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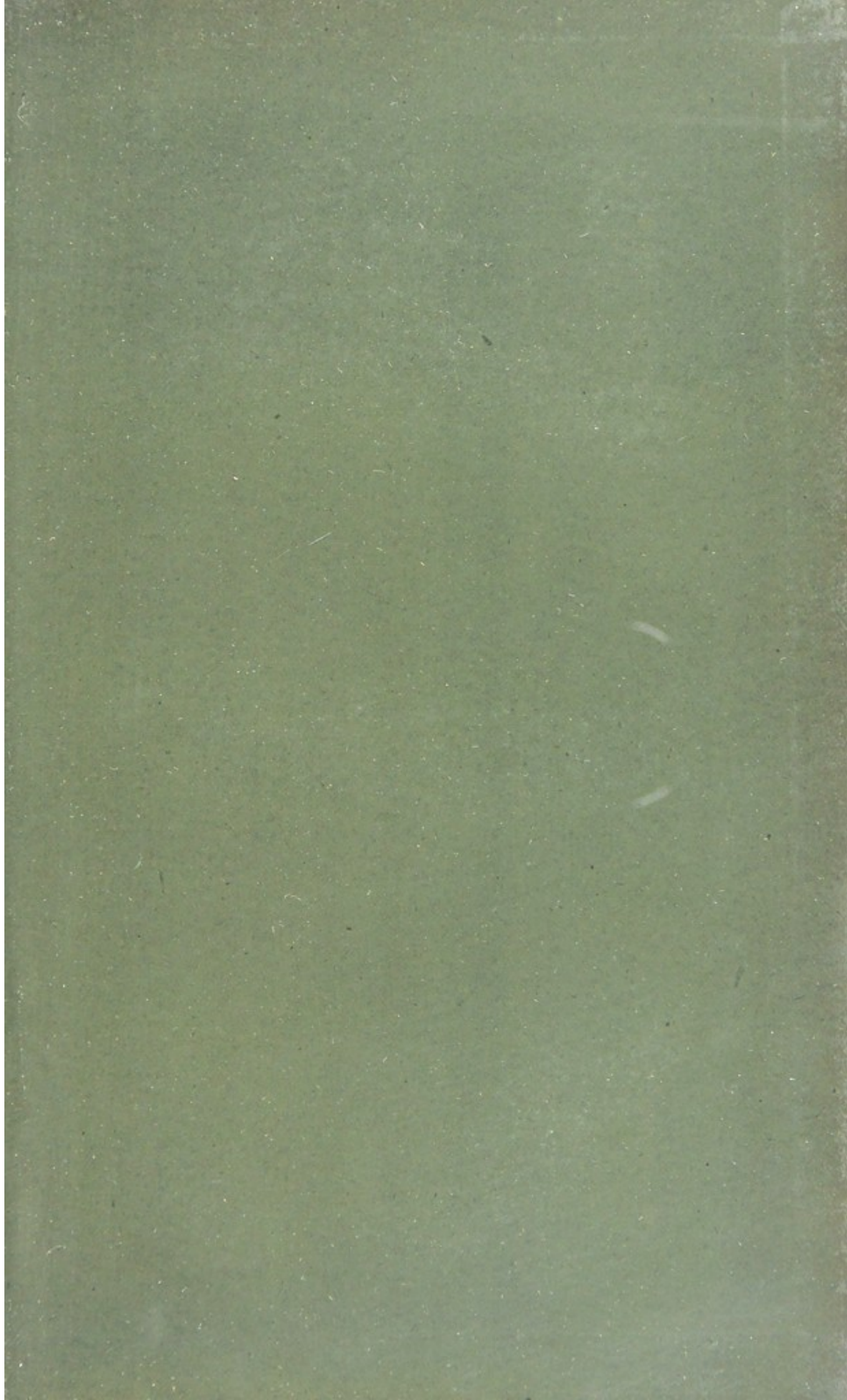
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CANCER
AND ITS COMPLICATIONS

JENNINGS



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CANCER

AND ITS COMPLICATIONS.

BY

CHARLES EGERTON JENNINGS,

M.D., M.S., F.R.C.S.ENG.,

AUTHOR OF

"TRANSFUSION OF BLOOD AND SALINE FLUIDS."



(SECOND EDITION.)

LONDON:
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PREFACE TO THE SECOND EDITION.

This work was originally written to elucidate the following points:—

1. Cancer is a local disease.
2. There are several varieties of cancer, distinguishable from one another by their microscopic character; but the degree of malignancy of a cancerous growth depends not merely upon its structure but upon its anatomical site.
3. Cancer frequently occurs in combination with some other disease, and is often preceded and caused by disease or injury of the tissue from which it springs.
4. The occurrence of cancer may often be prevented; and complete extirpation of the disease in its earliest stage may be considered curative.
5. Further investigation of the action of certain specific drugs—among other things—is still needed. Evidence which has been advanced in favour of the curative action of some mineral and vegetable substances cannot be disregarded.

The general terms of praise in which the first edition of this book was received, and the flattering manner in which it was reviewed by competent authorities, has done much to encourage me to offer a second edition at a price which puts the treatise within the command of every student.

Having perused many of the numerous reviews, and having reflected upon their criticisms, I find it only upon minor points

that the work is capable of amendment, and that the subject has been treated with a boldness and candour which, although it may sometimes press hardly upon the feelings of those afflicted with cancer, yet the treatment by early operation, dreaded though it be, offers the best prospects of success in the majority of cases and, as the *Lancet* remarks, despite any shortcomings in my work, the doctrine I enforce "is the most reasonable and hopeful one to be taken of this class of disease."

As will appear from the following pages, cases of cancer vary from one another in many important particulars, but the reader may conclude that the disease is not nearly so fatal or rapid in its course as commonly supposed. From my own practice alone I could demonstrate the beneficent results which attend adequate operations performed in the earlier stages of many varieties of cancer.

Of the natural history of cancer—apart from any treatment—I am convinced that its tendency to a fatal termination though usual is not invariable, but spontaneous retrogression is unfortunately of so rare occurrence that patients cannot be recommended to rely upon so remote a chance of cure, and deny themselves the greater probability of safety afforded by early extirpation whenever practicable.

