

The proclivity of women to cancerous diseases and to certain benign tumours : being the substance of a lecture delivered at the Cancer Hospital on February 6, 1891 : with appendix on heredity as a cause of cancer / by Herbert Snow.

Contributors

Snow, Herbert, 1847-1930.
Royal College of Physicians of Edinburgh

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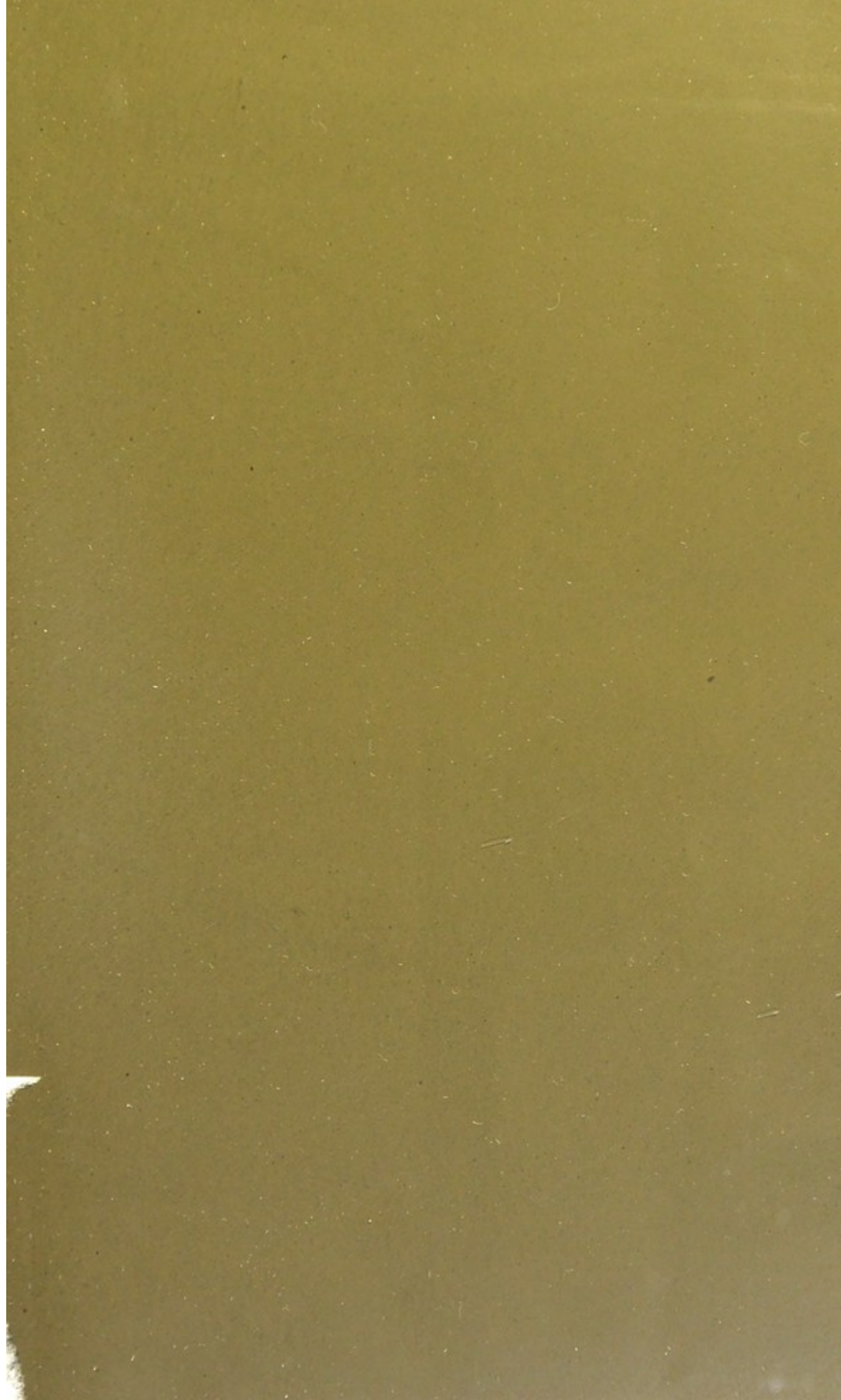
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THE
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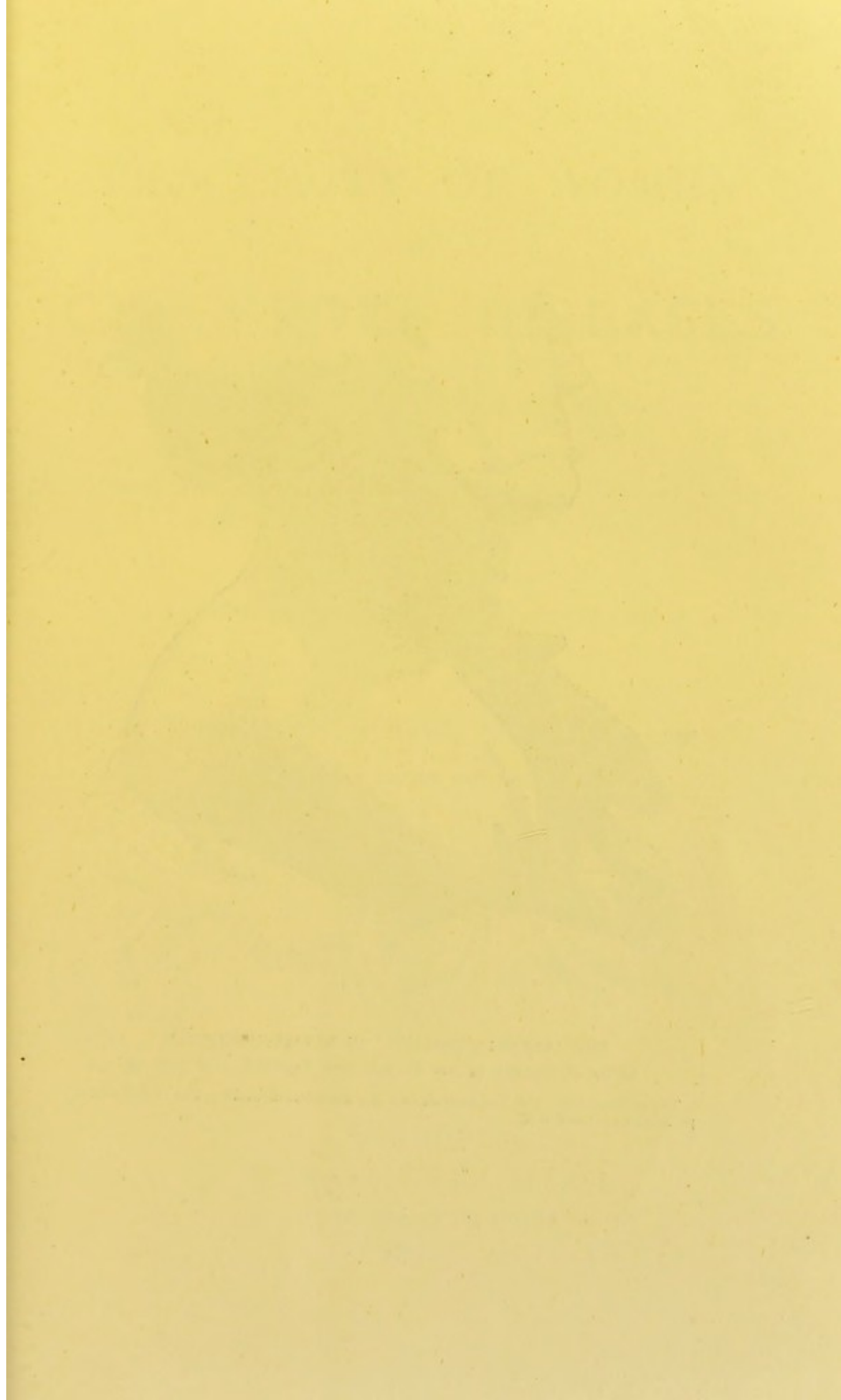


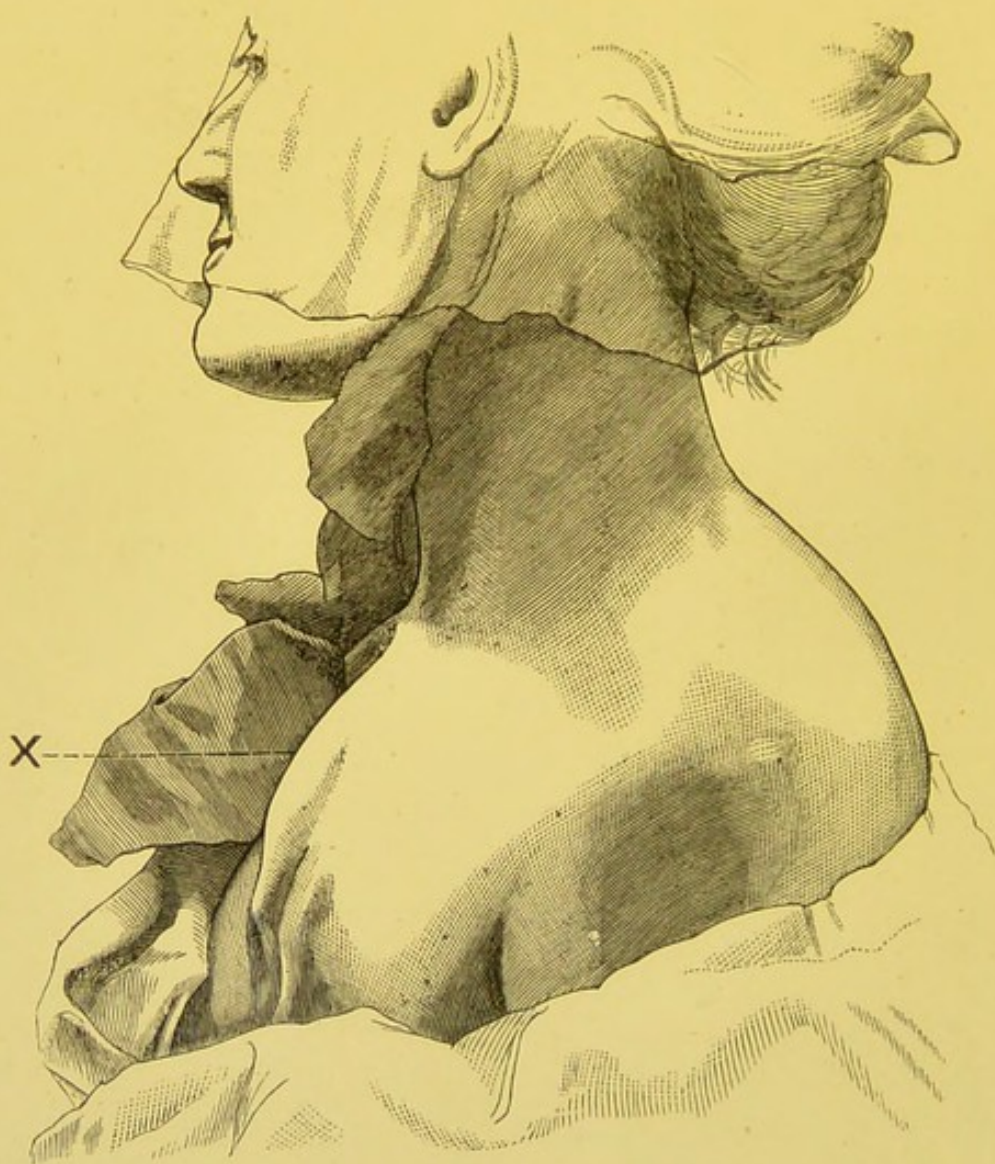
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PROCLIVITY OF WOMEN
TO
CANCEROUS DISEASES







THE 'STERNAL SYMPTOM' IN BREAST-CARCINOMA.

