The etiology of Malignant Disease of the Uterus.

A. Foster.
16 Dukes Brow
Blackburn.

April 30th, 1897.
The definition here understood by malignant disease is that of Sir John Williams as given in his Harveian lectures: 'A new growth possessing malignant properties—i.e., it possesses the power of invading neighbouring tissues and of reproducing itself in other and distant parts.' This definition embraces all forms of malignant disease, including carcinoma, sarcoma and epithelioma.

To know the cause of all diseases is and always has been one of the chief aims of medical philosophy. The etiology of malignant disease of the uterus is at present shrouded with much haziness. This is the more unfortunate, inasmuch as this disease is not only of very common occurrence, but is the cause of much prolonged suffering. The great frequency
with which it is found, cannot help but strike one, and when we consider the variety of the uterine tissues, the complex menstrual function, the hypertrophic processes connected with pregnancy, and the accidents associated with labour, need we be surprised to find that there is a greater tendency to malignant disease in those organs which have been subjected to such irritation; for, that irritation is an important factor in its causation cannot be doubted when we consider that it is mainly among women who have borne children that it is most commonly found.

Thus, as a favourite seat of malignant disease, is only what one might expect from analogy, for if we look at the most common seats of the disease, we find that they occur most often at some orifice where there is
some form of irritation, e.g., in the rectum, at the pyloric end of the stomach, or on the lip. The same fact applies to the contents. Sir James Paget in the Morton Lecture says: "In all specific diseases, and in cancers more than any, parts are rendered apt to become the seats of diseases after injury, or after degenerations, especially those produced by long-continued irritation." So that cancer is found increasing as age advances, and the tissues are undergoing senile changes. They are then not only less able to sustain themselves but also less able to resist attacks at extra. At first sight it would appear that as age advances and tissues deteriorate, new growths would be rare, but perhaps the explanation may be sought in the fact that, as remarked by Dr. Coakley, cancer depends in its origin
on some cause which produces a
local falling away of the resistance
of the underlying tissues, combined
it may be in many cases with a
special vigour of the epithelial
elements. Now this coincides with
the following statement by Mr. Woodhead:
"During the period at which cancer
is most usually developed, the
connective tissues have passed
their prime. The epithelial tissues
have also reached their zenith, and
are now on the turn; but, as we
know, they have still great vitality,
sufficient, indeed, when diverted
from the imperfect functional to
vegetative activity, to give rise
to very large masses of imperfectly
developed epithelial cells." He points
out that cancer of those parts whose
functions remain longer than the
more specialised cells is developed
later in life than those whose
function is lost at a comparatively
early age, take the skin and
utensis as examples.

What starts the new growth of certain tissues? What is the exciting cause of the cell proliferation?
Is it what may be called a morbid vital energy, or "the abnormal play of forces generated within the body", as has been suggested?

Again, does cancer depend upon the presence of a microorganism, perhaps of a parasitic nature? This is a more fascinating explanation, but as yet bacteriological workers cannot agree, and the verdict can only yet be given as not proven.

Another explanation is based on Bodanis's paper on nutritive centres. He suggests that all organs have nutritive centres in the shape of a few cells, which should disappear when their work is done, but which, if they persist,
may give rise to new growths.
Lastly there is Bohnhein's theory, which is that neoplastic growths may originate from sequestered fragments of the germinial matrix. This theory has found many supporters, and is quite as applicable to the uterus as it is to the breasts, numerous examples of the latter being quoted by Roger Williams. Fiechel pointed out that in infants the os externum and to some extent the portio beyond are lined by cylindrical epithelium, and Klotz showed how minute islets of these cells persisted in the adult among the stratified epithelium of the portio. Roger Williams thinks that it is to this source that the foreign epithelial elements in the portio must be ascribed, and he agrees with Ruge and Veit that most of the primary cancers of the
Portio originates from residual epithelial elements of this kind, rather than from the epidermoidal cells of the portio itself. Ruge and Veit have also observed that cancer may originate from minute cysts—ovula rabothi—which are probably sequestrations from the cervical glands.

These embryonic rudiments, whether disseminated through the connective tissue or accumulated in islands, appear to be the mother tissue of, at least, some of the carcinomata. The suitable seat for these rudiments would be at the natural orifices where there occur more or less irregular involution of the germinal folds, and the uterine cervix would be a suitable spot, for it is at the external os that the pavement epithelium of the neo-glandular sinus meets the cylindrical epithelium.
of the Müllerian ducts.

The female sex is certainly more subject to cancer than the male, as is proven by Sir J. Y. Simpson's well-known statistics. This appears to be due to the frequent occurrence of cancer in the uterus and breast, one-third of the total cases being found in the former.