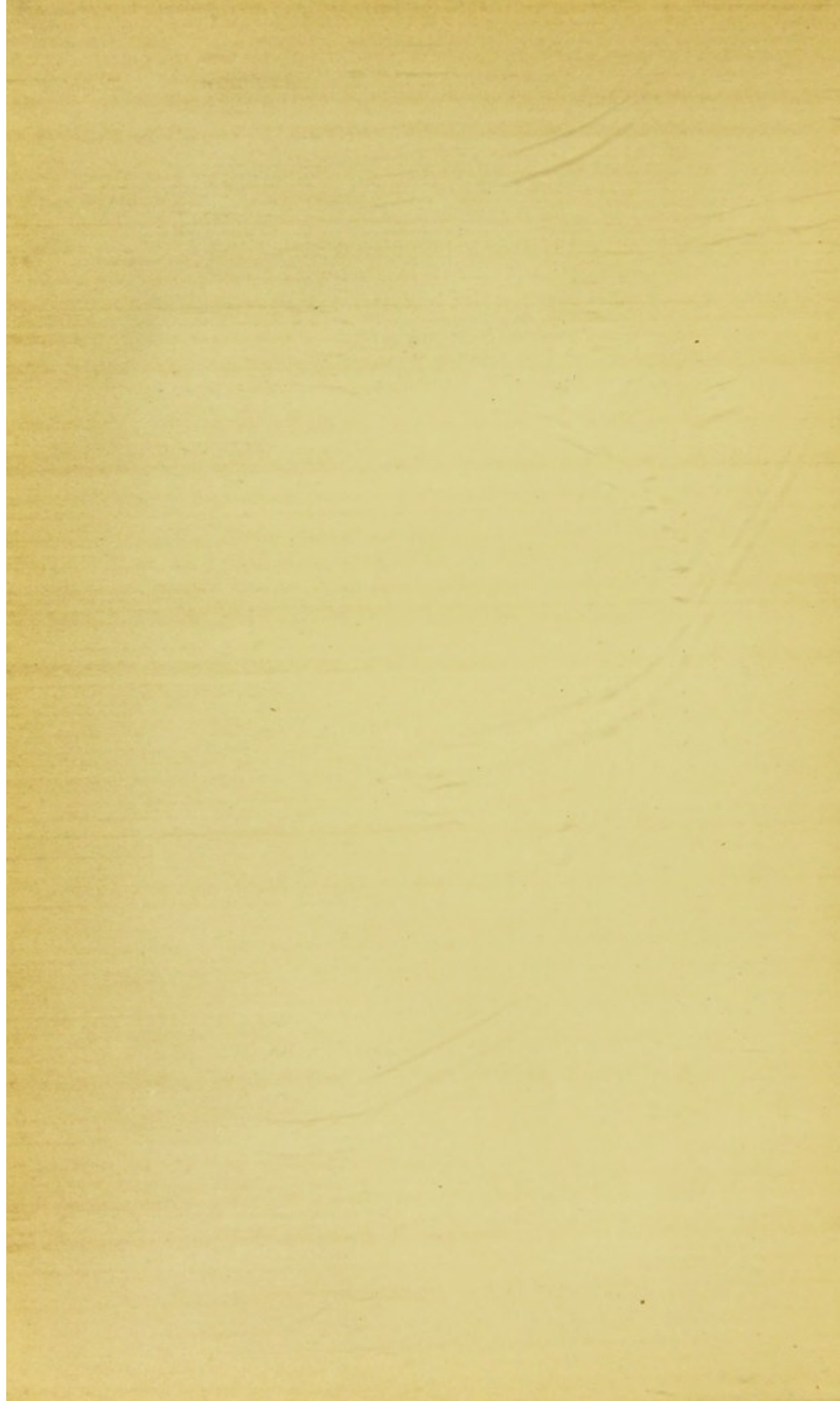
Important researches have recently been instituted upon the parasitic theory of the causation of cancer, but the student must seek elsewhere for information upon this branch of the subject. I have followed these investigations but cannot consider the theory satisfactorily proved, and it does not affect the question of treatment.

Upon these grounds this book is offered as in 1889.

48 SEYMOUR STREET,
PORTMAN SQUARE, W.,
September, 1893.

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CANCER AND ITS COMPLICATIONS.

CHAPTER I.

TUMOURS AND CANCERS.

A TUMOUR is a neoplasm, or new growth, of abnormal character, which usually can be distinguished from the normal tissue from which it springs by its boundaries and diversity of structure, and which is not the result of inflammation only.

But the term is often used in a far wider and in its strictly etymological sense, viz. to denote any "swelling;" for although this wide use of the word is abandoned by surgical writers, yet, whether properly or improperly, it is frequently so employed for practical or diagnostic purposes in actual practice. For diagnostic purposes, the pregnant uterus must be considered a tumour until it has been distinguished from an ovarian or other abdominal tumour. Similarly an abscess may be considered a tumour until distinguished from a sarcoma.

All tumours or neoplasms are divided into two main classes, viz. the malignant and the non-malignant, innocent, or benign.

For very good reasons, the malignant tumours are the cancers; and cancer or malignant disease are synonymous terms. Therefore every cancer is a tumour; but a tumour is not necessarily a cancer.

Cancer, or malignant disease, commences locally as a distinct focus or new growth, whose component cells have arisen from normal cells, and which begin to infiltrate and

consume healthy adjacent cells, the new growth sometimes generalizing by the lymphatic and sometimes by the vascular system.

A malignant or a non-malignant tumour may originate from nearly any part of the body; but whilst the latter in its growth will merely displace the surrounding tissues, the former will invade and consume them. A non-malignant growth will not disseminate by the lymphatic or vascular system, or recur locally after extirpation.

Local recurrence of a cancer after extirpation is nearly certain, unless considerable portions of the tissues apparently healthy, adjoining the growth, have been also destroyed or removed.

All tumours may ulcerate, but a distinction must be pointed out between the ulceration of an innocent and of a malignant tumour.

The ulceration which is sometimes found associated with an innocent tumour is of an accidental kind, and due to injury or defect in the blood-supply of the growth, and is not of a progressive nature.

But the ulceration of a cancerous growth is part and parcel of the disease, and one of the most striking features in its natural history. Growth is construction, and ulceration is destruction of tissue; the one process is the opposite of the other: where they coexist or alternate progressively, the diseased area increasing in size and extent, there is cancer. The *débris* cast off, whilst ulceration is proceeding, in the form of discharge, is of an offensive and foul character. The foulness of the discharge may be said to be in direct ratio to the rate of destruction of the tissue.

Cancer disseminates in various ways.

First, satellite growths may arise in the immediate neighbourhood of the parent growth.

Secondly, particles from the primary or parent growth may be carried along the lymphatic vessels into the lymphatic glands, constituting secondary or daughter neoplasms.

Thirdly, particles of the primary growth may penetrate the walls of the blood-vessels, and give rise to secondary growths in distant organs.