(After Photograph by Dr. T. Johnstone English.) See page 27.

The patient's left breast had been excised (for Scirrhus disease). The characteristic prominence is marked X.

THE
PROCLIVITY OF WOMEN
TO
CANCEROUS DISEASES

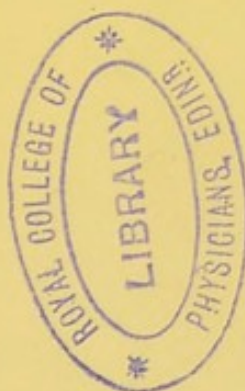
AND TO CERTAIN BENIGN TUMOURS

(BEING THE SUBSTANCE OF A LECTURE DELIVERED AT THE
CANCER HOSPITAL ON FEBRUARY 6, 1891)

WITH APPENDIX ON HEREDITY AS A CAUSE OF CANCER

BY HERBERT SNOW, M.D. (LOND.) ETC.

SURGEON TO THE HOSPITAL



LONDON
J. & A. CHURCHILL

11 NEW BURLINGTON STREET

1891

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AS A SLIGHT TRIBUTE OF ADMIRATION
FOR THE ACHIEVEMENTS OF THE MOST ORIGINAL GYNÆCOLOGIST
OF OUR TIME :
STILL MORE IN TOKEN OF RESPECT
FOR FEARLESS WARFARE AGAINST OLIGARCHIC CASTE-RULE
IN HIGH PLACES :
THESE PAGES ARE DEDICATED
TO
LAWSON TAIT.

AS A LIGHT SOURCE OF LIGHT
THE THERMAL RADIATION OF THE SUN IS
THE MOST IMPORTANT SOURCE OF
HEAT AND LIGHT FOR THE EARTH
AND ITS ATMOSPHERE

END OF THE

THE PROCLIVITY OF WOMEN
TO
CANCEROUS DISEASES,
AND TO
CERTAIN BENIGN TUMOURS.

GENTLEMEN,—One of the most eminent gynæcologists of this our era—a man presenting the most remarkable combination of scientific penetration, literary ability, and practical achievement—appropriately quotes in the introduction to his principal work a pithy French aphorism: ‘*La femme est une malade.*’ He goes on to say: ‘From the cradle to puberty, females seem to be on fairly equal terms with men; but from that moment, through the whole of the period of active life, their existence is one of prolonged suffering. The great function of their lives is led up to by troubles, and from it endless suffering springs. This seems to be the lot of civilised women only, and to be the result of this civilisation—why we know not, we cannot even guess.’¹

¹ *Note.*—Lawson Tait. *Diseases of Women and Abdominal Surgery*, vol. i. p. 4.

Now although before I conclude, I shall have occasion incidentally to make by implication the very guess here proclaimed impossible ; to hint at the solution of this mysterious problem ; and to offer for your consideration an explanation, which simple and homely as it seems, will yet I am convinced prove the master-key to many locks ;—I am of course now concerned with but one department (albeit the most painfully conspicuous)—of feminine suffering. We are all well aware of the deplorable predominance exhibited by the female sex in the aggregate mortality-statistics from that fairly extensive class of diseases which we term malignant or cancerous ; and which I shall here collectively designate by the convenient popular word ‘Cancer.’ I propose to investigate the reasons for this proclivity ; on the correct explanation whereof, practical consequences of no slight importance hinge ; and which is the more scientifically interesting in that it is by no means a general sexual law, holding good for each and every variety of malignant neoplasm. On the contrary for some very prevalent kinds, it is either absent, or the balance of relative tendency is very greatly in favour of men ; and the marked *exemption* of women in these particular cases will also claim our attention.

We will first glance at the ratio of cancer-sufferers, belonging to each of the sexes. The Registrar-General’s returns deal of course with the mortality from the diseases in question, and take no

heed of the cases saved by timeous surgical treatment ; are therefore approximative only.

In 1864, the population of England and Wales amounted to 29,680,437 ; in 1888, it had increased to 37,440,494. The proportion of males to females is as nearly as possible 100 to 105 ; in the population of London alone, 100 to 114.

In 1864, 8,117 persons (2,459 males, 5,658 females) died from cancer.

In 1868, 8,880 ; 2,743 males, 6,137 females.

In 1878, 12,664 ; 4,207 males, 8,457 females.

In 1888, 17,506 ; 6,284 males, 11,222 females.

It thus appears that, roughly speaking, for one male patient attacked, we encounter two women.

Any one who may care to peruse our Annual Hospital Report, will notice a similar striking disparity between the total numbers of the two sexes here treated ; since the foundation of the hospital in 1851.

We have next to ascertain in what proportion the different varieties of cancer contribute to swell these aggregates ; and secondly, the relative ratios of the manifold organs or tissues attacked. To a certain extent these queries coincide. I need hardly say that it is impossible to reply to them with absolute accuracy ; the Registrar-General's reports contain no information on these points, and any detailed analysis is therefore in that instance impracticable. The following figures are, like the preceding, approximative only ; but as they fairly

accord, I think, with the clinical life-experience of every medical practitioner, and are moreover corroborated by statistics from other sources—they will be found to afford a reliable basis for discussion, in respect of their more salient features.

Of 476 females treated here in the year 1889, as in-patients, 115 suffered from malignant disease of the breast, exactly the same number from that of the uterus; these two sexual organs therefore filling nearly half the field. Of 203 males, only 4 suffered from cancer of the genitals. With this item, compare a record of six cases of epithelioma of the vulva.

Two women-patients had malignant disease of the tongue, 1 ditto on the lips, none on the mouth and fauces. Among the men on the other hand, we find 20 attacked by tongue-epithelioma, 14 by the same in other parts of the mouth or pharynx, 11 by epithelioma on the lips, 3 by cancerous disease of the tonsils.

While 7 males were attacked by epithelioma in the skin of the face, only 1 woman suffered thus; whereas 6 men had the same on the external ear, the record is blank on the female side; one patient only (male) was treated for rodent ulcer commencing in the lower eyelid.

It is therefore evident that women are remarkably *exempt* from cancerous disease of the tongue, lips, buccal mucous membrane generally, skin of face and ears.

When however we pass to other regions of the

body, there appears, although the numbers here involved are too small for any very dogmatic assertion,—to be almost an equality between males and females in respect of liability to cancerous developments. Eleven women, 7 men, suffered from cylindroma of the rectum; 10 women, 6 men from disease of the abdominal viscera; 5 women, 4 men from miscellaneous cancerous maladies of the extremities; and, as we have seen, the external generative organs in both sexes are pretty much on a par. In fact, making allowance for the slight preponderance of women in the population generally; we are justified in assuming an absolute equality between males and females, in respect of all the parts last indicated.

I have further collated some corresponding statistics from other sources, which I present in tabular form. The first were computed by Mr. Sibley from the records of the Middlesex Hospital, and refer to a total of 520 cases, 105 male, 415 female; a part only of the table (published in the *Med.-Chirurg. Trans.* 42, 1859) is here given.

Organ	Male	Female	Organ	Male	Female
Lip, mouth, &c. .	27	3	Penis and scrotum .	8	
Tongue	9	5	Anus	4	1
Tonsil, palate, parotid, &c. .	5	1	Bones	9	6
Stomach and intestines	9	5	Lungs, liver, kidneys, lymphatic system, thyroid body	5	5
Rectum	4	7	Esophagus . . .	2	1
Nose, face, scalp .	10	9	Breast	1	191
Skin elsewhere .	5	5	Uterus	—	156
Clitoris and labia .	—	13			

In the *Medico-Chirurgical Transactions* for 1862 (45), is another statistical contribution, from which I will briefly quote; it is drawn up by Mr. Marrant Baker, from notes of 500 cases seen by Sir James Paget.

Organ	Male	Female	Organ	Male	Female
Lips and cheeks .	25	4	Integuments of scalp	1	1
Tongue	19	11	Integuments of nose		
Gums and palate .	6	3	and face	8	1
Rectum	8	3	Lymphatic glands .	10	6
Integuments of			Œsophagus	2	5
limbs and trunk .	13	5	Breast	7	269

Uterine cases are not included in the Report.

In addition then to the trite conclusion that, in by far the greater number of instances, the female breast and uterus are the parts attacked by malignant disease; I have to point out to you the peculiar exemption to which I have already alluded; and further the significant fact that when we pass into what we may term neutral ground, not influenced by marked differences in the mode of life characterising the two sexes; both men and women appear to suffer from cancer in equal or nearly equal proportion. Such parts as the internal viscera, the lower part of the alimentary tract, and to a certain extent, the lymph-glands, belong to this category; although the latter in males, are a little more exposed, by reason of the ordinary occupations of the sex, to mechanical injury, than in females.¹

¹ *Note.*—The stomach and œsophagus may be considered as occupying an intermediate position; but it is necessary

to be careful in the matter of statistics on visceral disease, Thus in the most copious analysis of cancer-cases with which I am acquainted, Dr. Walshe, dealing with 9,118 instances drawn from the Mortuary records of Paris, inserts a record of 2,303 deaths from cancer of the stomach, against 2,996 from that of the uterus, and 1,147 of mammary cancer. It is almost needless to add that malignant disease of the stomach is, among us, rather uncommon ; and that it is impossible to accept a statement which imputes to it such an extraordinary prevalence.

PRIMARY CANCER OF THE STOMACH.

Total Cases	Male	Female	Observer
2214	1233	981	Dr. Welch (of New York)
1303	680	623	Dr. Wilson Fox
223	151	72	Dr. Brinton
79	52	22	Dr. Habershon
3819	2116	1698	

Mr. F. B. Jessett (*Cancer of the Alimentary Tract*) quotes 35 cases of primary cancer of the œsophagus and pharynx. Of these 25 occurred in the male, 10 in the female.