Sir J. Y. Simpson's statistics showed during the years 1847 - 1861:
- 87345 fatal cases of cancer
- 61715 of these were women
- 25630 men.

Walsh's returns are:
- 1200 fatal cases
- 879 of these were women
- 321 men.

Ogle's returns on Reg. General's report for 1884:
- 26315 fatal cases
- 16117 of these were women
- 10398 men.

The proportion is lower in Ogle's
returns (1½ percent) than in those of Simpson and Walshe (2½ percent).

The direct exciting cause on the immediate etiology of malignant disease being unknown, I propose to pay special attention to the predisposing etiological factors, especially to that form — carcinoma — which occurs in the cervical portion of the uterus in about 95 percent of malignant disease of the uterus as a whole. Schroeder, however, in his revised estimate of the proportion of cervical cancer to that of the body gives 1 in 40.

These predisposing causes are

A. General.
B. Local.
A. General.
   i. Age and its association with the menopause.
   ii. Heredity
   iii. Race
   iv. Locality
   v. "Depreciation of the vital powers". (Stant & Barbour)

B. Local.
   i. Perturbation
   ii. Laceration of cervix uteri, with which is often associated
   iii. Erosions of external os
   iv. Venereal disease
   v. Blisters

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Age.

In this connection we may first study the following figures, collected by myself from various observers, as to the relation existing between age and the occurrence of carcinoma uteri.
### Age for Appearance of Cancer of Uterus

<table>
<thead>
<tr>
<th>Age</th>
<th>5-85</th>
<th>492</th>
<th>77</th>
<th>574</th>
<th>400</th>
<th>61</th>
<th>112</th>
<th>600</th>
<th>810</th>
<th>1460</th>
</tr>
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<tbody>
<tr>
<td>0-20</td>
<td>0.8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Between 20-30</td>
<td>3.5%</td>
<td>6.7%</td>
<td>4.4%</td>
<td>0%</td>
<td>3.7%</td>
<td>3.7%</td>
<td>0%</td>
<td>8.6%</td>
<td>5.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>30-40</td>
<td>21%</td>
<td>23%</td>
<td>27%</td>
<td>29%</td>
<td>20%</td>
<td>21%</td>
<td>25%</td>
<td>26.7%</td>
<td>27.5%</td>
<td>12%</td>
</tr>
<tr>
<td>40-50</td>
<td>34%</td>
<td>41%</td>
<td>36%</td>
<td>39%</td>
<td>57%</td>
<td>39%</td>
<td>50%</td>
<td>37.5%</td>
<td>36%</td>
<td>25%</td>
</tr>
<tr>
<td>50-60</td>
<td>26.4%</td>
<td>20.5%</td>
<td>31.1%</td>
<td>27.2%</td>
<td>20.3%</td>
<td>21.2%</td>
<td>23.3%</td>
<td>15.7%</td>
<td>22.6%</td>
<td>29.4%</td>
</tr>
<tr>
<td>60-70</td>
<td>11.3%</td>
<td>8%</td>
<td>10.7%</td>
<td>5.2%</td>
<td>1.5%</td>
<td>3.3%</td>
<td>8.9%</td>
<td>6%</td>
<td>28.9%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Over 70</td>
<td>3.6%</td>
<td>1.5%</td>
<td>4.8%</td>
<td>0%</td>
<td>1.8%</td>
<td>11.2%</td>
<td>3.3%</td>
<td>8.9%</td>
<td>6%</td>
<td>28.9%</td>
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</table>

*Note: The table details the age groups and the corresponding percentage of cases for cancer of the uterus.*
On searching through these figures for the most common age at which this disease is found, one cannot help but be struck by its preponderance between the ages of 40 and 50. The only cases where this is not so are those of Bough, Blau & Ditttrich and those of Jesset, but in the former case it must be remembered that the ages were based on post-mortem statistics and consequently came under the notice of the pathologist later than under that of the gynecologist. It seldom occurs before the 20th year, it then increases up to the decennium after, and the climacteric decreases. The height of the cancer curve, which is reached about 45, coincides with the occurrence of the climacteric period, which will be seen to be much about the same age.

Till found in London cases 46. 1 years
as average date of cessation.
Whitehead found in Manchester
cases 47.5 years as the average date.
Robertson found
18.3 ceased to menstruate before 47.5.
57.6 — — from 47-50.

Why this prevalence of concern
during the climacteric or change of
life and at or about the time
of cessation?

