a papillary growth over an area the size of a florin. The growth involved the anterior part of the uterine stump and adjacent anterior vaginal wall. The edge of the growth was overhanging. Gentle examination caused bleeding, and brought away fragments of the growth the size of shot.

On Oct. 13th a careful examination under ether was made. It was found to be impossible to cut out the recurrent patch, as most of it was on the anterior vaginal wall, and cutting it out completely would have involved cutting out a piece of the bladder. The whole area occupied by the growth, together with a margin of healthy tissue round it, was therefore freely cauterised with Paquelin's cautery.

On Jan. 24th, 1888, she came up to see me. She has been regular since leaving the hospital, and has had no intermenstrual discharge of any kind. On examination I found that the ulcer caused by the cautery had completely healed, and there was no trace of disease either there or elsewhere.

In the next case (No. 4 in the table) the disease was at a more advanced stage at the time of the operation.

E. L.—, aged thirty-three, the mother of six children, the last born about four years ago, and one miscarriage, which occurred four months ago, when she was six months pregnant, was admitted to the London Hospital on July 19th, 1886, complaining of having been losing blood ever since the miscarriage. The loss has never stopped more than a day or two during this time.

State on admission.—In the situation of the external os is a cavity admitting the finger as far as the root of the nail. The walls of the cavity are formed by hard tissue. Examination causes a little bleeding, and the finger on withdrawal has an offensive odour. The uterus is freely movable. Most of the excavation is in the anterior lip of the cervix, but there is superficial ulceration of the posterior lip also.

On July 20th the supra-vaginal amputation of the cervix was performed. At first sight it appeared as if the disease had extended so close to the bladder that separation would be impossible. I therefore dilated the urethra with Hegar's dilators, and held the wall of the bladder between my left forefinger and thumb while the cervix was drawn backward by an assistant; in this way the bladder was dissected off the anterior aspect of the cervix.¹ In clearing the peritoneum from the posterior aspect of the cervix, Douglas's pouch was opened, the opening being a quarter of an inch across. The operation was done at 10 A.M. Soon after its completion the patient had a rigor, and at 4 P.M. the temperature rose to 103°—the pulse, however, only being 76,—falling to 98° by 8 A.M. on July 21st. In the evening of the same day the temperature was 100.2°; after that it remained normal.

The patient left the hospital on August 17th. Her weight was then 11st. 9½lb.; November 18th, weight 12st. 2lb.; December 2nd, weight 12st. 0½lb. The patient was seen in January and March, 1887. The cicatrix was perfectly healthy and her general health good. She next came on July 16th, 1887, and complained that she was suffering from great pain in the right hip, and down the right leg. This had come on quite recently, and was preceded by numbness in the leg. The cicatrix was perfectly healthy, and the remaining part of the uterus freely movable. In the right posterior quarter of the pelvis there was felt a lump the size of a cherry, hard and fixed. There was an inch or more of healthy tissue between this lump and the uterus.

The patient was readmitted on Sept. 11th, 1887. She had continued to suffer severe pain in the right hip and leg. For some weeks past the right lower extremity had been swollen.

On admission it was seen to be considerably larger than the left; great tenderness in the region of Scarpa's triangle. There was, in fact, phlegmasia dolens of the right lower limb. The scar left by the operation was still quite healthy, and the uterus freely movable; the lump in the right posterior quarter of the pelvis was, however, now the size of a walnut, but there was an interval of healthy tissue between it and the uterus. From this time she gradually went down hill, and was never free from pain, except when under the influence of morphia. She often required as many as five injections of one-third of a grain each in the twenty-four hours. On Oct. 18th she weighed only 8 st. 13 lb. On Nov. 7th a little hard nodule was noticed in the skin on the right side below the breast, freely movable over the subcutaneous structures, but adherent to the skin, which was red over it. On Nov. 14th she weighed 8 st. 5½ lb. On Dec. 20th there was left hemiplegia and facial paralysis of the left side; sensation apparently normal. The patient had not been noticed to be unconscious. She was not very clear in her understanding. On Dec. 29th she died. No post-mortem. There was never any recurrence in the scar left by the operation, nor any lump perceptible on simple abdominal palpation alone, but the lump in the right side of the pelvis became somewhat larger before her death. She had been troubled with occasional vomiting since her readmission.

The next case (No. 10 in the table) illustrates the treatment of cancer of the cervix complicated by pregnancy, the malignant growth not having passed beyond the reach of radical treatment. It also shows that Douglas's pouch may be opened freely with impunity, if proper precautions be observed.