On the other hand, the same surgeon refers to 42 cases of rectal malignant disease ; whereof 20 were in men, 22 in women. Also to 104 of primarily cancerous intestines (excluding the rectum) ; 46 appeared in the male, 58 in the female.

We thus find that *while to cancerous disease of the lips, tongue, and buccal tract generally, men are enormously more prone than women ; to that of the stomach and œsophagus, they also exhibit a proclivity, but one of much less degree. Below the stomach the two sexes appear, in respect of predisposition to cancer, almost exactly on a par.*

The moderate preponderance of instances, in which the stomach and œsophagus of men are attacked by

malignant maladies ; is explicable upon the ground of their greater alcoholic proclivities, as pointed out subsequently in the text.

Above the pharynx, various other agencies provocative of cell-disorder also come into play ; whereas below the pylorus, the alimentary mucous tract is no longer exposed even to the direct contact of alcohol.

That in order to account for the paucity of instances in which the tongue, mouth, and facial region generally, become in women the site of cancer,—we cannot appeal on the one hand to some mysterious *sexual distinction* ; on the other to some *unknown pathological attribute* of the disease-process in itself ;—is evident from two considerations :

- (a) Men and women appear equally exposed to malignant disease (of any variety), attacking organs common to both sexes.
- (b) The species here more immediately in question (Squamous Epithelioma), when commencing in other localities, as the anal margin, the skin of the trunk or extremities, or the external organs of generation, exhibits no selective preference for either sex.

To my mind the latter point is especially significant ; as indicating that the true solution of the problem involved cannot be sought in any inscrutable law of pathological development ; but, with far more probability, in some simple phenomenon or phenomena of *causation*.

The facts are I think, readily intelligible when we reflect upon :

- (a) The greater attention to cleanliness, and to their personal appearance in general, which characterises women, as contrasted with men.
- (b) The comparatively small proclivity of women to alcohol, particularly in the concentrated form of spirits. And with this, their abstinence in this country, from the practice of smoking.

On the first of these I need lay no great stress ; it being for my present purpose sufficient to indicate how it operates by inducing an early removal of the familiar exciting causes which result in epithelioma,—in the mouth, irritating conditions of the teeth,—on the face, unsightly warts,—and so forth.

The second however brings me to one of the key-notes of this present paper ; a principle briefly summed up in the maxim : *Functional disorder or derangement is apt to generate organic disease.*

In a lecture previously delivered here, and to which in view of the exigencies of time I must venture to refer you ;¹ I showed the one essential element in all cancer-growth to be an abnormal cell-proliferation ; due to reversion, to a return of the primitive elements of the various tissues to an original amœbi-form condition, in which, every single cell is to all intents and purposes, a quasi-parasitic independent organism. I cannot now quote the evidence in favour

of this theory ; and can only now remark that, until some other more plausible appears, it is but reasonable to regard it as provisionally proven. There are strong reasons which lend it support ; it explains satisfactorily all the phenomena ; I know of no objections or difficulties in the way of its acceptance. And lastly there is no other mode of explanation in the field, which will at all serve as what Darwin so much prized, a 'good working hypothesis' ; for I take it that his own of 'Pangenesis,' and Cohnheim's fascinating Inclusion-theory, have now little or no weight in the present connection.²

¹ Note.—*The General Theory of Cancer-Formation.* J. & A. Churchill. 1889.

² Note.—Cohnheim attributed cancer to the inclusion, within organised structures ; of some small group of foetal cells, —latent throughout many years of life, then under the influence of some unknown stimulus, suddenly proliferating. Such neoplasms were regarded therefore as practically always congenital. It is almost needless to add that this hypothesis is totally unsupported by evidence ; and that modern researches indicating the exceedingly small influence of heredity in generating malignant disease, seem to negative it *in toto*.

On this view all the phenomena of cancer-development are phenomena of cell-growth ; and all questions of causation resolve themselves into the single one of what stimulates or irritates the cell-elements in a particular (always limited) area. The various modes of origin, (invariably mechanical), of Squamous Epithelioma of mucous membranes are so well known that I must not weary you by recapitulating them ; I will only point out that there *must*

almost of necessity be a minute superficial lesion, a crack, cut, or fissure, as the starting-point ; and that long-continued mechanical irritation of the adjoining epithelial tract, does the rest. Every person has, from time to time, these trivial breaches of continuity ; women are as much exposed to them as men. In an individual of functionally healthy mucous membrane, they give no trouble and speedily heal ; in one with a coated and abnormal state of the part, repair is slow and tedious,—then is the door for initiation of the cancerous process thrown widely open. We all know how commonly mouth, tongue, and lip-epitheliomata are the natural sequence of long-delayed healing under these conditions ; and how easily preventible their developments would almost always seem to have originally been.

It is the stronger vehicles of alcohol in which the local action of that fluid upon the epithelium is the most conspicuous, and most unmistakeable. If for instance, a young healthy adult take over-night a single glass of whisky,¹ you will discern on his tongue the next morning, without a single question, irrefutable evidence of the fact ; the coating of brownish unhealthy fur on the posterior half of the dorsum is pathognomonic, or very nearly so. The man himself probably feels perfectly well, is not conscious of the slightest disorder ; yet very tangible local results of the moderate dose of spirits imbibed are never absent, if looked for. And if, in comparison, we take an individual of more advanced years, the

habitual daily consumer of considerable quantities of alcohol in one form or other ; the result in chronically disordered epithelial cells need not be stated. Add to this, broken down health, general vitality (in addition to the local) conspicuously lowered ; and we can well understand what follows.¹

¹ *Note*.—Whiskey has become of late years the sole spirituous liquor imbibed by 99 out of every 100 men. May not this fact aid us in accounting for the increasing prevalence of cancer among males ?

Many of our male patients with Epithelioma of the buccal tract are intemperate ; many are only moderate drinkers of alcohol in its most undiluted, and therefore most mischievous forms ; still the local derangement of epithelial cells, if perpetuated and sustained by daily habit, tends to work the same ill consequences. And men commonly disorder their buccal membrane by other practices, tending in a similar direction ; smoking operates indirectly by coating the tongue, directly by the actual contact of the pipe or cigar ; a large number of cases take rise in old syphilitic lesions of many years' standing. By the comparative absence of all such cancer-factors, women conspicuously score ; and I do not think we have occasion to seek any more recondite explanation of their marked immunity from these local cancer-developments.¹

¹ *Note*.—Williams (*Veterinary Surgery*, 1884, p. 447) says : ' Epithelial cancer is very rare in the lower animals, and arises from some previous local disease or injury.' This would further tend to indicate the value of a healthy mucous membrane, as

unlikely to become cancerous. He goes on to state that epithelioma is more common in dogs (which ordinarily lead more pampered and unnatural lives) than in the other domesticated animals ; and that lympho-sarcoma occurs 'in' all the patients of the veterinary surgeon.'

Having thus considered the field of exemption, let us now turn to that province in which the peculiar liability of woman to cancer is displayed ; the uterus and breast. The question we have to answer is : *Why malignant disease of these organs should be, both absolutely and relatively, so deplorably frequent?*

From the general view of cancer-etiology with which we started, it is reasonable to assume that any organ specially rich in cell-elements will be much more liable to cancerous developments than one not so circumstanced. Within certain limits this anticipation is justified by actual experience ; but inasmuch as a few markedly parenchymatous organs (Ex. the liver, and the lymph-glands) do not evince any special tendency of the kind, it is evident that something more is wanting ; and that in the case of the parts here indicated, we must look for some additional causation-factor.

If we still reason deductively and appeal to our theory, we find that this further suggests a special liability to cancer in parts :

- (a) Where the cell-elements normally subsist in unstable equilibrium. In other words : where these are most prone to frequent modifications and changes, either in individual growth ; or in relative arrangement.
- (b) Where these morphological or histological varia-

tions exhibit the most intimate subordination to the nervous system.

Now these are precisely the conditions which are typically found in the uterus,—or perhaps I should rather say in that portion of the uterus whence malignant growths almost always spring,—its lining membrane.

The very important researches of Dr. Arthur W. Johnstone, confirmed by Mr. Bland Sutton's independent investigations among monkeys, have lucidly demonstrated the alterations which this tissue undergoes at the monthly periods; and have placed upon a reliable basis, our conceptions of the rationale of the menstrual process, as well as of the mechanism by means of which these delicate evolutionary changes are effected.¹

¹ *Note.*— Dr. Johnstone and Mr. Bland Sutton's papers were read before the British Gynæcological Society on June 23rd, 1886; and are printed in the volume of Transactions for 1887, p. 389. Another valuable memoir by the former is to be found in the Transactions of the American Gynæcological Society for the same year.

The tissue lining of the uterus has little or no analogy to the mucous membranes; that portion at least which is above the *os internum* is regarded by Dr. Johnstone as 'adenoid,' of the same nature as the lymphoid parenchyma of the intestinal canal, and the lymphoid organs generally. Its basic groundwork is an extremely fine fibrillar stroma, containing small rounded or irregularly shaped cells ('the corpuscular element'); this is covered by a

single layer of columnar epithelium, and contains very abundant tubular glands ('the utricular follicles'). In the young child, very few corpuscles are found in the stroma; and hardly any in the aged, in whom the whole of the endometrium undergoes atrophy. Towards puberty this 'corpuscular element' becomes relatively abundant; and just before menstruation the fibrillar network is everywhere completely infiltrated thereby.

When menstruation approaches, there is an increased flow of blood to the part; the maximum pressure being about two days before the commencement of the discharge. (Stephenson.)

The process, as indicated by the characteristic pain in salpingeal disease, appears to be initiated in the Fallopian tubes (Lawson Tait). 'Denidation' takes place; that is to say, the lining epithelium both of the surface membrane and of the open mouths of the utricular follicles, together with the great bulk of the 'corpuscular element,' dies and is washed away by a stream of blood, mixed with mucus secreted by the said follicles. When the period has terminated, a microscopic examination shows the lining membrane of the uterine cavity completely bare of cell-covering; the outer ends of the follicles also entirely denuded of epithelium; and the corpuscles of the adenoid stroma very scanty and small. But there is no sloughing away of the endometrium *en masse*, as was supposed by Tyler Smith and John Williams; all the changes,—we

may almost consider them 'morbid,' and Lawson Tait indeed styles menstruation itself 'a morbid process,'—*take place in the cells*. Renovation of the structures removed subsequently ensues, in readiness for the next menstrual epoch; mainly, as it would seem, by the agency of the adenoid sub-structure above-mentioned.¹

¹ *Note*.—The word 'denidation,' (*nidus*, a nest) was aptly coined, by Dr. Aveling, for the process here described; its object being to procure fixation and growth of the impregnated ovum, with the development of a placenta.