"The woman who has passed through
the period of sexual life in perfect
health, with her superfluous
nerve force absorbed in child-bearing,
is, when a change of life takes
place, more liable to suffer from
prevented nutrition as expressed
by the development of some form
of malignant disease." There is
no doubt that in the great
majority of cases it is a disease
of that period of life in which
there is instability of tissues,
accompanied by loss of vitality.
This is so in the case of the uterus, and more so than in other parts of the body, for the usual unstable equilibrium of the cell elements is now increased. At the climacteric the various systems have all more or less lost tone, especially the circulatory, nervous and glandular ones. The nutritive power is diverted from the uterus to other parts of the body. The endometrium begins to atrophy, the connective tissues get thinned, the uterine glands lessen in size and number, and the blood supply diminishes, thus fitting the uterus for the quiescent state in which it should remain in after life. Nutrition is now occupied in the removal of old structures and not in new formations, but is it not possible to conceive how if the nutritive power were misdirected, perhaps in an attempt to repair injury, and with the influence of heredity
playing a part, it might start a new growth.
It is at this time also that many women begin to suffer from
neurotic troubles; they become depressed, irritable etc. This of
itself, as we shall see later, cannot help but have some effect on
the production of carcinoma uteri at this age.
Heredity

In considering the factor of heredity it is as well to note that inheritance of cancerous disease and inheritance of predisposition to cancerous disease are two vastly different things. Most recent observers do not consider that heredity has much influence in the causation of cancer. As far as our knowledge extends at present it certainly is not hereditary in the same sense that syphilis is; there is nothing which would correspond, for example, with the syphilitic teeth. As a rule cancer shows no sign of development until after the birth of the progeny, and in connection with this fact Dr. MacEwen in the discussion on Cancer in the Glasgow Pathological and Clinical Society asked as if expecting a negative reply, "Is it in accordance with the laws of heredity that a disease or an accidental feature only occurring..."
in the parent after the birth of
the progeny should manifest
itself in the offspring? Dr. Coats
replied in the affirmative remarking
that it was possible for a man
to beget a child before he become
prematurely bald, and yet that
child might have the tendency to
premature baldness at the same
time of life as the parent.

Another point against the view
of heredity is that of unequal transmission.

Statistics in regard to the
heredity of cancer cannot be said
to be very reliable, for many of
the cases that suffer most from
it know little or nothing of their
family history, and often if they
do know are loathe to tell it.

Rogen Williams believes that it is
undoubtedly hereditary and in
support of it quotes several cases,
one of which was that of a woman,
aged 53, with uterine cancer, whose
maternal grandmother, mother,
mother's sister, and the patient's two aunts had all died of uterine cancer. He also states that in 142 cases of uterine cancer he found 24 with hereditary history, that is 19.7 percent.

Schroeder says that judging from statistics the theory of hereditary descent does not seem feasible, though he thinks that we must allow some foundation for it. Placing the statistics of Sibley and Benten together he shows that heredity was proven only in 8.2 percent.

Garrigues thinks it is hereditary "to some extent."

Baldy thinks that heredity has "a considerable influence" in its causation.

Pozzi says he has seen "several undeniable cases."

Snow says: "In the genesis of cancer no appreciable influence can be ascribed to heredity." But of 295 cases of uterine cancer he found 27 with family history.
Out of 1719 cases collected by Lebent, Asble, Siegrist and Snow, the disease only showed itself in the relatives of the affected person in 236 instances or about 13 per cent of the total number.

According to Poussenow, out of 1025 cases heredity was only proven in 79, that is about 7.6 per cent. Pirot places it at 13 per cent.

Sir James Paget gives 33 per cent and Boneau 11 per cent in cancer generally. Winkel thinks it to be at least doubtful as to hereditary influence. He noted 6.3 per cent of such cases, but in many of them the diagnosis was uncertain in regard to father or mother.

Looking at the above opinions one cannot say that there is much proof that heredity plays anything more than a small part in the etiology of cancer of the uterus. Probably an hereditary predisposition is more often transmitted. This does
not necessitate any structural change in the organs but a transmitted functional inactivity, an inherent wont of power, or a constitutional incapacity for conscious cell proliferation, by which the organ (often the same as the diseased one in the parent) is more liable to suffer from the attack of extraneous irritating causes.

**Race.**

It would appear from Chisholm's statistics, and Billings and Rauher agree with him, that negro women are less subject to cancer of the uterus than white women, the proportion being one to three. Statistics, he says, renders as a racial disease in this country. Emmet says that in all his professional experience he has only come across one negro woman with cancer of the
utensils, and he thoroughly endorses the view that negroes are less subject to cancer.