L. E. M.—, aged thirty-nine, married twelve years, has had seven children, and one miscarriage at the sixth month of pregnancy. The miscarriage was nine months ago. A month afterwards menstruation appeared. It occurred again after an interval of three weeks, and again after an interval of two weeks. Since then she has been bleeding every few days. There have been "floodings" which last a day or two, and between the "floodings" she has had a brown watery discharge. She has had no pain to speak of. There has been no trouble with micturition or defecation, and the appetite has been good; latterly she has got thinner. She was admitted into the London Hospital on Dec. 21st, 1887. On examination, a globular swelling reaching a hand's breadth above the pubes was felt rising out of the pelvis. It may be said at once that this was the pregnant uterus, the pregnancy having advanced to about the end of the fourth month, though the patient had no idea she was pregnant. A large "cauliflower-like" mass was felt in the vagina, springing from the posterior lip of the cervix, its attachment being rather to the left of the middle line. Anteriorly the mass was attached to the cervix by a sort of spurious pedicle, but posteriorly it was continuous, without any constriction, with the posterior lip of the cervix. The growth bled very freely on touching it. The vaginal portion, where not involved by the growth, was of a purple colour.

On Dec. 29th I removed the greater part of the mass in the vagina with the écraseur, with the intention of proceeding at once to the supra-vaginal amputation; the vascularity of the parts was, however, so great that I judged it would be safer to empty the uterus first, and allow time for the involution of the uterus and vagina to diminish the blood supply. Accordingly, I dilated the cervix rapidly with Hegar's dilators, and removed the foetus, placenta, and membranes at the same sitting; altogether the patient was about an hour under the anæsthetic. Antiseptic douches were used before, during, and after the operation, the uterus also being washed out. No bad results followed. The patient took ergotin, and had hot douches to promote involution, and on January 16th, 1888 (eighteen days after emptying the uterus), I performed supra-vaginal amputation of the cervix. I opened Douglas's pouch to an extent of about two inches in a transverse direction, and was thus enabled to get well above the disease. A somewhat quadrilateral piece of the peritoneum, covering the posterior aspect of the supra-vaginal cervix, was removed adherent to the specimen.

The interval allowed for involution to proceed before undertaking the operation must, no doubt, have diminished the blood-supply; nevertheless, at the time of the operation the parts were still very vascular. This will be evident from the fact that the patient went back to bed with three

¹ No permanent incontinence of urine resulted.

pairs of Spencer Wells's large pressure forceps, and six pairs of the ordinary size, left on. These were removed forty-eight hours later. It should be mentioned that the opening in Douglas's pouch was closed with three silver sutures. Great care was taken to do everything as antiseptically as possible, but of course the spray was not used. I am satisfied that the lines of section were in every direction made in healthy tissue. The patient had moderate fever for a few days after the operation; but after the first two days there was nothing in her condition to occasion anxiety. The sutures were removed on the tenth day.

THE GEOGRAPHICAL DISTRIBUTION OF CANCEROUS DISEASE IN THE BRITISH ISLES.

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(Concluded from page 444.)

Cancer in the Isle of Man.

In the Isle of Man there are no fully formed rivers, although some of the mountain streams such as the Sulby, the Dhoo, and the Glass, when they, in the latter part of their courses, traverse low-lying areas, occasionally flood the flats adjacent to their banks. The more densely populated towns and villages do not, however, come within the influence of these floods, which are only occasional and very transient. There are, however, in the north, along the great central valley, and scattered elsewhere in the interior many imperfectly drained "loughs" or "lochs," the remains of ancient lakes, in which the skeletons of the Irish elk have been found. By the gradual upheaval of the island within historic periods these loughs have been naturally drained, but in wet seasons they retain much water, and for a time resume their old bog form; bogs, however, in England and Scotland are not factors in those local climates which are coincident with a high death-rate from cancer, either among males or females. The period over which it was possible for me to extend my investigations was too short to expect any definite results, the first published report of the Registrar-General for the island bearing date 1880. However, I will give the facts as they stand for the period 1880-86 for the whole island, treating it as a registration district, without attempting to divide it into parishes and divisions, although this has been done, and the map will eventually be published in my "Introduction to the Natural History of the Isle of Man"; but the results are based upon too slender a foundation to draw conclusions from, although the facts, small in number as they are, point to the direction in which future inquiry should be made.

The mean male population of the Isle of Man (1879-86) amounted to 27,318, and the females to 27,194; whilst the deaths from cancer recorded during the seven years 1880-1884 were 89 males and 114 females; total, 203. The male death-rate would therefore be 4.65, and female 5.98. This is a most unusual combination of male and female death-rates, and occurred in England and Wales during 1851-60 in only four districts—namely: Thakeham, males 4.4, females 5.5; Ringwood, males 4.0, females 5.5; Wheatenhurst, males 4.7, females 5.4; and Machynlleth, males 4.0, females 5.0.