Fourthly, the disease may become disseminated by grafting; particles becoming implanted from a primary growth to some other part of the body temporarily in contact with such growth; from one part of the peritoneum to another; and sometimes from husband to wife.

Individuals, therefore, frequently present themselves suffering from multiple cancerous developments — the secondary or metastatic formations being generally recognized, if occurring near the surface of the body, by their anatomical continuity with the parent growth; or their existence in the interior may be surmised.

Metastatic formations are always, and necessarily, of the same histological variety as the primary growth.

When malignant disease occurs primarily at more than one part or organ, the different growths are not necessarily of the same histological variety.

In such cases the diseased foci may be either symmetrically or asymmetrically situated.

The occurrence of cancer primarily in both breasts is rare, but such a manifestation should not be construed as indicating a constitutional origin, but rather as an instance of a local disease attacking independently two organs symmetrically situated, and placed under similar predisposing circumstances.

In addition to the ulceration referred to, other retrogressive changes may occur in neoplasms. The growth may undergo fatty, colloid, gangrenous, or caseous degeneration. Ossification, too, may occur.

In cancer, should the destructive or ulcerative factor exceed in rate the constructive factor in the disease, the neoplasm will destroy itself and a spontaneous cure result. Whether such cases ever really occur, though descriptions of them may be found sparsely scattered in surgical literature, is a controversial topic; but I am sorry to say

I have never seen examples of what from theoretical considerations would be anticipated.

Patients suffering from cancer are often found in the best general health, and it is only in the ulcerative stage, when deleterious or putrefactive products may become absorbed, that constitutional disturbance may arise. Such a condition is termed the cancerous cachexia, but there is nothing special about it. The cachexia will frequently disappear after the disease has been extirpated by operation, or the foulness of the discharge, which poisons the system, destroyed by antiseptic agents.

When cancer has once commenced, its duration, if unchecked, varies from a few months to many years. The rapidity of growth will vary with the part of the body first attacked, and the histological variety of the disease. In the majority of cases of cancer, however, which fall under our notice, the duration of the disease must be measured by years, even if only *temporarily* checked, as only too commonly happens, by inadequate operations, or those which have not been performed sufficiently early.

Death, when it supervenes, results from the mechanical pressure of the primary neoplasm or of the secondary growths upon some vital part, when danger will be apprehended by the anatomical relation of the tumour to such part; from blood-poisoning, and exhaustion, or from hæmorrhages, either small and repeated from the growth itself, or profuse, resulting from the extension and ulceration of the growth into some large-sized blood-vessels.

Cancer is a disease which is found in all periods of life, though the vast proportion of cases occur in persons aged between forty-five and sixty-five years. Cancer rarely occurs under twenty or over seventy-five years of age; nevertheless none are too old or too young to be attacked by cancer.*

Statistics show that the annual mortality from cancer is increasing, both actually and relatively to the population.

* When malignant disease occurs in childhood, and in youth, it is usually as sarcoma.

CHAPTER II.

THE VARIETIES OF CANCER.

CANCERS are divided into two main groups, the carcinomata and the sarcomata, each of which presents sub-varieties. This mode of classification is based upon the circumstance that during the development of the embryo, the blastoderm presents three layers, viz. the epiblast, mesoblast, and hypoblast. Embryology teaches us, that from the cells of which the trilaminar blastoderm consists (all having arisen from a common parent cell, the ovum) eventually is developed the entire body, all parts of which can be traced in origin to one of the three layers mentioned. When a cancer originates from a part of the body developed from either hypoblastic or epiblastic cells the growth is termed a carcinoma; if from cells derived from mesoblastic tissue, a sarcoma.

Carcinomata are composed of groups of epithelial cells imbedded in a vascular framework of connective tissue. The cells multiply endogenously, and lie together in confused masses.

The sarcomata which arise from parts derived from the mesoblast are composed of cells which do not ordinarily lie in alveoli, or spaces, (as in the case of the carcinomata); the cells predominating over the intercellular substance, thus resembling immature connective tissue. So far, the division between the two main groups of cancer can be formed easily enough, but unfortunately it is not always practicable to say from which of the blastoderm layers a neoplasm has arisen. Moreover, encephaloid carcinoma (so-called) is perhaps generally a sarcoma, and the rare cases of alveolar sarcoma are most difficult to distinguish

from carcinoma. But, taking all in all, this primary division is the most useful and modern classification, and the primary divisions may for descriptive purposes be subdivided as follows :—

Varieties of Carcinoma.

1. Scirrhus.
2. Medullary.
3. Melanotic.
4. Osteoid.
5. Cylindroid.
6. Colloid.
7. Epithelioma.

Sub-variety, Rodent Ulcer.

Varieties of Sarcoma.

1. Round-celled.
2. Spindle-celled.
3. Giant-celled.

Special variety, Epulis.

4. Mixed-celled.
5. Melanotic.
6. Hæmorrhagic.
7. Lymphoma.
8. Glioma.
9. Psammoma.
10. Myxoma.

SCIRRHUS, OR HARD CANCER.

<i>Latin equivalent</i>	...	...	Scirrhus.
<i>French</i> „	...	...	Squirrhe.
<i>German</i> „	...	...	Scirrhus.
<i>Italian</i> „	...	...	Scirrho.

Scirrhus cancer originates from the epithelium of the tubular or acinous glands, notably of the breast, pylorus, and pancreas.

The growth consists chiefly of fibrous tissue, enclosing clumps of cells within alveoli; and derives its name from the toughness and quantity of its fibrous element. The cells are large in size, with large nuclei, and are polymorphous from mutual pressure. Scirrhus is first circumscribed, but soon commences to spread from the periphery, infiltrating the adjacent tissues and puckering the region in which it grows, the infiltrated parts contracting. Dimpling of the skin (in the case of the tumour subjacent to it) therefore appears; and the tumour becomes adherent to the skin as well as to the parts beneath it. The contraction of the scirrhus gives rise to pain from implication of the nerves involved in it; the pain is described as of a stabbing, paroxysmal, and lancinating character; the other pressure-symptoms will vary with the site of the growth. After the skin has become involved, it generally presents a dusky colour, and sometimes there is desquamation. Distinct cancerous nodules may appear in the skin; should this structure become hard and brawny, the term "*cancer en cuirasse*" is applied to it. Ulceration may follow, and the ulcer presents these characters: it is of irregular outline and generally solitary; its edges are dusky, hard, usually everted and nodular; its surface is irregularly excavated; its discharge is fœtid, semi-purulent, hæmorrhagic or sanious; and, according to Gross, the carcinomatous fungus hæmatodes of the older writers is apocryphal. Scirrhus grows chiefly in the direction of its best blood-supply, and increases in size by continuity. It disseminates by the lymphatic system, the glands on the proximal side of the tumour, which lie nearest to the growth, becoming first involved; and the lymphatic vessels which unite the tumour with the glands are indurated, and sometimes stand out like cords. The implication of the glands may be of a scirrhus or medullary character; if a cluster of glands be affected they become fused together, the new growth running a similar course to the primary lesion.