Dr. Young, writing from the West Indies, observes that among the negro women: "Malignant diseases of the uterine and mammary are of very rare occurrence; and even those cases I have witnessed in this class of people, have been among the better orders of them, whose habits of living have been assimilated by those of the Europeans. But more recent statistics of Chisholm's are those of the town of Charleston in S. Carolina which show very little difference in the death rate of the two races; but then it must be remembered that the conditions of civilised life exist here, so that the inference is that civilisation, with its production of persons more highly organised intellectually and morally, instead of having an ameliorating effect, has a
deteriorating one as far as malignant disease is concerned. It would appear that in monkeys and other mammals uterine cancer is very rare, being hardly known to veterinary surgeons.

**Locality.**

Dr. Haviland sought to determine the topographical variations of cancer. He thinks it is more prevalent along low-lying marshy land where rivers overflow their banks, than in those parts of the country where there is plenty of hard rock, elevated surfaces, good natural drainage and exposure to drying winds. He based his views on the Registrar-General's statistics of mortality from cancer during the years 1860-1870. But there appear to be many exceptions to the rule, and in fact practitioners in suspected towns refused to recognize any...
connection between dampness of soil and cancer growth.

Depreciation of the Vital Powers.

Gynecologists seem generally to agree that privations, insanitary surroundings and mental worries, conditions found mostly in the lower ranks of life, have some weight as an etiological factor. Pozzi quotes some statistics of Schwedler showing the occurrence of carcinoma in the different ranks of life.

<table>
<thead>
<tr>
<th>Fibroids</th>
<th>Cancer</th>
</tr>
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<tbody>
<tr>
<td>out of 14,000 hospital patients 233 (2.3%)</td>
<td></td>
</tr>
<tr>
<td>&quot; 16800 &quot; &quot; 603 (3.6%)</td>
<td></td>
</tr>
<tr>
<td>&quot; 9400 private &quot; 537 (5.7%) 209 (2.2%)</td>
<td></td>
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</table>

Davenport says there are four or five cases of cancer of cervix in Wakefield to one seen in Edinburgh, and in Birmingham it is twelve times more abundant, showing the
more frequent occurrence of cancer in large working-class centres compared to such towns as Edinburgh, where the working-class element is only a small part of the populace. Snow says: "carcinoma is preceded, in a very large number of instances, by conditions inducing mental depression; often, under such circumstances that one is forced to regard this, not merely as a predisposing, but as the directly exciting cause."

Schroeder quotes Scanzoni as laying great stress upon previous depressing states of the mind in the production of cancer, and Fleetwood Churchill in 1844 enumerates the "depressing passions, bad food, exhausting occupations, unhealthy localities" as predisposing causes. Tarrignes believes it is much more common in the lower classes for the same reason. Dr. Leith Reaper, while not doubting that poverty and inattention to
personal cleanliness are likely to favour deficient vitality, yet thinks that the general increase of cancer seems to affect races, nations and districts which are most removed from actual want.

Dr. Sinclair of Manchester, whose experience is based largely on the working-class women of Lancashire and surrounding counties, is strongly in favour with the view that deficient vitality is one of the chief predisposing causes. He quotes Czereń Müller's 677 cases of cervical cancer which were found exclusively among the working-class, and he says his experience is, with very few exceptions, the same. The frequent labours, the early getting up, often only three or four days after the labour, long before the uterus has regained its normal size and position, the worry and noise arising from perhaps half a
dozen children, the too frequent falling back on alcohol as a stimulant, with its production of a chronic metritis, the insanitary conditions, often entirely due to the neglect of the women themselves, the tea and bread and butter diet, instead of suitable nourishing food, all these conditions so common in the large working class towns of Lancashire and Yorkshire cannot fail to have an injurious effect on the uterus, for we know, from almost daily experience, what an intimate association there is between the actual organs of women and the central nervous system, and how these organs are influenced in very many different ways by emotional conditions. The fact is, that of all causes of the cancer process, neurotic agencies are the most powerful. Of these distresses of mind is one of the most, if not
the most; commonly met with; and exhausting toil and privation rank best. Idiots and lunatics appear to be remarkably exempt from cancer in every shape.

**Parturition.**

Parturition appears to bear a distinct relation to carcinoma uteri, as the following figures of Blesten show:

<table>
<thead>
<tr>
<th></th>
<th>Single</th>
<th>Married</th>
<th>Widow</th>
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<tbody>
<tr>
<td>Out of 1000 Vienna women over 20.</td>
<td>45.4%</td>
<td>40.8%</td>
<td>13.3%</td>
</tr>
<tr>
<td>&quot; &quot; &quot; &quot; &quot; &quot; &quot; with uterine cancer</td>
<td>22.9%</td>
<td>5.0%</td>
<td>26.8%</td>
</tr>
</tbody>
</table>

There are two facts worth noticing:

1. Women who conceive are more the subjects of cancer of the uterus than those that do not conceive.

   This is supported by the following figures of various observers:
Winkel in 130 cases of cancer found 1.7 patients unmarried and \( \frac{2}{3} \) had given birth to one or more children.