Ovulation as originally pointed out by Ritchie (*London Med. Gazette*, 1843) is a totally distinct function from that of menstruation; progressing uninterruptedly through life from the cradle to the grave; common of course to all other mammalia; probably periodic in some measure, in the human female, though even this is somewhat doubtful. But the periods do not necessarily coincide with those of the menstrual flow, and are regulated by a separate nerve-mechanism,—so that removal of the ovaries does not preclude subsequent menstruation, normal in every outward respect.

Menstruation on the other hand is the proud privilege of woman, as contrasted with every other female mammal; a distinction she is plausibly believed to owe to the assumption, by her kind, of the erect position.¹

¹ *Note*.—The higher apes are credited by Mr. Bland Sutton, with the same physiological badge of rank; but there appears to be still some doubt whether the vulvar discharge in these does

not appertain more to the phenomena of the *œstrus* or rut, a totally distinct process from that of menstruation. The absence of periodicity, and of 'denidation,' the small amount of hæmorrhage, turgescence of the external genitals, &c., &c., would seem rather to indicate that we here find a *mixed* process; not precisely analogous to what occurs in the human female.

The extreme delicacy of the selective process; which takes place in 'denidation,' and which otherwise might almost as aptly be termed 'denudation'; can hardly be appreciated without a reference to Mr. Bland Sutton's diagram in the Gynæcological Transactions (*loc. cit.*). At the bottom of each utricular follicle, a very scanty residuum of lining epithelium is seen, after menstruation; the remainder of the follicle, together with the intra-uterine surface of the endometrium, has become perfectly bare of cell-covering.

It is characterised by a delicate cell-denudation process which obtains in no other animal whatever; and is at once permanently abolished by radical extirpation of the Fallopian tubes. The trunk by which the behests of their special nerve-centre are conveyed to the parts concerned, is believed by Dr. Johnstone to be a large one which 'comes up at a very acute angle to the body of the uterus, from deep down in the base of the broad ligament, and enters the uterine cornua, just underneath the lumen of the Fallopian tube. This nerve lies so close to the body that if the operator is not extremely careful to extirpate the whole of the Fallopian tube, he is very apt to miss it.' (Johnstone, *Amer. Gynæcol. Trans.*, 1887, p. 281.)

Upon other interesting and valuable suggestions and observations in the above-quoted papers, we cannot now enter; the originals will well repay

perusal, and their explanation of the why and the wherefore in an otherwise mysterious problem, appears well worthy of acceptance in the main. That argument in particular, which demonstrates how menstruation is brought about by assumption of an erect position,¹ with the necessitated modifications in anatomical structure, is characterised by the fascinating simplicity which we invariably find as the ground-work of every great law in Nature; although a speculation assigning a trophic neuritis in infancy as the cause of an infantile uterus in the adult, would seem to need confirmation. All I have now to do is to point out the unstable equilibrium of the cell-elements in question; and their peculiarly close subordination to a nerve-centre or centres.²

¹ *Note.*—The following are Dr. Johnstone's views on the mode in which the menstrual function has originated by a process of evolution; he defines that process, in the most terse expression which can be found to include all the phenomena as: '*a periodic washing away of those corpuscles that are too old to make a placenta.*'

In the cow and sheep, the endometrium possesses extremely abundant lymphatics and intercellular spaces; the plexus of blood-vessels is also richly supplied with lymph-radicals and perivascular sheaths. That of the sow presents similar features, but in a less degree; and approximates more to that of the human child. Hence in these, and the other inferior mammalia the defunct corpuscles developed by the adenoid endometrium are readily carried off into the general circulation. 'The sow does not menstruate for the same reason that the child does not. The corpuscles are so slightly developed that they do not need rapid removal.' (*Trans. British Gynæcol. Soc.*, II., 1887, p. 300.)

In woman, with assumption of an erect posture, the anatomical condition and requirements of the uterus are entirely changed ; the organ has to depend on the tenacity of its own fibres for the preservation of its shape, and a plexus of lymphatics would no longer suffice to carry off the now very abundant 'corpuscular element,' when this degenerates. Hence provision is made for an 'emulgent stream' poured directly into the uterine cavity ; and not into the general current of the circulation.

It is worthy of special note, in connection with the topics discussed in this paper, that the menstrual periods of the *savage* female are few and far between ; and that the flow is scanty.

² *Note*.—According to Dr. John Williams (*Harveian Lectures*), the first step in the production of carcinoma of the cervix is that the normally single layer of columnar epithelium, becomes stratified or multiple-layered.

The due performance of natural functions effected by means of a special nervous apparatus are proved by Dr. Johnstone's researches, confirmed by the clinical experience of Lawson Tait. Upon the manner in which the machinery is so readily thrown out of gear by manifold intrinsic or extrinsic agencies, I need say little. Cases in which the menstrual flow is suddenly checked by shock, by chill, by fatigue, by fear, trouble, anger and the like ; or in which it is similarly brought on at an abnormal time, by neurotic factors, (among which we may reckon operations in general, and those on the abdomen in particular)—come under our notice every day. This, of course, during the fruitful period of woman's life ; but even at or after the close of that epoch, we occasionally encounter instances demonstrating the same marked subordination of the uterine glandular

tissue to nerve-influence. Thus in his Harveian Lectures on *Cancer of the Uterus*, Dr. John Williams quotes a case (No. xxviii. p. 83) in which a widow, aged 52, had eight years previously 'received a shock through the sudden death of a patient.' This brought on a sanguineous discharge, which had continued more or less down to date ; and had ultimately resulted in carcinoma.

We will now consider the BREAST as a specially favoured site of Cancer. The parenchyma of this gland is, of course, rich in cells ; and is, moreover, abundantly supplied with very fine nerve-filaments, derived principally from the fourth and fifth dorsal nerves, which form a plexus at the root of the nipple and under the areola ; the third dorsal is distributed along the blood-vessels, some small branches are received also from the sixth ; with all are incorporated numerous fibres from the sympathetic.

I imagine that although the trophic sympathy which exists between the mammæ and the uterus, in respect of the changes during pregnancy, is so familiar to us ; we yet hardly accord sufficient recognition to the subordination of the former to nerve-control, under other conditions natural or abnormal ; nor do we duly appreciate the extremely minute modifications in cell-structure and cell-nutrition, which must of necessity underlie the obvious macroscopic phenomena we encounter. During lactation for example, it is a significant fact that the QUANTITY of milk secreted depends much more upon

a healthy vigour of the nervous system, than upon anything else. The supply is always more copious in the morning than towards night; is abundant after a good night's rest, scanty if the sleep has been broken; and by fatiguing physical exertion, is speedily terminated altogether. We know that a sudden mental shock will immediately put an end to the functions of the gland; and conversely, in how great a degree, efficient performance of these functions is favoured by tranquil and cheerful surroundings. The sudden rush of blood to the breast produced in the nursing mother, by the sight, or even by the thought of her infant, is a familiar example of *reflex* nerve-impulses, acting upon the organ in question.

But Sir Astley Cooper,¹ who published a most elaborate monograph on the normal breast, goes further than this; and discriminates between the modifications, in great part *qualitative*, produced in the milk by the various emotions. He states that while *terror* inhibits the secretion *in toto*, *grief* lessens the quantity simply; *anxiety* and *fear* both diminish the supply, and render the milk less nourishing; with a *fretful temper* the amount is lessened, and the milk is irritating and unwholesome; fits of *anger* result in the production of a fluid, which causes green evacuations in the infant. By other observers, cases have been recorded in which a fit of passion so deranged the secretion, as to induce fatal convulsions in the child. The

quantitative variations, I would suggest to you, *may* depend in part on blood-supply; *the qualitative must rest wholly on minute modifications in the cell-protoplasm.*

¹ *Note.*—Anatomy of the Breast, 1840.

These conspicuous phenomena occur when the gland is in its most active state; but even in the resting stage, facts bearing similar testimony are not wanting. Pressure or injury to the breasts produces a sensation of nausea, which if carried to an extreme, may excite actual sickness; I have reason to believe that some sensitive women consciously refer depressing motions to the breasts, even in health. Sir Astley Cooper writing in a pre-anæsthetic age, notes, apparently as an exceptional phenomenon, the almost constant occurrence of VOMITING after important operations upon the mamma. According to the same authority; 'The return of the menstrual secretion makes a great difference in the feel of the breasts, as they become full, tense, and painful; and an ecchymosis sometimes appears. Menstruation has also some influence on the colour of the nipple and areola.' Although for obvious reasons, positive observations are almost necessarily wanting; there can be little doubt that minute cell-changes, analogous to those of the endometrium, and of similarly periodic character, go on unperceived in the breast; the exuvial products being carried off by the copious

network of lymphatics. Darkening of the areolæ, together with general mammary enlargement and tenderness, are of course occasional phenomena resulting from uterine *disease*, especially chronic endometritis.¹

¹ *Note*.—An obvious analogy obtains between the cyclic exuvial process here indicated ; and that which, in the uterus of the lower mammalia, has been seen to take the place of menstruation. It may be remarked that Dr. C. Creighton (*Contributions to Physiology and Pathology of Breast*, 1878), says in reference to the mammary glands of the ornithorhynchus, as investigated by Mr. G. Bennett, that 'the chief physiological factor must be held to be that of periodicity.' And, in describing the embryonic development of those in the guinea-pig : 'The cells of the embryonic matrix in assuming the secreting structure, will be found to exhibit a cycle of changes, which may be compared with the successive changes of a periodical evolution.'

Now in by far the greater number of instances in which malignant disease attacks the uterus or breasts, the pathological variety is Carcinoma ; whereof the glandular parenchyma is the parent-tissue.¹

¹ *Note*.—So far as can be ascertained under conditions usually obscure, a very small proportion of cases of uterine cancer, indicate an origin in the stratified epithelium of the *portio vaginalis* (Dr. John Williams, *Harveian Lectures*, 1888).

What causation-history do we find in carcinoma ? Or perhaps I had better say ; what are its ordinary immediate antecedents.

In a certain comparatively small number, the symptoms date from a brief period subsequent to the infliction of sudden mechanical injury, as a

blow. This mode of origin is most often seen in breast-carcinoma, about 11·9 per cent. of all the cases being thus accounted for; occasional examples of uterine cancer also date from a fall, &c., but the occurrence is exceptional. A great many of the latter, however, begin after a confinement or miscarriage; and I think that Dr. John Williams, in his *Harveian Lectures on Cancer of the Uterus*, fails to make allowance for this by no means infrequent clinical history, when he refuses to recognise the validity of lacerations as a causation-factor in that disease.¹

¹ *Note.*—It is singular that cancer rarely attacks a procident uterus. Dr. John Williams notes a single instance: the writer, in fifteen years' experience at the Cancer Hospital, has never seen a case.