The cancerous cachexia is commonly said to become

established after the disease is *well advanced*, and to be due to the exhaustion consequent upon it, and caused by various factors, viz. the hæmorrhages from the growth, if it be ulcerated, the debility produced by the local discharges and the absorption into the system of septic material; by sleepless nights, by malnutrition, and by anxiety.

Important though the cancerous cachexia be from a diagnostic point of view, yet it is most frequently confounded with cachexia due to other conditions, viz. to that of Bright's disease; various forms of chronic anæmia, especially pernicious anæmia; icterus, syphilis, the pigmentation caused by Addison's disease; and though the differential diagnosis may often be arrived at by an elimination of these conditions, yet, given an absence of unequivocal signs and symptoms of cancer, the presence of a cachexia will often prove of great value in confirming an opinion.

MEDULLARY.

<i>Latin equivalent</i>	...	...	Carcinoma medullosum.
<i>French</i>	„	...	Cancer médullaire.
<i>German</i>	„	...	Markschwamm.
<i>Italian</i>	„	...	Cancro midollare.

Medullary or encephaloid carcinoma constitutes, according to Gross, about five per cent. of all the varieties of cancer. It is generally met with in the testis, breast, kidney, liver, and ovary. Histologically, the difference between medullary and scirrhus carcinoma is merely one of degree in the comparative relationship which subsists between the epithelial elements and the fibrous stroma; for whilst in the latter the matrix is largely in excess of the cells, in the former the proportion is reversed and the cells are greatly in excess of the stroma, giving the neoplasm a much softer consistence, which may sometimes be mistaken for the fluctuation of an abscess, and imparting to it a far quicker rate of growth. Clinically, encephaloid cancer is often met with at an earlier period of life than scirrhus,

sometimes below the age of puberty, whilst scirrhus is not,—and whilst the greatest number of cases of this variety attacks people in the fifth decade, a large number of that are met with in the fourth. From scirrhus, medullary cancer differs in the larger size to which it attains, in the greater prominence of its superficial veins, and in its greater readiness to give rise to metastases or secondary tumours. Thus, the lymphatic glands become implicated early in the course of the disease, and secondary growths, which occasionally originate *de novo*, or else by infection from the first tumour, not unfrequently appear in organs distant from the primary lesion.

Encephaloid cancer is really a rare variety, for most of the cases so tabulated are, in point of fact, instances of small-celled sarcomata.

MELANOTIC.

<i>Latin equivalent</i>	...	...	Carcinoma melanoticum.
<i>French</i> „	...	...	Mélanose.
<i>German</i> „	...	...	Melanotischer krebs.
<i>Italian</i> „	...	...	Cancro melanotico.

Melano-carcinomata are much rarer than melano-sarcomata. They are carcinomata in which a deposition of pigment has taken place, giving the tumour a black or grey appearance.

OSTEOID.

<i>Latin equivalent</i>	...	...	Carcinoma osteoides.
<i>French</i> „	...	...	Cancer ostéoïde.
<i>German</i> „	...	...	Osteoid krebs.
<i>Italian</i> „	...	...	Cancro osteoide.

By osteoid carcinoma is understood a cancer which has undergone ossification. It is still maintained by some writers that carcinoma is often met with in the bones, and that such tumours not unfrequently ossify. Histologically, little difference can often be found between carcinomatous

and sarcomatous tumours of bone ; so that the differential diagnosis between these neoplasms cannot be made.

But proceeding upon the basis that sarcomata are neoplasms of connective tissue, and carcinomata of epithelial origin, it follows that it would be logically impossible for primary carcinoma of bone, the carcinomatous deposition originating in the bone, to occur, and therefore the term "osteoid carcinoma" could not be applied to the ossification of a tumour which commenced in bone (as it generally does), but only to an ossification of a carcinoma occurring in other structures. On the other hand, Mr. Timothy Holmes points out, in the *System of Surgery*, vol. ii., p. 315, that it is an assumption to say there is no epithelium in the bones, "since the vascular endothelium may be considered epithelial." But this is a most ingenious *petitio principii*, and, were it admitted, the entire distinction between carcinoma and sarcoma would at once fall through ; for since all the connective tissues are permeated by blood-vessels, carcinoma might originate in any connective tissue, viz. from the endothelium of its vessels. Moreover, the vascular endothelium is of mesoblastic development.

With reference to these tumours, Mr. Holmes points out further, in defence of his classification of them among the carcinomata, that they "present none of the features which were originally described as characteristic of sarcoma, for they are usually highly malignant, and recur not locally, but in remote parts ; and they invade the lymphatic glands, often at an early period of the disease. But in striking contrast to these very malignant osteoid tumours, which I would still call osteoid 'cancers,' there are others which are only locally malignant—*i.e.* recurrent—which do not threaten life unless by their pressure, and which in all clinical respects bear the strongest analogy to the 'recurrent fibroid' tumours of Lebert and Paget. Such cases I would class apart from the cancerous tumours by some such term as 'diffused bony' or 'recurrent osteoid' tumours."

CYLINDROID ; *syn.* ADENOID.

<i>Latin equivalent</i>	...	...	Carcinoma cylindroides <i>vel</i> adenoides.
<i>French</i>	„	...	Cylindroïde, <i>syn.</i> Adénoïde.
<i>German</i>	„	...	Cylindrom, <i>syn.</i> Adenoid.
<i>Italian</i>	„	...	Cilindroïde, <i>syn.</i> Adenoïde.

Cylindrical carcinoma presents groups of cells of which those, at least at the periphery of the cluster, are cylindrical in form. The cells which occupy the interior of the groups are generally polymorphous, the centres of the loculi being often empty—a circumstance which could be explained by the dropping out of the central cells in making the microscopic sections. Cylindromata are formed from those cells which clothe the mucous membranes, and the growths are usually met with in the rectum, sigmoid flexure, other parts of the intestine, and uterus. The neoplasms are found in various stages of development, some closely simulating the higher organization of the adenoid tumours, with which they have been confounded, in some cases the distinction being most difficult; but a true cylindroma is not encapsuled. The tumour is of comparatively slow growth, and is apt to disseminate chiefly by the liver and lungs.