Hofmeier in 812 cases of cancer where found 4.5% had not conceived.

Stenkl. 926 7.4%.

Emmet 53 0%

Schroeder 531 16.4%.

Reaney in about 1,000 cases about 3.6%.

Sinclair in 100 cases 1%.

Müller found 5.3%.

(but cancer of baby not deducted.)

II. It is women who have above the average number of children that are more subject to cancer of the uterus than those who have below the average number. This is supported by the following figures:

Winkel in 130 cases found 5.6% of children.

Guereau found 5.6%.

Hofmeier 572 5.2%.

Emmet 53 5.16%.

Sinclair 100 5.8%.
Now is it then that parturition should be a factor in the causation of this disease? It may be due to the wear and tear which the uterus has undergone in successive pregnancies, especially when it has sustained injuries in labour, such as, for example, as laceration of the cervix. It has been noted on a previous page that savages are not as subject to carcinoma uteri as the civilised whites. This may be partly accounted for on the ground that their labours are easier; the foetal head is smaller owing to poorer brain development, and "the dolicho-cephalic shaped skull adapts itself more readily to the pelvis. The pelvis of the negroes is comparatively large in proportion to the size of the child's head."

Playfair also thinks that "civilisation and intellectual culture, have considerable influence on the size
of the foetal skull."

It is often said that difficult labours in which forceps are used are a precursor of this disease, owing to the tearing of the cervix which often happens in such cases. Whilst agreeing that a certain amount of laceration often cannot be helped and may even be of use for the thorough discharge of the lochia, not only in instrumental but also in normal labours, still, I think that much of the tearing which often occurs might be prevented by the more general use of chloroform in such cases, for the cervix could then be allowed to dilate more slowly, than when the woman is in continual agony and "cannot keep back inclinations to end the labour as speedily as possible, regardless of the rule that traction should be made only with the pains, or if they are absent that it should..."
be made at regular intervals. Unfortunately chloroform in labour is as yet looked upon with dread both by practitioners and patients in many parts of the country.

**Lacerations.**

Among gynaecologists who believe that lacerations have a very decided influence in the causation of carcinoma uteri, are such men as Emmet, Baloty, Courtois, Puey, H. Wells, Leith, Prior, McNeice, Checkley, and Macauley. Sir John Williams, however, does not consider this to be a cause.

We owe much to Emmet for bringing to the front many of the diseases, including cancer, which result from these tears. But Henry Bennet in 1849 drew attention to this neglect, and Thorburn says he remembers Sir J. Y. Simpson
at the Edinburgh Maternity Hospital calling attention to a torn cervix as a common cause of aggravated cervical disease. The conscious development may occur in recent years, or it may be that it does not occur for many years after the production of the tear, perhaps not until active circulatory changes are going on in the cicatricial mass that may have been thrown out between the lacerated surfaces. Such a mass might be removed by absorption, but at other times it becomes a centre of irritation. In 53 cases observed by Emmet he found on average of 13.87 years had elapsed since the last pregnancy. The depth of the tear is of some importance, for Wells from a study of Mündé's cases finds that the data show a progressive increase in the frequency and severity
of the lesion corresponding to the tear.

Puerperal and abortion, the latter often of a criminal nature, are the cause of these tears, though it is as well to remember that Fischel and Küster describe a divided condition of the cervix as being a congenital one. Rapid labours, and even more so, prolonged tedious labours, and the application of forceps with rapid dilatation of the os, are the most frequent cause. Roux and Muntele both state that these tears are more common among the poorer classes than among the better ones; this is probably owing to the better treatment during and after labour that the latter receive. This, on the belief that lacerations are etiological factors in the causation of cervical cancer, will partly account for the greater affinity the disease has for the poorer
classes.

Bennet found that 32.8 per cent of women coming under his professional care, and all of whom had been impregnated, had lacerated cervixes. He says he has never failed to detect laceration in cases of epithelioma, unless the disease is extensive and has involved the vaginal surface; and he believes that nearly all, if not all, cases of epithelioma or cauliflower growth have their exciting cause in a lacerated cervix.

Mundé found 2.8 per cent of women suffering from lacerations, but only 1.1 per cent were deep enough to have a pathological significance.