It must not be forgotten that in some 4 or 5 per cent. of instances, breast-carcinoma is the result, not of sudden injury; but of long-continued irritation, or of chronic irritative disease about the nipple,—the mechanism of production being thus identical with that of squamous epithelioma; and we may plausibly ascribe a few examples of malignant uterine disorder to similar agency. Into the region of malignant neoplasms appearing in other glandular organs, I cannot now travel; partly because the features of their clinical career are usually obscure, partly because it is not always easy to define with accuracy, the parent-tissue, in which these primarily originated.

It is thus seen that *traumatism*, sudden or continuous, will account for the appearance of but a few cancerous growths in these localities; and we have to seek some other antecedent, adequate to account for the phenomena. This we find in various depressing neurotic conditions; particularly in *mental distress*.

So far as mammary carcinoma is concerned, the fact that worry and trouble seemed in numerous instances directly to originate the malady, is an extremely old and oft-repeated observation; and, considering the status of the eminent surgeons who have noticed this sequence, with the directness of their testimony on the point, nothing more surprises me than the manner in which the phenomenon in question appears to be still passed over, not only by the profession at large, but also in the schools,—which might reasonably be supposed to guard the van of medical progress.

Thus Dr. Walshe¹:

‘Much has been written on the influence of mental misery, sudden reverses of fortune, and habitual gloominess of temper, on the deposition of carcinomatous matter. If systematic writers may be credited these constitute the most powerful cause of the disease; and Lobstein, assuming the fact as established, exercises his ingenuity in tracing the connection of cause and effect; moral emotions produce defective innervation; this, perversion of nutrition; which in its turn causes the formation of

carcinoma. Whether this be the real catenation of circumstances or not, and although the alleged influence of mental disquietude has never been made matter of demonstration, it would be vain to deny that facts of a very convincing character, in respect of the agency of the mind in the production of this disease are frequently observed. I have myself met with cases in which the connection appeared so clear and decisive that to question its reality would have seemed a struggle against reason.'

¹ *Note.*—Walshe *On Cancer*, 1846, p. 155.

Again Sir James Paget¹: 'The cases are so frequent in which deep anxiety, deferred hope, and disappointment, are quickly followed by the growth or increase of cancer, that we can hardly doubt that mental depression is a weighty addition to the other influences that favour the development of the cancerous constitution. Nor is it strange that it should be so; it is consistent with the many other facts showing the affinity between cancer and depressed nutrition.'

¹ *Note.*—*Surgical Pathology*, 3rd edition, 1870, p. 800.

For my own contributions to the literature of the same subject, including the report of sufficiently typical cases, I will venture to refer you to my published booklet on *The Re-appearance of Cancer* (J. & A. Churchill, 1890); as also to my *Clinical Notes on Cancer* (*ibid.* 1883). The former contains a short

table exemplifying various neurotic antecedents of carcinoma ; for although mental distress ranks as the principal of these, the agency of several others such as exhausting toil, and prolonged illness, must not be lost sight of.

¹ *Note.*—As the supposed influence of heredity in generating cancer is not discussed in this lecture ; reference may be made to the writer's paper : 'Is Cancer Hereditary?' *British Medical Journal*, Oct. 10th, 1885 ; which demonstrates the scanty grounds on which the theory of heredity, as an ordinary factor in the genesis of cancer, has been based.

In further disproof of those pathological views, which a few years since were very generally current, and which assigned a constitutional origin to malignant disease ; reference may be made to two papers by the writer, read in the Pathological Section at the recent Birmingham meeting of the Association. The first, entitled 'The Local Origin of Cancer,' has since been printed in the *Medical Press and Circular*, of Nov. 12th, 1890 ; the second still awaits publication, but its substance may be briefly quoted. It shows that in carcinoma of the mamma, an infection of the bone-marrow takes place, if not invariably, at least with considerable frequency. This marrow-deposit leads to local tumour-formation or to fracture only in exceptional instances ; far more often, it progresses insidiously, perhaps for several years, with comparatively inconspicuous local indications of its presence, but with a gradual and steady deterioration in the general health.

The observation largely aids in accounting for the peculiarly chronic and insidious career of many cases of breast-carcinoma ; and for the occasional long interval of seeming immunity, followed by 're-currence,' which more than anything else favoured the constitutional theory. As it is of considerable practical importance on the question of operative interference, a plate of the most obvious and most common physical sign, which I believe has not previously been described, is appended ; viz., a *slowly progressive and painless prominence of the sternum between the 2nd costo-sternal articulations*. This I have ventured to designate the 'sternal symptom' in mammary cancer.

Another objective symptom is a fulness and seeming enlargement of the adjacent humerus in its upper third ; and the so-called 'rheumatic' pains in loins, scapula, or arm are familiar subjective phenomena of the same occurrence.

These investigations show that with carcinoma of the breast and uterus, failing a history of traumatism, *we invariably find certain neurotic immediate antecedents* ; whereof *trouble of mind* and *anxiety* are the most constant. Conversely we never see malignant disease of the pathological species in question (except as the result of injury), developed in the mamma of a woman leading a healthy, happy, well-balanced life. Though indeed it must needs be confessed that in this transitional epoch, individuals meriting such a description are by no means too plentiful ; and their numbers seem, as yet, little likely to increase.

We may now, I think, formulate an answer to the main problem propounded in this lecture. Women are specially liable to cancer ;

First, because they possess certain special organs, rich in cells ; which latter elements again, are incessantly undergoing peculiar phenomena of decay and subsequent repair ; the process evincing very delicate adjustment and control, by a regulating nerve-machinery.

Secondly, because the variety of cancerous disease from which women chiefly suffer, is found to be most frequently generated by trouble of mind : and by other analogous conditions, of a *neurotic* character.¹

Thirdly, because the female is, on an average, by far the more neurotic and emotional of the two sexes ;

and moreover that on which the hardest stress of life's battle, among the great bulk of our population, of necessity falls.

¹ *Note*.—A very significant fact in the above connection is that the lower animals suffer chiefly from malignant diseases of the connective-tissue series; found in human beings to be mostly subsequent to *traumatism*. Carcinoma, usually a *neurotic* malady, rarely attacks the other mammalia. 'The sarcomata are by far the most common forms of malignant tumours met with in veterinary practice, particularly in the horse; and through all the ordinary patients of the veterinarian, subject to their inroads.' (Williams, *Principles and Practice of Veterinary Surgery*, 1884, p. 433.)

The above considerations are perhaps most important from a scientific point of view; although even in the field of actual practice, they are by no means without value,—as prompting a more facile recognition by the surgeon, of insidious malignant developments.¹

¹ *Note*.—The imperative necessity for a diagnosis of cancer at the earliest possible moment goes without saying. See the writer's work on *The Re-appearance (Recurrence) of Cancer*, 1890. If such were more often attained, and *promptly acted upon*, cancer would surely cease to be what it has so long been termed, the 'opprobrium of surgery.'

If however I may venture to trespass a little longer on your patience, I would fain discuss some other forces and factors bearing materially on this grave topic of woman's health, from the direction of prophylaxis. And lest their seeming triviality¹ excite, as it readily may, your ridicule and incredulity; I will take leave to shield myself behind the example of the greatest name in biological science;

and remind you, how suggestively Darwin's wonderful book on the earthworm has demonstrated to us how :

Great events from little causes spring.

¹ *Note.*—'The strongest objection which was ever advanced against Darwin's Theory of the Origin of Species was the sublime simplicity of the process by which it was accomplished.' (Lawson Tait.)

I commenced with the expressive *dictum* to which I suppose we shall all readily subscribe : *La femme est une malade.* Let us now inquire whether this is the natural condition of our kind ; and if not, what probable reasons may be given for the melancholy assertion.

Very little research is needed to show that such is NOT woman's normal state ; and that the phrase can be predicted of her only when she is placed amid the artificial surroundings of modern civilisation. For example, if we consider that test-process which conspicuously involves the greatest demands upon her vitality and physical vigour, we note that an aboriginal Australian will bear a child one day, and trudge thirty miles the next ; that the native Indian of Brazil will shortly after delivery, make her way alone and unassisted to the nearest river, to perform the requisite ablutions ; that the negro women on the plantations would formerly continue their toil to the very verge of delivery, and after an hour or two's interval of retirement, would often resume it without ill consequences ; and so on. Than such a point as this, we surely need no further witness that women, under primitive conditions, are

in respect of physical vitality, if not of muscular strength, on a par with men.

Again if civilised woman is habitually 'une malade,' I presume there will be no difference of opinion as to the very large part played by derangements of her special sexual organs in causing this chronic invalidism. Or secondly, that such disorders, however serious the ultimate organic lesion, are commonly at the beginning, *functional* only.

I must briefly invite your attention for a moment to a phenomenon in some measure analogous to that of cancer-development¹ and proceeding *pari passu* with this, as an attribute of the civilised state. The mammae and uterus are pathologically distinguished from every other organ in the body by their remarkable proneness to tumour-formations, of a peculiar kind. The mammary fibroma of adolescence (by no means to be confounded with the *cystic fibroma* or the *adenofibroma* of later life); and the myoma of the middle-aged woman, consist histologically of redundant normal tissue. Permanently benign in the majority of instances, though hardly in all,—each appears to be but a local perversion of natural development; and each moreover is more or less apt to disappear spontaneously,—a phenomenon unknown in the case of any other tumour.²

¹ *Note.*—That is, if the highly ingenious speculations of Mr. Pitfield Mitchell are accepted. Mr. Mitchell applies to tumour-formation generally, the theory which I have formulated in

reference to malignant neoplasms only ; he regards the benign tumours also as instances of reversion, on the part of cell-elements, 'to an archaic form of multiplication, following extinction of co-ordinating energies in the protoplasm.' One corollary from this hypothesis would be a fact recognised of old, though in these latter days often lost sight of ;—that there is no hard and fast line of demarcation between the so-called benign and malignant neoplasms, but that the two classes pass into one another by insensible gradations. That moreover we occasionally see new growths begin as innocent tumours ; and pass eventually into an unquestionably malignant stage. Some instances of this in the female breast are recorded in my work on *The Re-appearance (Recurrence) of Cancer*. Two examples of ultimate cancerous developments in the familiar uterine myoma, are to be found in the *Brit. Med. Journal*, May 10th, 1890 (Patholog. Society), and in the *Cincinnati Obstetric Gazette*, September, 1890. Dr. John Williams (*Harveian Lectures*) states that uterine polypi in advanced age are apt to become malignant, and figures the transition of the cylindrical epithelium of a gland into cancerous parenchyma ; I have met with similar cases. In the *Brit. Med. Journal* of January 18, 1890, is the account of an osteo-chondroma of ten years' duration, which had apparently developed malignancy ; and a parallel instance was in the Cancer Hospital in June, 1890, under the care of my colleague, Mr. Bowreman Jessett ; the humerus being in each instance the seat of disease.