COLLOID.

<i>Latin equivalent</i>	...	...	Morbus colloides.
<i>French</i>	„	...	Cancer colloïde.
<i>German</i>	„	...	Gallert krebs.
<i>Italian</i>	„	...	Cancro colloide o gelatinoso.

It is very doubtful whether colloid cancer ever occurs as a primary growth. Colloid is usually regarded as a *degeneration* of one of the varieties of cancer, and not as a distinct species. As to formation, the cancer cells enlarge, and become partially filled with clear colloid or glue-like material. The alveolar structure of the neoplasm

is generally well-marked, and a jelly-like substance (gelatiniform) exudes on squeezing a section of the growth.

Colloid cancer pursues a slow course; it is most commonly found in the omentum and abdominal viscera. It is more than probable that the sarcomata as well as the carcinomata undergo colloid change, in proof whereof may be cited an instance of primary malignant disease of the bones,* of colloid character, and therefore presumably sarcomatous.

EPITHELIOMA.

<i>Latin equivalent</i>	...	...	Epithelioma.
<i>French</i>	„	...	Cancer épithélial.
<i>German</i>	„	...	Epithelial krebs.
<i>Italian</i>	„	...	Cancro epiteliale.

Epithelioma is that variety which originates from the epithelium of the skin, or mucous membrane, and is most commonly met with at the points of junction of these structures. The appearance of epithelioma at such a site is very often attributed to the presence of a fissure, or excoriation, or to the result of some slight injury. Nevertheless, the rich blood-supply with which the mucocutaneous junction and the mamilla are endowed would in itself render these parts specially prone to epithelial infiltration.

Epithelioma commences by presenting aggregated cells, similar to those of the Malpighian layers. The deeper tissues become invaded by clumps of cells—just as, in the development of the ova, groups of cells from the germ epithelium first sink into the ovarian stroma. These processes, having entered the corium and the subjacent structures, often cross or unite by branches. The cells which compose these plugs are very firmly pressed together in some places, so that a cross section of them yields the so-called “bird’s-nest” bodies, or “epidermic globes.”

* *Pathological Transactions*, vol. xxii. p. 206, 1871.

Nevertheless, these bodies are not pathognomonic of epithelioma; or, perhaps, more properly speaking, they point out the relationship which subsists between the various neoplasms and normal growths,—for the nest-cells of the epithelioma cannot be distinguished *per se* from those met with in some papillomata, or even in the covering of the healthy tongue.

Ulcers form from the breaking down of the deposit, and present certain characteristic features. The edges of the ulcer are rugged, hard, nodulated, and everted. The surrounding area is inflammatory and indurated. From the roughened base of the ulcer proceeds a foul discharge which exhibits a tendency to scabbing. Epithelioma is a slow-growing variety of cancer. At the present moment, there is a case, under the care of the author, of epithelioma of the right breast, the growth being of six years' duration. The axillary lymphatics have become involved during the past twelvemonth. It is also noteworthy, with regard to the etiology of cancer, that all the children of the woman were suckled solely from the right breast.

Epithelioma usually commences as a small crack, fissure, or ulcer, and often in a crack, fissure, or ulcer; *i.e.* the growth may appear in a certain form on a structure previously healthy, or *more frequently may develop out of some morbid condition of apparently trivial character.*

Thus, the simple fissure of the anus; the simple crack on the lip, caused by the irritation of the rough or broken pipe-stem or decayed tooth; the patch, plaque, or ichthyotic spot on the tongue—so often of syphilitic origin; the common scar-tissue, the common erosion of the cervix uteri, or the skin already infiltrated by a lupoid growth;—each of these conditions form the most fertile predisponents for cancerous deposit.

Out of these facts, two things are manifest: first, that the diagnosis, by the naked eye, of epithelial deposit in its very *earliest or premonitory stage* is impossible; and, secondly, the important prophylactic point, viz. that the greatest care should always be exercised in the observation

and treatment of "suspicious-looking" ulcers, fissures, and patches, especially if accompanied by a slight infiltration of the parts, or if syphilitic or other taint exist.

Epitheliomatous cancer is rarely met with in patients under thirty years of age. Its most common seats are the lip, tongue, œsophagus, stomach and intestines, breast, genital organs, and anus. The rate of growth varies with the region primarily affected. The disease disseminates through the lymphatic system; but secondary growths appear in the lungs, liver, kidneys, and other organs.

RODENT ULCER; *syn.* JACOB'S ULCER.

<i>Latin equivalent</i>	...	...	Ulcus erodens.
<i>French</i> „	...	...	Ulcère rongeur.
<i>German</i> „	...	...	Ulcus rodens.
<i>Italian</i> „	...	...	Ulcera rodente.

Rodent ulcer is a sub-variety of epithelioma, usually occurring on the upper two-thirds of the face, and distinguished pathologically by the presence of certain glandular cell-masses, connected with the hair-follicles and sebaceous glands.

Rodent ulcer usually attacks people advanced in life, and the nasal side of the lower eyelid is its usual seat. The growth commences as a small nodule, which *very slowly* ulcerates. The edges of the ulcer are hard, regular, sinuous, and inverted. Its base is smooth and clean; and its discharge slight. As the disease progresses, the orbit usually becomes implicated. The eyeball may slough out, and the bony frame-work of the orbit and nasal cavity having become involved, communication with the nasal fossæ and antrum are at last established.

This sub-variety runs a peculiarly *slow course*, and is further distinguished from epithelioma by its physical characters, by its site, by an absence of glandular implication, by good general health, by an absence of pain, and usually of cachexia—the discharge being insignificant. As to the origin of rodent ulcer, all pathologists agree that it springs from epithelium.

Thiersch, followed by Drs. Tilbury and Calcott Fox,* believed that the growth commences from the external root-sheath of the hair-follicles, which, in point of fact, is an extension of the rete Malpighii. Dr. Thin, on the other hand, considers Jacob's ulcer to be a cancerous adenoma of the sweat-glands.†

Dr. Hume, who has devoted great pains to the task of elucidating the origin of rodent ulcer ‡ by means of the careful study of microscopic sections of a few cases, favours the former view ; but these specimens, which are admirably illustrated in the *British Medical Journal*, § would seem to support the view that rodent ulcer may arise *either* from the hair-follicles or sebaceous glands. According to Dr. Hume, however, "the first appearance of disease is noticed in a broadening from increased cell-formation of certain hair-follicles. The portion of the follicle seems usually to be the neck, or that part between the opening of the sebaceous gland into the follicle and the epidermis. The canal of these broadened follicles usually widens, producing an elliptical cavity in the section. In some follicles the broadening is not general, but takes the form of a distinct outgrowth from the edge, and in such the connection of the outgrowth with the external sheath of the follicle can be plainly traced." These changes are followed by increased vascularity in the corium, by the transudation of leucocytes, and, later, by œdematous infiltration. The diseased follicle, with its sebaceous gland, assumes a deeper position, becomes constricted, and finally broken off. It is this deeper portion which is transformed into a patch of rodent tissue, by cell-proliferation.