Brook H. Wells found in 20 cases of cancer 7 who were known to have suffered from cervical tears. He relates a case of a torn eroded and everted cervix, which he was not allowed to remedy;
Twelve months afterwards, the patient returned with an extensive carcinomatous mass.

Barbour relates a case of cancer which developed in the puerperium, showing the relation of cervical cancer to labour.

Prof. Leith of Edinburgh mentions a case following a difficult labour. The cervix was split in several directions, and he thinks, and rightly too, that after all tedious labours the patient ought to be examined.

Sir John Williams does not believe in lactation as a predisposing factor either in the case of the portio vaginalis or of the cervix proper. Assuming that it occurs most frequently, if not entirely, in primiparae, he argues that cancer should be as common in them as in multiparae, which we have seen not to be the case; but it is more likely that the
more labours there are, the more
risks there are either of disturbance
of old tears or the production of
fresh ones. Besides one has to
take into account the increasing
worry and anxiety that often
accompany a rapidly increasing
family. He also denies that
lacerations occasion the development
of cancer by reason of the irritation
they give rise to. He thinks it
should attack the lacerated part
primarily, but he has never
seen it do so. But when one
thinks of the secondary lesions
that have been caused by the
tear, such as the thickening of
the submucous tissue, the production
of cervical cataract with erosions,
and the hardened cicatricial
tissue around the tear, need one
be surprised to see the cancerous
growth starting in the secondary
lesions instead of the primary
one?
Pujoa gives his views in the following statement: "I believe that the phenomena of development and involution incident to pregnancy are much more prominent in the causation of cervical cancer than are the tears which invariably follow labour." Doubtless the sudden onsets of developmental and retrograde processes may indirectly have something to do with cancer; but then these processes are common to all parous women, rich and poor alike, and yet the latter are found more favourite subjects for its attack.

**Erosions.**

Rowan Jeeves in his lectures on cancer of the uterus says that he has no doubt that many cases of incipient granular erosion of the cervix are
frequent precursors of cancer, and later on he says: "I believe it nearly always originates in some crack or erosion of the os which has been the source of irritation," and he recommends that where there is extensive erosion with infiltration of the tissues of the cervix, amputation of the cervix should be performed.

Bennet thinks that erosions do not occur without the previous occurrence of laceration; but erosions may be found in virgins and multiparae as pointed out by Bennet and supported by Pozzi; but they are much more likely to occur in parous women, especially those with lacerated cervixes. The proportion of erosions in an intact cervix to that in a torn one is as 1 to 44.

Though erosion and cancer differ in structure, though only perhaps a difference of degree, yet one
cannot but believe from clinical evidence that the former is often the forerunner of the latter, and the relation existing between the two is rather an interesting one. It is as well to observe, however, that in the opinion of many continental writers the relations of erosions to cancer have been much overrated.

What is an erosion? It is a newly formed glandular secreting surface and looks like an extension of the mucous membrane of the cervical canal through the external os on to the lips, and possibly it may occur in this way. The lips are as a rule covered with stratified epithelium, but now not only do they become covered with columnar epithelium but also possess a glandular structure. The glands do not penetrate deeply, but are very numerous, dividing and subdividing.
Ruge and Veit hold that these glands arise from proliferation of the cells of the deeper layer of the stratified epithelium. Sir John Williams thinks this "somewhat improbable." Haut and Bouhour agree with him. It is much more probable that they are offshoots of the cervical glands. These burrow superficially beneath the epithelium and send processes through it to the surface, causing the small red points which are seen in an erosion. Frechel thinks the cylindrical epithelium found outside the os, has penetrated into adult life, thus forming a congenital predisposition to erosions, which is fanned into active life by inflammatory changes. Klotz's observations go to prove that some women get erosions under slight inflammatory changes, while others escape though subjected to severe ones.
This bears out the view that some women are predisposed to erosions. Cancer of the portio arises by the proliferation of the epithelial cells growing into the underlying connective tissue, but it may also arise from the invasion of the stratified epithelium of the cervix, and according to Ruge and Keit 20 out of 21 cases of cancer of the portio originated in this way: The majority of cervical cancers, both those of the portio and the cervix proper, start from the cervical glands on their aberrant extensions. The glands greatly increase numerically; the cells proliferate freely, often blocking up the lumen of the gland and becoming of an atypical nature. On looking at the above facts one cannot but be struck by the fact that the cancerous development is very like an aberrant continual
repitition of what goes on in
the formation of erosions, giving
one the impression that the
cancerous process is simply an
aggravated erosion. The microscopical
study of one of John Williams' cases
in which an early cancerous
condition was associated with an
erosion bears out the above
statement, and he remarks that
cancerous glands often assume
forms seen in erosions. Hugs
and Reit maintain that as far
as the histology is concerned,
there is no clean border line
between the two.