Ethnology has never yet been studied in relation to cancer, so far as I am aware; but this anomalous death-rate amongst a mixed Celtic and Norse community is interesting, and requires further investigation. An examination of the Celtic and Norse names of the persons who have fallen victims to this disease may afford some clue; but this part of the inquiry I have not hitherto studied, although I have the names of all who have died from this disease during the above period.

This anomalous death-rate reminds me of another instance which I lately investigated, that of Victoria, an account of which will be found in the *Australian Medical Journal* for March 15th, 1887. We have seen that in England nearly twice as many females fall victims to cancer as males. In Victoria the difference in the mortality between the two sexes is but slight; for instance, the mean annual death-rates to every 10,000 of each sex living during the years 1861-1884 were as follows: in England, males 3.78,

females 6.92; in Victoria, males 4.28, females 4.52. Cancer is rapidly increasing in England and Victoria, but there is reason to think that the cause of its increase in Victoria is of such a nature as to affect those organs principally which *the two sexes have in common*. In Victoria there are no thickly populated flooded districts, like those on the banks of our rivers in England; and coincident with this fact is the one just mentioned—that the Victorian mortality from this cause is not markedly greater among females than among males.

Cancer in Scotland.

In 1887 I made an attempt to investigate the distribution of cancer in Scotland, but I found that no decennial or even quinquennial reports were issued by the Registrar-General for Scotland similar to those initiated by Dr. Farr, and therefore no data existed for studying the distribution of this disease among males and females respectively, and at different age-periods. Dr. Stark, the late Registrar-General for Scotland, issued with the census report for 1871, the cancer death-rates in each of the counties and towns. In this report, however, the deaths in the registration districts were not given, and the rates for the counties were the means for the two sexes, and not for males and females separately. It was impossible, therefore, to inquire how far the riparian districts seasonally flooded by the Scottish rivers were affected as regards this disease. One or two small counties not much larger than some of our English districts alone afforded any data within sufficiently small limits to admit of being studied at all. The county of Berwick was one, wherein were to be found all the conditions known to coexist with a higher mortality from cancer among females, if not among males; but even in this instance it was impossible to decide whether the male or the female mortality dominated the mean death-rate. On crossing the border, however, over the Tweed, and getting into the English district of Berwick, we have collateral evidence which would support the belief that the female death-rate was the cause of the high mean mortality from cancer in the Scotch county, although the death-rate from this cause was also high at the same period (1861-70) amongst the males as well. Thus: males, 4.21; females, 6.03; mean, 5.17; that for the Scotch county being 7.45. The highest death-rate in Scotland from cancer is thus associated with the most typical local climate coincident with high mortality from cancer in that country. Berwick had the lowest death-rate but one from phthisis in the same period—viz., 19.23. The highest death-rate was for Dumbartonshire 33.03, where that from cancer was only 3.83. Before giving an outline of the distribution of cancer in Scotland, I wish to call attention to a fact that will have in the near future to be studied more than it has been.

In April, 1869, I published an abstract of my paper on Cancer, which was read before the Medical Society already referred to, and in it will be found the following passage:—"Phthisis was shown to have a geographical distribution almost the reverse of cancer. The *plus* average or *blue* group of the Herefordshire cancer field, in the *phthisis* map, had the *minus* average or *red* colour; the *plus* average of blue colour of the Thames cancer field was *red* in the phthisis map, and the *red* or *minus* average districts of the north-west of England and Wales were coloured *blue*, indicative of high mortality. Again, the great south-eastern *red* group of low mortality in cancer, which surrounded the Thames field (the water-parting districts on oolite and chalk), had its districts coloured *blue* in the phthisis map."

More than five years after this remarkable fact was published, Dr. Stark, the late Registrar-General for Scotland, in his census report, published in 1874 a set of tables showing the death-rates from cancer and phthisis throughout Scotland at "all ages." The figures, however, unfortunately, only refer to "persons," and not to males and females separately. Dr. Stark made the following remarks on these tables: "By these tables it is seen that of the counties of Scotland Shetland was free from cancer (not quite 1.68); but it was one of the counties, on the other hand, in which the deaths from consumption were far above the average. The county of Berwick had the very highest death-rate from cancer of all the counties of Scotland, but it had a compensation in that it was the county which had the second lowest mortality from consumption. Forfar had a high death-rate from cancer, but a very low death-rate from consumption. Ayr had a very small death-rate from cancer, but a very high rate from consumption. Then take the towns, and the same want of