In the sebaceous glands, the process begins by proliferation of their sheaths, which are diverticular from the sheaths of the hair-follicles. The ulcer is formed by atrophy of the epidermis superficial to the patches of rodent tissue. But in some cases, viz. in those accompanied by inflammation, there is considerable (secondary) thickening of the epidermis.

* *Pathological Society's Transactions*, 17, vol. xxx.

† Ibid.

‡ *British Medical Journal*, 1884, vol. i., pp. 5-7.

§ Loc. cit.

Dr. Hume, in opposition to Dr. Thin, maintains that the changes in the sweat-ducts and glands are of a secondary and not of a primary character—that they are changes of disintegration, not of growth.

“In epithelioma,” writes Dr. Hume, “there is a marked tendency to an unrestrained cell-infiltration of surrounding structures, so that infection of the lymphatic system readily occurs. The cell-growth of rodent ulcer, on the other hand, is in the form of isolated masses which, originating in the follicles and sebaceous glands, are, at least for some time, restrained by the fibrous sheaths of these structures. The tendency of these masses is, therefore, to cause by their pressure on the tissues a persistent ulceration, in which they, as well as the tissues, perish. But because this local destruction takes place rapidly, and because of the absence of cell-wandering, lymphatic infection is not prone to occur.”

These facts would tend largely to support the view of Mr. Jonathan Hutchinson, that no essential difference exists between epithelioma and Jacob’s ulcer, and that the clinical and microscopic discrepancies between these conditions are explicable on consideration of the locality of rodent ulcer; *i.e.* in a situation where sebaceous glands abound.

In the summer of 1883, the author saw a patient who had been affected for many years with a typical Jacob’s ulcer involving the orbit; but, since the commencement of the year, a distinct epithelioma had developed in the lower lip. This isolated case confirms strongly Mr. Hutchinson’s views as to the relationship of these diseases.

SARCOMA.

<i>Latin equivalent</i>	...	...	Sarcoma.
<i>French</i> „	...	...	Sarcome.
<i>German</i> „	...	...	Sarcom.
<i>Italian</i> „	...	...	Sarcom.

DEFINITION.—A SARCOMA is a tumour of connective-tissue origin, composed of elements which are for the most

part cellular and embryonic. These elements are embedded in a matrix of intercellular substance of varying quality and quantity. The vessels run between the cells, and the cells increase in number by division.—Butlin.

When malignant tumours occur during young life they are generally sarcomata. Clinically, sarcomata present many features in common with the carcinomata; and as in carcinoma wide differences in the natural history of the growth, dependent on the variety and site, exist, so in sarcoma the rate of progress and degree of malignancy will be found to vary with the locality and anatomical character of the neoplasm.

A sarcoma is usually a more or less *encapsulated* tumour, which can be readily “shelled out” or peeled off from the structures with which it is connected. However, the tumour really extends beyond its *apparent* boundaries, so that during an operation for its removal a considerable amount of the surrounding tissues should be excised also.

In outline, sarcomatous neoplasms are generally rounded or ovoid—not often lobulated; in consistence, elastic; distinct fluctuation, simulating that of an abscess, may be met with; on the other hand, there are solid varieties. The subjacent structures are not infiltrated, and the skin is not adherent to the tumour. Sarcomata usually attain far larger dimensions than carcinomata. The subcutaneous veins are often very much engorged. Owing to the histological relationship between the blood-vessels and cells of the neoplasm, dissemination generally occurs through the blood-vessels. Nevertheless the neighbouring lymphatics are by no means infrequently involved, and notably so in the case of sarcoma of the testis and sarcoma of the tonsil. If recurrence takes place after removal of the neoplasms, the secondary growth or growths are usually found in the internal organs. Sarcomata are not so painful as carcinomata, and the cachexia is not frequently present. When ulceration of the skin takes place from a sarcoma situated beneath, it is from pressure, not by infiltration. The edges of the ulcer are regular, and round, or ovoid;

the surrounding integument is healthy, and the sarcoma partially protrudes through the aperture, as a "fungus hæmatodes." The latter point is one of importance, for according to Gross's observations the presence or absence of a fungus hæmatodes would at once establish the diagnosis between sarcoma and carcinoma.

Histologically, the sarcomata are divided into the spindle-celled, round-celled, and giant-celled varieties, and since a medley of these cells may be found in any specimen, a fourth group, the mixed-celled sarcomata, is added.

Quite another form of sarcoma often met with is the cystic. The cystic sarcomata cannot, however, claim a special class, since they are merely ordinary sarcomata containing cysts which may develop by one of two methods, viz. (1) as a degeneration of the sarcomatous tissue, or (2) by the retention and increase of the normal product of the acini or tubules of the gland from which the sarcoma springs. The sarcomatous tissue may also bulge into the cysts (and even obliterate them), forming intra-cystic growths.

VARIETIES OF SARCOMA.

ROUND-CELLED.

<i>Latin equivalent</i>	...	...	Cellas habens rotundas.
<i>French</i>	„	...	À cellules arrondis.
<i>German</i>	„	...	Rundzelliges.
<i>Italian</i>	„	...	A cellule rotunde.

Round-celled sarcomata consist essentially of round cells irregularly arranged in a homogeneous matrix. The vessels are generally mere clefts between the cells, and this intimate relationship is the explanation of the rapidity with which sarcoma disseminates through the blood-vessels. The round-cells are of two classes, large and small: the small round-celled variety naturally being the more

malignant. The most common situations for this variety are the testis, tonsil, antrum of Highmore and lymphatic glands (lympho-sarcoma).

SPINDLE-CELLED.

<i>Latin equivalent</i>	...	...	Cellas habens fusiformes.
<i>French</i>	„	...	À cellules fusiformes.
<i>German</i>	„	...	Spindelzelliges.
<i>Italian</i>	„	...	A fusa.

The cells of this variety being spindle-shaped, some writers have concluded that they are really embryonic muscle- and nerve-fibre cells in an arrested state of development.