I am endeavouring to collect analogous cases ; and shall be greatly indebted to any practitioner, who will favour me with notes thereof, should he have encountered such. The point materially bears on Mr. Mitchell's views ; his work (*The Philosophy of Tumour-Disease*, 1890) brings forward some interesting facts, and involves several very plausible generalisations upon a topic otherwise extremely intricate and obscure.

² *Note*.—The resolution of mammary fibromata in young girls, spontaneously, or under some simple treatment, is a tolerably familiar incident, not requiring verification by cited cases. That of uterine myoma is of course more exceptional, but many undoubted instances are recorded ; several of these, which came under Mr. Lawson Tait's own observation, may be found in his work on *The Diseases of Women*.

It is in the highest degree important to recognise the distinction between the ordinary myoma, and a growth of widely different characters, now passing under the same title. The former is commonly multiple, and arises only during the period of life throughout which menstruation persists. It is (primarily) benign; often involves exhausting hæmorrhage; tends to diminish in bulk after the menopause, which however it may indefinitely postpone; its growth and any attendant menorrhagia are promptly terminated by removal of the appendages.

On the other hand, the 'soft œdematous myoma' is invariably solitary; is 'no respecter of age,' though preferring the old; always progressively increases in size (ultimately forming, in one of Mr. Tait's cases, a livid protrusion through the umbilical aperture); is totally independent of the menstrual flow, and is rarely attended by any undue loss of blood, *per vaginam*; is not in any way affected by the climacteric. Excision of the appendages proves utterly futile,—this demonstrating an exemption from control by the nerve-centres which regulate the periodic uterine 'losses'; and, unless operative measures are invoked, the patient's progress towards death, though often gradual, is uninterrupted. These considerations prove that we have here to deal with a truly *malignant* neoplasm. According to Dr. A. W. Johnstone, who carefully microscoped one of the cases, the mass consisted of lymphoid tissue, and was practically a 'homologous growth from the adenoid uterine lining.' (*British Gynecol. Trans.* III., 1887-88, p. 390.) Mr. Tait's own published description (in the *Diseases of Women*), refers the tumour to the non-striated muscle-fibres of the part. Possibly more than one variety of new-growth may at present rank in this class.

However this may be, there can be no question of the weighty practical differences between this rather uncommon neoplasm, and the prevalent simple myoma. It would be well if Mr. Lawson Tait, to whom is due the credit of having demonstrated the point, were in future editions of his work, to complete his achievement, by endowing the fatal 'soft myoma,' with a designation not shared by a tumour comparatively innocuous.

Now reliable records of disease among savage

racess are, I need hardly say, painfully meagre ; so far as we can ascertain, the majority of their complaints (including now tuberculosis) rank in the zymotic class, and we find very little organic disease at all. Mr. Lawson Tait¹ says : ' The proof that such diseases are progressing is given by the fact that this very disease (uterine myoma), unknown amongst the savage women of Africa, has become a very scourge amongst their descendants (of a very few generations) in the Southern and Central States of America.'

¹ *Note.*—*Diseases of Women, and Abdominal Surgery.*

Dr. Livingstone¹ states that among the Bakwains, the natives are troubled with fatty and fibrous tumours ; but that cancer is quite unknown. Dr. L. Young,² writing from the West Indies, observes that among the negresses : ' Malignant diseases of the uterus and mammæ are of very rare occurrence ; and even those cases which I have witnessed in this class of people, have been among the better orders of them, whose habits of living have been assimilated to those of the Europeans.'

¹ *Note.*—*Missionary Travels in South Africa*, 1857, p. 127.

² *Note.*—*Anatomy of the Breast*, by Sir Astley Cooper.

According to Dr. Walshe, the maximum amount of ' cancerous disease occurs in Europe ;' and this is very rare among the patients of the hospitals at Hobart Town and Calcutta, as well as among the natives of Egypt, Algiers, Senegal, Arabia, and the tropical parts of America.

On negative grounds, there is some reason to believe that uterine myoma was very rare in the Middle Ages.

Of the very existence of mammary fibromata in young savage women, I have been unable, after diligent search, to discover any evidence at all; and from long-continued observation of their never failing environment, I feel amply warranted in assuming that these also are results of civilisation.

We find therefore :

- (a) That the variety of cancerous disease, technically classed as carcinoma, and of which the female sexual organs form the special realm, is almost wholly absent among barbarous races; and is to be regarded as, to all intents and purposes, a product of the civilised state.
- (b) That in respect of the trophic aberrations of these organs, known as Uterine Myoma and as the Mammary Fibroma of Adolescence; identically the same proposition holds good.

It has already been pointed out that the two latter neoplasms are 'trophic,' and associated only with the periods of natural growth in the case of the breast-tumour; with functional activity, in that of the uterine ditto.¹ Whence, when we take these two facts in conjunction, we cannot escape the inference, —not only that civilised women are subject, as all will

readily admit, to manifold disease-agencies from which their savage sisters are exempt; but further that *some condition affecting the former directly interferes with the nutrition of their breasts and uterus*. In other words that irrespective of whatever *general* causes may be found, we must also of necessity, look, when we seek to explain the appearance of these morbid phenomena; for some very powerful *LOCAL* influence, seriously perverting the due course of normal growth or of normal repair.

¹ *Note*.—‘The truly glandular function of the uterus, as demonstrated for the first time by Johnstone, begins with puberty; and ends with the climacteric. Therefore we have myoma practically limited to this.’—L. Tait, *Valedictory Address, Gynæcol. Society*, II. 1887.

Time will not serve to discuss the numerous *general* causes, which contribute to produce that invalidism so notoriously characteristic of civilised woman.¹ I may mention only the three most serious and most commonly noticeable.

(a) Constipation; due solely and simply to the non-acquisition of regular habits; and to neglect of the daily behests of Juno Cloacina.

(b) Over-pressure at school.

(c) Abuse of neurotics: especially of tea.

Of these, the first is by far the most important; and assuredly one of the most easily preventible. On such matters, and others of like tendency which could readily be cited, it is permitted to me now only

to remark that what promotes continuous ill-health also sours the mind and depresses the nervous system ; and thus most materially contributes to augment the daily-increasing aggregate of sufferers from carcinoma,—if not indeed also of those who develop any variety of cancer whatsoever.²

¹ *Note.*—For some of these, see Dr. Gaillard Thomas's work on *The Diseases of Women*. One or two of the disease-factors he mentions, probably however affect American women more than English.

² *Note.*—The writer holds mental distress to be a *direct excitant* of Carcinoma ; a powerfully *predisposing* cause of all other varieties of malignant disease. For reasons see article, *Increasing Prevalence of Cancer ; its probable Cause*, in *Nineteenth Century* magazine, July 1890.

Of the *local* foes to a sound and healthy organism, there is one which conspicuously differentiates the woman of Europe, and of Europeanised America from her who lives in a state of nature ; which is always present in the former, while absent in the latter ; and which, there is every reason to believe, is almost wholly responsible for the appearance of the benign tumour-formations just alluded to.

Civilised females habitually and from earliest years, envelop the lower half of the thorax, and most of the abdomen, in a rigid CIRCULAR SPLINT. Described in surgical language, this is the only accurate term, and one which in no way savours of exaggeration—for the instrument in question ; though I need hardly say that it is technically designated by another title.

In its mode of use it differs however from our professional implements in a very important particular. When we adjust a splint, we take every possible precaution, by carefully adapted pads of cotton wool and the like,—*to avoid pressure*; if not all pressure, yet all in excess of what is necessary to secure the aim we are seeking, absolute rest of the part. On the other hand, in applying the 'thoracic splint' of woman, *every attempt is made to secure as much compression as the 'female frame divine' can be made to bear.*

Now I am assuredly not going to inflict upon you a lengthy discussion upon all the evils of 'tight-lacing.' Such, to be exhaustive, would become intolerably lengthy, and would read very like a treatise upon almost the entire range of medicine, and upon a very large portion of the domains of surgery. A too brief notice (by Mr. F. Treves) of some natural results of the practice may be read in the *Book of Health*, edited by Mr. Malcolm Morris; and further very apposite remarks on the production of disease in the special female organs by this agency, may be found in the already quoted work on *The Diseases of Women*, by Dr. Gaillard Thomas. But one point I cannot refrain from indicating to you, which seems to me all important,—not only in the present connection, but in relation to the general topic of female health;—yet which would seem hitherto to have been overlooked.

Numberless medical writers have concurred in

denouncing the practice of which I speak ; and in demonstrating the vicious results of that custom, when carried to excess. But you search their pages in vain for a recognition of the fact that '*tight-lacing*' is to all intents and purposes universal. That every female, who wears the corset at all, habitually applies a most immoderate amount of compression exactly to that part of the body which is normally subject to the greatest alternations, diurnal or otherwise, in bulk. That there is no 'half-way house,' no potentiality of compromise, in this matter. However opposed to the common-sense or inclination of the individual ; she must perforce submit, all the same, to the iron rule of custom,—still more to the edict of that supreme autocrat, the dressmaker.

Another fact not, I think, generally known to the profession, is that pernicious as this 'splint' is to our womankind ; and profound as are the anatomical displacements, and structural modification of important organs to which its employment gives rise ; the degree of permanent departure from nature's model thus secured, is too often materially enhanced, by its continuously energetic application to female children of tender years.¹

¹ *Note.*—In the numerous cases of fibromata in the mammæ of young unmarried women, which we see at this hospital, the presence of undue compression by stays, is always sufficiently conspicuous ; and is generally associated with other manifest results of the same, such as anæmia, fainting-fits, and the like—all of which are almost unheard of in males of the same age. At a later date, when pregnancy has taken place, the pressure

effects are naturally exerted more directly upon the expanding uterus.

For a detailed account of the production-mechanism of some of these visceral displacements ; and of the mode in which stays contribute to bring about almost every non-contagious malady that can be named,—see the two works above referred to. Dr. Gaillard Thomas in particular, has done original service, by demonstrating the grave alterations, in both the structure and the habitual position, of the uterus, —to which the corset gives rise ; by showing how mechanical injury to the organ is then apt to occur ; and by thus accounting for the numerous examples of chronic invalidism after marriage, in young people, which we daily hear of. So also the granular erosions ('ulceration'), patulous os, &c. of later matrimonial life, are often attributable to the same cause.