It is generally believed that
the villous growths sometimes
found about the external os, either
inside or out, are very liable to
assume malignant properties,
out of three such cases mentioned
by John Williams, there was only
one which showed cancerous change,
which is not very conclusive evidence.
Venereal Disease.

1. Syphilis.

It is questionable in what respect syphilis influences cancer generally, but it is certain that some syphilitic lesions are the forerunners of cancer.

Bladder of the cervix is rare, and most authors ignore its occurrence or state nothing about it except its rarity. J. E. Hermann says he has only seen one case. Norburn says it is "excessively rare." R. Poroll says "a hard sore on the cervix is occasionally seen." Ragü Moff regards it as not particularly rare. He has found cervical chancre in 9.44 percent of disease found in all of the body in prostitutes and chancre in 1 percent in working women. The percentages respectively were 2.32 percent and 1 percent.

Spanton records the development of a malignant growth from
the site of a previously healed specific ulcer of cervix. There was no doubt about the syphilitic nature of the primary ulcer. In the same number of the Journal, Inglis Parson and Denwick note several similar cases.

Syphilitic lesions of the cervix can only play a small part in the etiology of cancer on account of their rarity, but still it is as well to remember that this is a possible source of malignant disease.

II. Gonorrhoea

Lincoln remarks that there is a suspicious frequency of coincidence of malignant disease of the cervix and a history of gonorrhoeal infection. Winkel is also of opinion that it favours the development of cancerous.

But prostitutes have not been noticed to have any special tendency to its development.
Coitus.

Excessive sexual indulgence has been thought to favour the occurrence of carcinoma, but here again prostitutes do not seem any more liable to it than others. The ungovernable sexual passion exhibited by some women with carcinoma is only a symptom of uterine disease.

Is direct inoculation or transplantation of the disease from one person to another possible in coition? In Copland's Dictionary of Medicine Watson mentions that he had come across two cases where this had happened. In one of them the husband suffered from cancer of the penis and eventually died from it. His wife also became the subject of cervical cancer and she died from it some time after her husband.

Dr. Macleod in the discussion on cancer mentions several similar
cases. One of them was a case of Dr. Donnel of Glasgow, in which carcinoma of the penis appeared three months after the death of the wife from uterine cancer. It would appear from these cases that the answer to the above question should be an affirmative one, but the general opinion is at present of a sceptical nature.

In relation to this factor Dr. Leith of Edinburgh notes that in cases of cancer of the uterus enquiring as to the condition of the husband's penis often elicits the information that oozing accumulates behind the glans, and beneath the prepuce. Whether this has anything to do with the causation of cancer one cannot say.
Sarcoma of the cervix is very rare and on this account no statistics are available from which we can get help in the search for its etiology. Wrethler mentions 5 cases besides some of his own but no cause can be stated beyond general predisposing causes. Roger Williams thinks that certain forms of sarcoma which are found here, with which are blended foreign elements—such as cartilage, may be caused by and have their origin in sequestrations from the matrix of adjacent tissues during early embryonic life.
Malignant Disease
Body of the Uterus.

Very little is known regarding the etiology of malignant disease of the body, still its relation to age and parturition are well looking at.

There are three forms in which it is found:
1. Carcinoma.

This is of much less frequent occurrence than that of the cervix.

Eucken and Burg found it in 20 out of 235 cases
Griffiths... 1 in 61
Age.

It appears to be most commonly found after the menopause.

Hofmeier's average age was 54 years.

Sinclair's 5 cases were all past the menopause. Two of them had been married, but only one had been pregnant.

Hermann found average age 57.4 years.
Veib's 50 cases showed

Between 50 and 60 years 31 cases
Above 60 years 21 "

Ruge's and Veib's 16 cases showed
Under 40 years were 2 cases.
Between 40-50 " was 1 case.
" 50-60 " were 6 cases.
" 60-70 " 7"

B. Jeaclt has not met with a case before the menopause. The age in his cases were
43 52 62
44 63 63

Panturition

Mulliparae are more often the subjects of carcinoma of the body than parous women. Sir John Williams mentions 13 mulliparae out of 15 cases.
Veib's cases showed
38 mulliparae out 72 cases.

Thus it will be seen that age and panturition bear a different relation to cancer of the body than to that of the cervix. Moreover,
the patients are generally found to be of the better class.

ii. Sarcoma

as a rule it attacks young people, but the uterine body appears to be an exception to the rule for elderly women are attacked more often than young ones.