As there are two kinds of round-celled sarcoma, viz. large and small, so also are there large and small spindle-celled sarcomata.

This variety is most common in the bones, testis, muscles, skin, and eye.

GIANT-CELLED.

<i>Latin equivalent</i>	...	...	Myeloides.
<i>French</i>	„	...	À Myéloplaques.
<i>German</i>	„	...	Myeloidgeschwulst.
<i>Italian</i>	„	...	Mieloide.

The giant-celled or myeloid sarcomata are distinguished histologically by the presence of giant-cells, which are masses of protoplasm of considerable size, containing a very variable number of nuclei (from two or three to forty or more).

The term should only be applied to those tumours which contain a very large preponderance of giant-cells, among the other constituents—generally round or spindle cells, and not to sarcomata in which only a few exist.

Giant-celled sarcomata, therefore, occur nearly exclusively in the bones—and in the *central* portions of the

bones. These neoplasms are most frequent in the lower maxillary bone, inferior extremity of the femur, and the head of the tibia. The giant-cells themselves are said to be distinguishable from those of scrofula, inasmuch as in those of this affection the nuclei are arranged around the periphery of the cells, whilst in sarcomatous giant-cells the nuclei are aggregated in the centre of the cells. But this distinction is a most equivocal one.

The giant-cells impart to the sarcoma a red or maroon colour, like the red marrow of bones—whence the name, myeloid. Myeloid sarcoma is of slow growth; it disseminates slowly or hardly at all, and is said not to affect the lymphatic system. On these grounds it is recommended by some surgeons, in treating this disease, merely to enucleate the new growth, and not to amputate or to excise the bone with which the neoplasm is connected.*

SUB-VARIETY—EPULIS, IN PART.

<i>Latin equivalent</i>	...	...	Epulis, partim.
<i>French</i> „	...	...	Epulide, en partie.
<i>German</i> „	...	...	Epulis, zum Theil.
<i>Italian</i> „	...	...	Epulis, in parte.

Some of the forms of epulis (*ἐπί, upon*; *οὔλα, the gums*) are sarcomatous; and, if so, the bulk of their sarcomatous elements are very often giant-cells with a small proportion of round and spindle cells. Such neoplasms usually spring from the outer surface of the alveolar process, close to the teeth. The upper jaw is more generally affected than the lower. The neoplasm is more or less connected with the periodontal membrane. It may spring from the interior of an empty socket; and is often caused by the irritation of the stump of a tooth. Nevertheless, epulis may occur where the teeth are in good condition,

* As a rule, however, I should advise amputation.—C. E. J.

and, as it grows, displace or dislocate a particular tooth. In size, epulis varies from a pea to a walnut. The consistence of the growth is semi-elastic. Ulceration is uncommon. The tumour seems to spread in the direction of basal attachment rather than in height.

Local recurrence, after removal of the epulis, is very frequent, especially if the stump of the tooth associated with the growth be left behind. On this consideration, great care should be exercised in removal of neighbouring stumps, and the growth excised, with the portion of bone from which it springs, very freely. Bleeding may be arrested with Pacquelin's thermo-cautery, or by the application of ferridized cotton.

MIXED-CELLED SARCOMATA are merely those in which a combination of the forms of cells already described is found histologically, viz. round, spindle, and giant cells. The mixed-celled sarcomata attack the bones more often than other structures.*

MELANOTIC.

<i>Latin equivalent</i>	...	...	Melanoma.
<i>French</i>	„	...	Mélanome.
<i>German</i>	„	...	Melanom.
<i>Italian</i>	„	...	Melanoma.

The melanotic sarcomata are distinguished by the presence of black pigment, which may be found either within the individual cells, or in the intercellular tissue. Melanoma, consequently, occurs in those regions where pigment exists; its most common habitat is the choroid, and not unfrequently pigmentary deposit takes place in sarcoma of the skin.

* Some writers consider the mixed-celled sarcoma to consist only of round cells and spindle-cells—whether large or small—to the exclusion of giant-cells.

HÆMORRHAGIC.

<i>Latin equivalent</i>	...	...	Hæmatoma.
<i>French</i>	„	...	Hématome.
<i>German</i>	„	...	Hæmatom.
<i>Italian</i>	„	...	Ematoma.

Some forms of blood-tumours are sarcomatous. The round and spindle cells can be detected, not only in the cyst wall of the tumour, but in the extravasation itself. This tumour is uncommon; it disseminates freely, and if recurrence follow removal, the secondary growth, like the first, presents a hæmorrhagic character.

LYMPHOMA.

<i>Latin equivalent</i>	...	...	Lymphoma.
<i>French</i>	„	...	Gangliome.
<i>German</i>	„	...	Lymphom.
<i>Italian</i>	„	...	Linfoma.

A lymphoma is a lymphatic-tissue tumour, and may therefore be (α) a tumour connected with the lymphatic vessels (lymphangeioma) or (β) with the lymphatic glands or adenoid tissue in the organs (lymphadenoma).

The lymphangeiomata, or *tumours so-called*, arising from lymphatic vessels are exceedingly rare, if indeed they ever exist. In elephantiasis Arabum, the connective tissue is associated with a dilatation and *hyperplasia* of the lymphatic vessels and spaces, but this is not a *neoplasm*, and should not be confounded with it.

Again, a lymphadenoma is a lymphatic-glandular tumour, but is often erroneously described as synonymous with the adenoid hyperplasiæ, such as acute, sub-acute, or chronic adenitis, caused by inflammation sequent to injury, to local irritation, such as pediculi, or to specific infection, as the syphilitic virus.

Further, by many writers lymphadenoma is regarded as synonymous with lympho-sarcoma; but lympho-sar-

coma is the malignant *variety* of the lymphatic-glandular neoplasms, the other forms of these tumours being (1) the scrofulous, strumous, or tubercular neoplasm; (2) Hodgkins's disease, which consists essentially in a gradual enlargement of a cluster of lymphatic glands, with the subsequent implication of other groups throughout the body, and is in fact by some—Southam, to wit*—regarded “as a very generalized form of lympho-sarcoma.” On the other hand, Hodgkins's disease is very closely correlated with leukæmia or leucocythemia, but differs from it “in the fact that the white corpuscles of the blood are not notably increased in number.” †

A LYMPHO-SARCOMA, then, may be either secondary or primary in origin. If secondary, the neoplasm is clearly sequent to malignant disease of parts on the distal side of the lymphatic gland or glands affected. If primary, the diagnosis will be the more difficult, and must be arrived at by an elimination of the other varieties of the lymphadenomata, lymphatic hyperplasiæ or neoplasms simulating these conditions from locality, and by the positive signs and symptoms—already given—which serve to distinguish sarcomatous growths.