Considering the magnitude of the evil, it were well if systematic writers upon this branch of medical practice, accepted more fully (or at least, more avowedly and emphatically) the proverb: *Sublata causa, tollitur effectus* ; with its no less important converse that, *until* the cause is removed, its effect must of necessity persist, however the outward manifestations thereof may be masked. So instead of endeavouring to counteract the consequences of undue pressure in one direction, by counter-pressure in another ; (witness, the abdominal belt) ; of 'impaling the unfortunate uterus on a stem, or of supporting it by a crutch,' (in the form of one or other of innumerable pessaries) ; of, (to quote once more the now trite witticism), 'dividing everything that can well be divided, and of sewing up everything that can be found to sew up ;' they would infinitely better serve their species by a more

definite recognition of the single source, whence all these troubles usually spring ; and by a more pronounced advocacy of those simple rules of life, which constitute efficient prophylaxis.

To sum up the concluding portion of my argument :—

By far the greater number of cancer cases are seen in women and in the breasts or uterus ; where the disease generally assumes the form of carcinoma.

Every other organ or tissue common to the two sexes is in these equally liable to cancer ; with a conspicuous exception, which can readily be accounted for.

In addition to the frequency with which the *mammæ* and uterus are attacked by cancerous disease ; they are also the frequent site of certain benign tumour-formations, consisting in a simple over-growth of normal tissue, without the intrusion of any heterogeneous element (such as cartilage).

These latter, in their liability to spontaneous disappearance, are without parallel elsewhere in the body, or in comparison with any other neoplasm. They do not appear except during the period of natural growth, or of functional activity ; are unquestionably due to perverted development, the result of some factor which interferes with the local nutrition of the organs in question.

The *Myomata* which are found in the uterus, and the *Fibromata* common in the *mammæ* of young girls, rarely or never appear in savage women ; although so common among civilised races.

In order to explain their occurrence, it is necessary therefore to inquire what local agencies, which are wanting in the savage, influence the nutrition of these organs in civilised woman.

Amid many *general* causes, which tend to impair the physical vigour of civilised females ; there is but one LOCAL, which conspicuously influences for evil the nutrition, (and also the functional phenomena dependent upon nutrition)—of the mammæ and uterus. This is universally present among the females of every civilised community ; while it is not seen among savages.

It is impossible therefore not to attribute the benign tumours in question to this LOCAL disease-agency, and to this alone.

It is also found that carcinoma is almost absent in the savage ; while rapidly increasing in prevalence among the civilised.

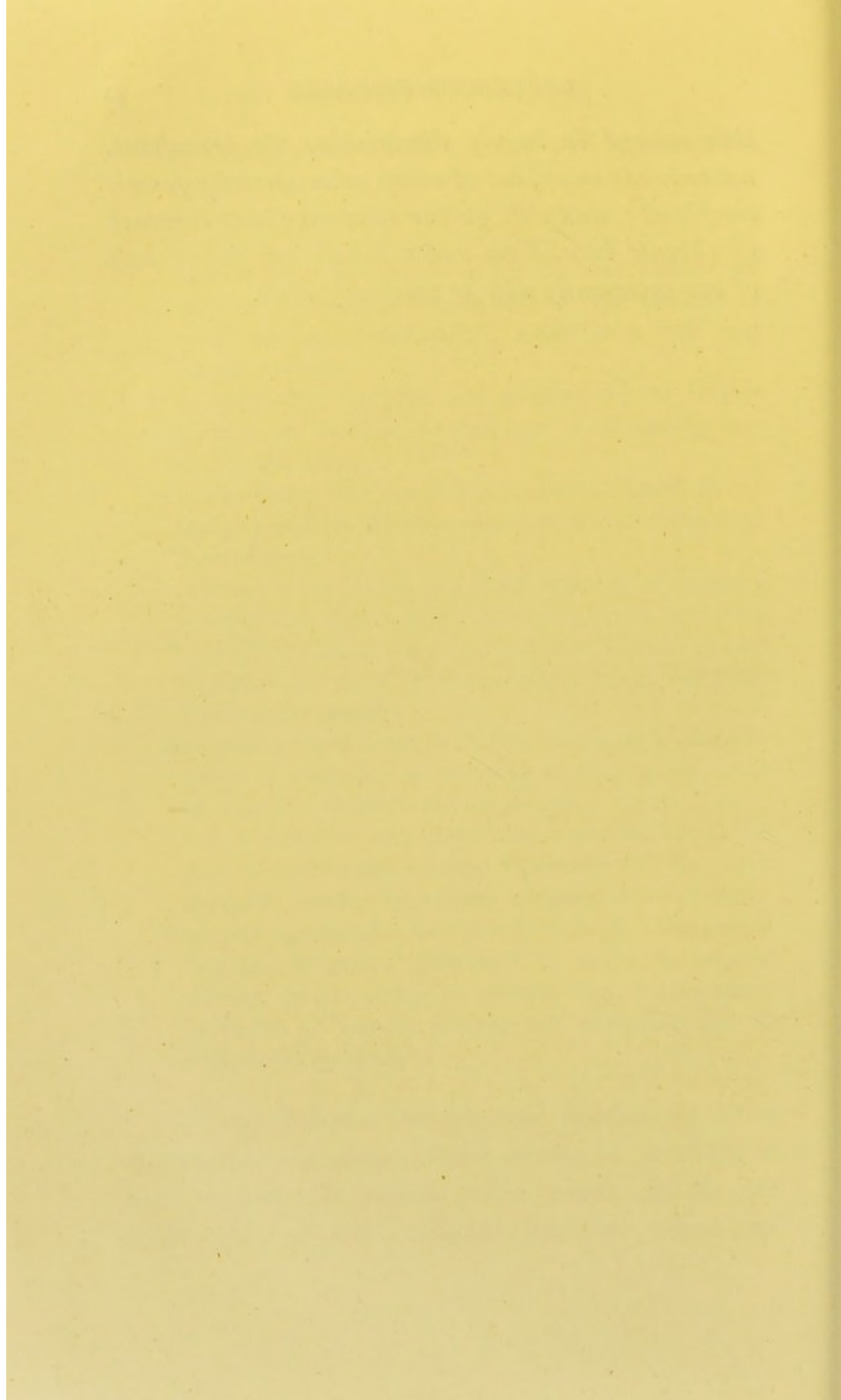
Carcinoma is originated in a small minority of cases, by traumatism ; in the great majority by causes operating through the central nervous system. Local agencies therefore are seen to exert only a minor influence on its *direct* genesis.

Whatever however leads to chronic ill-health, is clinically found to constitute an influence strongly predisposing to cancerous developments in general. Local disease-factors therefore may play a very important INDIRECT part in producing cancer, especially of that very prevalent variety technically designated Carcinoma.

Moreover our familiar axiom in pathology, 'Disordered function is prone ultimately to result in organic disease,' may usefully be paraphrased : 'Very many instances of organic disease are primarily due to disordered function.'

Whence follows the practical conclusion : *Aim at removing the causes which, among us, so conspicuously impede the female sexual organs in the due performance of their allotted functions. You will*

then succeed in hugely diminishing the prevalence, not only of cancer, but of every other specially female complaint; and will go far to remove that reproach of chronic invalidism under which the fairer half of our community now so needlessly rests.



APPENDIX

IS CANCER HEREDITARY?

[The following paper was read at the Cardiff Meeting of the British Medical Association in 1885 ; and is reprinted from the 'British Medical Journal' of October 10th in that year.]

I THINK I may reasonably assert that to this query an unhesitating answer in the affirmative would be returned by nearly the whole of the medical profession, the exceptions being few and far between. Now, if the question was purely theoretical, no great harm could be done by the persistence of a belief in heredity ; but, as it appears to me that this opinion leads to the most important practical results, and is productive of enormous mischief, I venture to solicit from the profession a reconsideration of their attitude in the matter ; and, should they withhold their assent from the conclusions I now endeavour to bring before them, at any rate not to regard the current theory as of indisputable authority, until they have thoroughly and dispassionately sifted the circumstances of as many individual cases in ordinary practice as they possibly can. For I am convinced that it is the difficulty of securing

direct personal knowledge of the facts, that so greatly obscures our views on this and similar topics. In all such it is of the highest importance to distrust all merely hearsay evidence, and to make ourselves as cognisant as possible of a patient's family history, independently of the patient's own statements.

I propose, now, first, to lay before you statistics on heredity drawn from cancerous patients; secondly, to balance these by statistics drawn from other sources and from patients non-cancerous; lastly, to discuss the validity of these statistics, and the general bearings of the whole question.

Of 519 patients affected with mammary scirrhus, 94 gave some family history of cancer, 425 denied any such.

Of 295 patients with uterine cancer, 37 gave a family history; 258 had none.

Of 204 cases of epithelioma in various superficial sites, 31 were placed in the former class, 173 in the latter.

Of 57 cases of sarcoma, 7 gave a family history, and 50 denied any hereditary taint.

Thus, of 1,075 cases of malignant disease in its various forms, there was some account (not by any means of hereditary transmission, but of more than one individual in a family having been affected by diseases of a certain class, not even by the same disease) in 169 instances only, or 15·7 per cent. This, again, is the most liberal estimate possible, for

all forms of blood-relationship are included ; and 22 of the above are marked very doubtful.

But, as in physiological investigation, it is usual to institute a control-experiment, so, in a statistical inquiry, it is well to balance and contrast mutually controlling statistics. It appeared to me that no evidence of this kind on heredity in cancer was worthy of attention unless checked by corresponding statistics drawn (1) from people in sound health and of fair intelligence, (2) from patients affected with some prevalent disorder other than cancer, as Bright's disease, or phthisis, (3) from miscellaneous out-patients.

1. I accordingly addressed a circular inquiry to 150 medical practitioners, taking the names as they came alphabetically in the 'Medical Directory,' and I am much indebted to the 78 gentlemen who favoured me with a reply. Of these 78, 15, or 19·2 per cent., were cognisant of cancer having occurred in a member of their family ; in 5 instances, the father or mother had been thus afflicted. It is noteworthy that this large percentage is found among males.

2. Through the kindness of Dr. Douglas Powell and the medical staff of the Brompton Consumption Hospital, I was enabled to make a similar investigation among in-patients of that hospital suffering, of course, from some form of thoracic disease, not necessarily phthisis. Here, as in the preceding instance, printed questions were distributed, and

careful inquiry among relatives was solicited. The courtesy of Dr. Waugh, the resident medical officer, could secure for me the return of 79 only, out of 150; and of these 79, 9, or 11·3 per cent., could hear of cancer in some one member of their family. In 2 instances, the mother had been thus affected. The papers, it should be said, were equally distributed in the male and female wards.

3. Of 175 patients who presented themselves at the Cancer Hospital with maladies such as strumous lymph-glands, dental sinuses, and the like, in no way allied to cancer, 46, or 26·3 per cent., stated that cancer had affected one or more members of the family. By no means unfrequently, several relatives were stated to have been cancerous; whereas, among the cancer-patients themselves, this was very much the exception.