Age.

Jessen mentions three cases all of whom were over 60 years of age.

Schroeder gives 8 cases of "Sarcoma of the parenchyma of the uterus."

"Young" 1 case

20 - 29 years 2 cases

30 - 39 5

40 - 49 8

50 - 59 1

Over 60 1

Guessow's cases along with 8 collected by Hert and Barbour are:
Under 20 years 11 cases.
Between 20-30  6
30-40  17
40-50  31
50-60  19
60-70  4
over 70  1

A. R. Simpson's cases were all approaching the menopause or beyond it. Three of them were parous and one was unmarried.
Their social surroundings were of a comfortable nature.

Parthenitis.

Out of Guzzenbichler's 63 cases 25 were alemic.

Out of 14 cases of Fabrōden:

3 were nulliparae
3 had 1 child
3 " each 3 children
1 " 2 "
1 " 6 "
2 were "nulliparae".

The menopause appears to be the commonest time for its
appearance. The cases of A.R. Simpson and Schröder cannot be said to favour multilocularity as a cause. It may arise from a supplicative endometritis and sometimes it develops in a fibroid. Seithkaper relates a case (case XV) which is an example of malignant transformation of an old uterine fibroma after the menopause. Alben Donan has shown that sarcomatous degeneration of the meshwork of a fibroid sometimes takes place and in May 1890 showed a case that was mostly made up of well-formed, plain muscle cells, but also included large collections of relatively short spindle cells, with broad oval nuclei.

A.R. Simpson also describes a case of probable fibromyoma in which carcinoma developed. In 5 out of 6 cases 7 cases the disease developed in connection with supposed fibrous growths.
iii. Deciduoma Malignum.

One of Marchand's conclusions regarding this disease was that mole pregnancy favoured its production, and many of the cases that have been observed have this history. Spencer has observed it in 46 per cent of the cases. The parts of the decidua left behind ought to keep in the regeneration of the mucosa, themselves disappearing in the process. But sometimes they persist, giving rise to various morbid conditions, one of which is this deciduoma malignum, probably a form of sarcoma.

The age and number of children cannot be said to bear any relation to the disease in question. The ages mentioned in the Manchester Med. Chronicle by Sinclair in a review of the literature of the subject were:

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Sinclair gives the average age as 33.7 years in 26 cases. The average number of children was 4.7.

Having now reviewed the various etiological factors and remembering that prevention is better than cure, is it not possible to lessen this scourge which affects women? Some of the factors, such as heredity, we cannot interfere with. But I think that by the more general use of chloroform in instrumental labours, by the timely treatment of exocervical and torn cervixes, by impressing on women the necessity of lying in bed at least ten days after their confinement, by keeping a careful lookout on fibroids and polypi, which do not disappear, but may enlarge, after the menopause,
and by trying to elevate the general masses from insanitary habits and surroundings, I think that by these means we may lessen the occurrence of this disease, and thereby prevent the greatest suffering that woman is heir to, which aim is one of the grandest of our profession.
The following are three cases of cancer of the cervix which have recently come under my professional care. The first one has just died, and the other two are nearing the end.

i. Mrs. Roberts.

Age 52. Menopause began at 46.
Widow. One child at 31 years.
Had instrumental labour.
First noticed discharge 18 months ago.
No hereditary history obtainable.
History of much worry and trouble with relatives, who refused, though able, to help herself and child. Consequently she had had to work hard to support both, the husband having died shortly after the birth of the child.

ii. Mrs. Barnes.

Age 56. Menopause began at 46.
Six children, last at 41.
All labours tedious and instrumental, with exception of second one, which was a breech presentation. Always got up on 1st day after confinement, and doing usual laborious housework (e.g. baking, washing) at end of fortnight.

Had discharge 2 1/2 years.

No hereditary history.

iii Mrs. Edelen

Age 45. Menopause began at 45. Had discharge 2 years.

Had 6 children and 2 miscarriages.

Last child at 37. Easy labours with exception of one before last, which was and instrumental. After this labour she never regained her normal health, always complaining of pain in her back and general debility. She dates her present illness from it.

Has a comfortable home.

No hereditary history obtainable.
There are some facts worth noticing in these cases in reference to the etiology of the disease.

Age in i + ii later than the average, and after the menopause; in iii the disease developed during the climacterium.

No hereditary history obtainable.

Number of children above the average in i + ii.

In ii there was much neglect by the patient herself after confinement.

In iii general debility dates from her instrumental labour.

In i + ii there was a history of a struggle to "make ends meet", and in the former this was accompanied by mental distress.