I venture to submit to you that these statistics collectively warrant the following general proposition. *Taking any number of non-cancerous people, we find a percentage, roughly stated at from 10 to 20 per cent., with cancerous relatives; and no larger percentage is to be found among patients actually suffering from cancer.* Hence the figures above quoted not only fail to indicate that cancer is hereditary, and so specially prevails in certain families; but involve a directly opposite conclusion.

But, in order even to countenance a theory of hereditary transmission, it is surely necessary to show, not merely that some relative has been

affected, but that transmission in the direct line is a frequent and ordinary occurrence. Proceeding further to analyse the 169 cases already mentioned, we find that the mother was stated to have been cancerous in 51 instances, the father in 18, grandmother in 12, grandfather in 4, sisters in 36, brothers in 8, other relatives in 35. Among the 129 near relatives, there were only 7 instances of more than one member of the family having been cancerous. Of these 7, there were only 2 in which a parent and grandparent had been both affected by malignant disease. A woman with scirrhus of the breast stated that her mother and grandmother had both died of the same malady; another, in the like condition, said that her mother had also died of this, that her mother's father had died from 'cancer of the toe.' We thus seem entitled to conclude that instances indicating the transmission of cancer in any form for more than a single generation are most rare and exceptional, whereas, were the ordinary belief true, they should be the general rule; and this making all due allowance for the obvious fact that many people would hardly know what had caused the deaths of their grandparents.

Further, I would strongly urge upon you that, in the present state of our pathological knowledge, we are by no means entitled to point to the development of one form of cancer in an individual as having any relation whatever to the appearance of

a totally different form in his or her relative. For instance, if a parent have suffered from epithelioma of the lip or tongue (a complaint in which we can invariably trace a direct and obvious mechanical cause), and the daughter come before us, with a round-celled sarcoma of the ovaries, it is difficult to imagine that any question of heredity can arise. At any rate, such a view would surely require very strong evidence in its support. Yet I fear that many such instances have in our clinical records gone to reinforce the popular belief; and, of course, in accumulating merely subjective testimony we cannot entirely exclude them.

Of the 51 mothers above alluded to, a corresponding organ was affected (and so, presumably, mother and child suffered from the same form of cancer) in 19, including 2 doubtful. This organ was the breast in 16, the uterus in 3. Of the 18 fathers, there were only 2 very doubtful instances of disease in the same organ as in their children; of the 4 grandfathers, none; of the 12 grandmothers, 4, all breast-cases; of the 8 brothers, none; of the 36 sisters, 11 (breast 8, uterus 3).

Again, of the 35 instances of cancer in distant relatives, 9 were double or multiple—a very suspiciously large proportion, remembering the corresponding percentage (7 to 129) among the near relations.

These figures point to rather large further deductions from the proportion in which the cancerous

parent appears to have transmitted the malady to his or her offspring.

I think we may now quit the realm of figures, and, bearing in mind Plato's advice, endeavour to take a general view of our subject from the outside, and from a distant stand-point.

First of all, it is well to remember that, when we seek the origin of cancer, heredity cannot possibly be a *vera causa*. It relates only to the transmission of cancer—in no way touches the first appearance of the disease. Then, how far are statistics in general competent to throw light upon this question? Statistics are proverbially fallacious, and easy to manipulate, according to the more or less unconscious bias of the writer. Witness the volumes of arithmetical arguments poured forth for and against the Contagious Diseases Acts, or the Vaccination Acts; too often they serve rather to obscure our perception than to enlighten it, and, in the present question, have the very obvious drawback that they of necessity must be almost entirely based upon hearsay evidence, upon traditions and memories of the vaguest possible character, and upon pathological ignorance in an extreme degree. To point out a few of the fallacies which are involved: there comes first the influence of the preconceived idea, so that a cancerous patient feels almost compelled to find some one in the family similarly afflicted, whenever it is in the least possible to do so, both as a matter of mental satisfaction to

herself and friends, and also in order to comply with the usual assumptions of her medical attendant. Anything in the shape of a tumour, be it the simplest fatty or sebaceous growth, which has ever affected a relative, is thus pressed into the service; and women will not unfrequently quote to you a husband's second cousin, or some similarly near kinsman, as evidence of 'cancer being in the family.' Then we must make allowance for mistakes of diagnosis, for the obscurity which often envelops the cause of visceral maladies, and for the rarity of *post mortem* examinations on such cases when they occur in ordinary practice—a point which indicates that we must by no means impute infallibility to the Registrar-General's returns. Hence, for my own part, I should place far greater reliance (in forming an opinion on this and kindred topics) upon a moderate number of cases in which the evidence had been judicially sifted, and was not in the smallest degree hearsay, than upon any, however large, mass of statistics with these requisites unfulfilled.

Yet I would venture to lay some stress upon the negative value of the figures I have quoted. In my own experience—and I would confidently appeal to that of most other medical men, especially to those who have themselves had cancerous relations, to confirm this—whenever a person dies from cancer the fact is circulated far and wide among all his or her kinsfolk and acquaintance, who forthwith

store up the fact in their memory ; and according to the more or less emotional nature of the individual, ever afterwards more or less dread a similar fate. Such is the popular terror of cancer, and such the deeply rooted belief in its hereditary nature ; so that, in questions about a cancerous family history, it appears to me far more likely that we should be misled in the affirmative direction, than that any instance of cancer, which has really occurred, should have been forgotten by the kinsfolk of the sufferer. And I am therefore disposed to hold that the negative answers of 806 out of 1075 patients afford rather strong presumptive evidence against the hereditary transmission of cancer as a general rule.

I would submit to you that any degree of relationship wider than that of parent and child, or of grandparent and grandchild, is of little or no value in establishing the fact of an inherited taint.

Here is an argument which I take the liberty of borrowing from a valuable paper on the same subject by Mr. Harrison Cripps in vol. xiv. of the *St. Bartholomew's Hospital Reports*, in which hereditary statistics are used, as it were, in an inverted fashion. If cancer were ordinarily hereditary, we should naturally find that, among the parents of cancerous patients, the death-rate for cancer would be far larger than that prevailing among the general population. Now, in the years 1861 to 1870, the death-rate from cancer among adults over

20 years of age, as computed from the Registrar-General's returns, was one in 29·1; while among the parents of cancer-sufferers it is, according to Sir James Paget, 1 in 24·8; according to the *St. Bartholomew's Hospital Reports*, 1 in 28. The two rates are substantially identical.

Then, as instances of widely-spread popular credulity, in support of which (during the prevalence of the superstition) an overwhelming mass of testimony could at any time readily have been brought forward, I would refer to witchcraft, magic, fairy tales, and miraculous cures wrought by relics. The history of those in Mr. Lecky's works should clearly teach us caution in accepting popular traditions, however venerable and time-honoured, without due investigation, and without a reasonable amount of preliminary scepticism.

I should like to glance now for a moment at the practical outcome of the belief that malignant disease is always, or almost always, hereditary. In the first place, the surgeon who holds it necessarily regards cancer as a constitutional malady almost sure to appear (in the predisposed) at a certain time of life; and therefore as, if excised, certain to recur sooner or later. Hence, in cancer of external sites, he looks upon an operation as a palliative, and as a mere matter of routine, to be undertaken because we can do nothing else; he is rarely in a hurry to attack the disease; and when he does operate, cares only to steer clear of the disease visible to the

naked eye, and pays little heed to the adjacent glands, and the track by which the malady ordinarily extends. Now, I conceive that everyday clinical experience teaches us that malignant disease of whatsoever form is, at the commencement, strictly a local disease, starting at one point, next extending round that point as from a focus, but then proceeding to locate itself at distant centres, along a definite track, which can usually be predicted. The epithelial forms, glandular or otherwise, are the most typical instances of this proposition. In the more diffident varieties of sarcoma, especially when the bony system is affected, its truth is sometimes obscured by the friable character of the growth, which allows infinitesimal portions to be swept off at a very early period into the circulating current, and deposited as grafts in distant localities, there to grow vigorously *pari passu* with the parent tumour, or even to outstrip it.

Such a conception will necessarily lead to as early as possible a resort to surgical measures; to an operation which will aim at the most complete eradication of the disease, whenever possible; to incisions wide of the visible tumour; to the extirpation of an extensive margin of tissue, healthy to the naked eye, but in which we surely know that invisible cancerous germs are present; and, most important perhaps of all, to *the most careful search for, and extraction of, all the adjacent lymphatic glands lying in the track by which the disease*

ordinarily spreads. And though, mainly from the difficulty of securing this last object with certainty, it cannot be denied that the surgical treatment of cancer is uphill work, and that even the most careful endeavours too often fail to attain complete success; yet, unquestionably, the benefits we confer are in exact proportion to the measure in which we are enabled to carry out these aims. That is to say, we shall, in many instances, I firmly believe, be rewarded by a permanent cure; in most others we shall prolong life and greatly mitigate suffering. As an illustration, which I have occasion rather frequently to notice, of the last point, I may be permitted to refer to the agony which patients with scirrhus of the breast suffer, in the latter stages, from the well-known brawny œdema of the arm—a condition entirely obviated by well scraping out the contents of the axilla, as a routine practice, whenever the breast is removed, whether the glands be obviously enlarged or not.

In the second place, the medical man who looks for history of hereditary transmission will often be misled in his diagnosis by its absence. On the other hand, I have long found that, whenever a patient quotes to me several cancerous relatives, that statement at once raises a strong presumption in favour of the patient's own disorder being non-malignant.

Thirdly, the fatal theory of heredity often pre-

vents the subject of cancer from seeking medical advice till the disease is too far advanced for any useful treatment. When told what is really the complaint, and blamed for delay in not applying sooner, the reply is, 'Oh, there has never been any cancer in my family, and I thought cancer was always hereditary.'

Lastly, Carcinoma, and less conspicuously other forms of malignant disease, are 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. It is obvious that the sword of Damocles, which the belief in heredity holds suspended over the heads of any unfortunate enough to have lost a relative from cancer, must act powerfully as a mental depressor; and that we may possibly here find another illustration of the well-known tendency of a prophecy to work out its own fulfilment. I am tempted thus to explain the rather large number of instances among my statistics in which mother and daughter were affected by cancer; as also, in some measure, the very considerable preponderance of the female (and so more emotional element) among the cancerous relatives.

I feel that many apologies are due from me for detaining the meeting at such length on what may possibly seem to them a well-worn topic. I can in extenuation plead only my conviction: 1. That the

belief in heredity is derived merely from popular tradition, and is wanting in any sound basis of scientific proof: 2. That extremely practical issues are involved, and that the views now prevalent often lead to disastrous results.

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