A lympho-sarcoma is histologically a small round-celled sarcoma, which simulates closely the appearance of a lymphatic gland. The matrix is almost hidden by the round cells, but if sections of the growth be agitated in a test-tube partly filled with water, many of the round cells are shaken out, and a reticulated stroma formed by the union of the branches of connective-tissue cells becomes visible.

Lympho-sarcoma usually invades the lymphatic glands, but often also the adenoid tissue of the mucous membranes. The tendency of the neoplasm to generalize is marked—in short, this tumour is exceedingly malignant.

* *Regional Surgery*, part i., p. 147.

† *Ibid.*

GLIOMA.

<i>Latin equivalent</i>	...	...	Glioma.
<i>French</i> „	...	...	Gliome.
<i>German</i> „	...	...	Gliom.
<i>Italian</i> „	...	...	Glioma.

A glioma is a tumour which springs from the connective tissue of the retina, optic nerve, brain, and spinal cord. It consists, histologically, of small round cells imbedded in a matrix, very much resembling a lympho-sarcoma. In the brain, a glioma may be found of size ranging from a pea to half that of one of the hemispheres. The colour of the neoplasm (as seen on section) may vary from a pale pink to maroon. Yellow caseous patches, indicative of retrogressive changes, are not uncommon. Hæmorrhage into the substance of the growth is also sometimes found, and a case is recorded by Dr. Gowers where, upon post-mortem examination, such a specimen was mistaken for a cerebral hæmorrhage with adjacent softening. Modern surgery teaches us that treatment of these tumours is often not beyond our art. Gliomata of the spinal cord are exceedingly rare ; they have no special histological features.

Retinal glioma is a disease of the newly-born and of children—a point of importance from a diagnostic view, since sarcoma of the retina or choroid is rare, save in adults. The tumour may be solitary, or there may be one or two distinct growths at first, which may subsequently coalesce. In its early stage, it may grow either forwards into the vitreous, or backwards into the choroid. The tension of the globe is first diminished, but soon increased.

Unfortunately the tumour is rarely detected at its commencement, since the failure of vision, consequent upon it, is generally overlooked by the parents : first, because the child is usually too young to read ; and, secondly, because blindness in one eye, consequent on a small glioma, would hardly be detected by the laity, the other eye being intact.

However, when the neoplasm reaches a certain magnitude, a bright, abnormal reflex is noticeable through the pupil. The pupil is usually dilated, and the anterior chamber is abnormally shallow. The globe becomes distended and painful; the cornea sloughs, and the growth protrudes through the lids. Simultaneously, the tumour may grow inside the optic nerve, and thus pass directly through the optic foramen into the cranium; or it may perforate the sclerotic, posterior to the insertion of the recti muscles, and infect the orbital structures.

Ophthalmoscopically, the diagnosis can generally be established with tolerable certainty; the absence of pigment is of importance, as (usually) serving to distinguish this tumour from sarcoma of the choroid. It is not uncommon for both retinae to be affected with gliomata. Secondary growths are not infrequent in the diplöe, and, should the child survive sufficiently long, neoplasms of character histologically similar to the primary growths may be found in the internal viscera, especially the liver. If the disease be treated promptly, whilst in its earliest stage, by extirpation of the eyeball, the prognosis is hopeful, otherwise it is hopeless.

PSAMMOMA; *syn.* BRAIN-SAND TUMOUR.

<i>Latin equivalent</i>	...	Psammoma.
<i>French</i>	„	... Psammome.
<i>German</i>	„	... Psammom, <i>syn.</i> Sandgeschwulst.
<i>Italian</i>	„	... Psammoma.

Psammomata, or brain-sand tumours, are varieties of sarcomata. Dr. Collins* exhibited a very interesting specimen before the Pathological Society of Dublin. The tumour had been removed from an elderly subject in the Anatomical School. It sprang from the inner endothelial surface of the falx cerebri, near the crista galli. It projected into the subdural cavity, and had hollowed out a

* *Medical Times and Gazette*, 1875, vol. i., p. 123.

slight depression upon the overlying convolutions of the left frontal lobe of the cerebrum. Of soft consistence, it was easily separable from its attachments, about the size of a walnut, and of a greyish-white colour. Microscopically, it proved to be a "psammoma," or "angiolithic sarcoma." A fibrous investment and a fibrous stroma comprised the chief bulk of the tumour. Embedded in it were very minute isolated calcareous particles of brain-sand, reflecting light, and presenting their peculiar concentric lamellar arrangement when examined under a high microscopic power.

These were chiefly remarkable for their very small size, and scanty distribution throughout the fibrous elements of the tumour. The tumour was exceedingly vascular. Some of the sand particles were very near the walls of the vessels, but no such definite connection with them could be ascertained as led *Rauvier* to believe that they were deposited in ampullary dilatations of the walls of the vessels from which they subsequently became detached. No cells were found differing from those proper to sarcoma, so as to favour the epithelial mode of development, as suggested by *Meyer* and *Robin*; but in some instances the concentric arrangement of the spindle-cells described by *Steudener* was observed. *Virchow's* view, that such tumours were hyperplastic growths, owing their origin to increased development of sand-formations which are so often found on the inner surface of the dura mater and in connection with the choroid plexuses, seemed to *Dr. Collins* the most correct as regarded the specimens he exhibited.

CHAPTER III.

CANCER IS A LOCAL DISEASE.

CANCER is a local disease, and as it is evident that the principles for the rational treatment of cancer must depend upon whether or no the balance of evidence is in favour of or against the local as distinguished from the "constitutional" theory of cancer, this question is practically the most important in connection with the whole subject.

At the present day, all the various methods of treating cancer may be grouped under two main headings:—

1. Methods which have for their object the removal of the growth or growths from the body by amputation, excision, or destruction by cautery or caustics.

2. Attempts to procure resolution of the disease by medicaments administered internally in order to purify the blood; methods for palliative treatment, all hope of eradicating the disease being abandoned; various "cancer cures" and patent nostrums, etc.

I say cancer is a local disease, chiefly, because I know that it generally originates locally in some peripheral part of the body, and spreads through the lymphatics or blood towards the central organs; and therefore, with certain reservations, it must be treated early and boldly upon the lines laid down under heading 1.

Some practitioners say cancer is a "constitutional" disease, because they believe its "germs" lie dormant in blood, "constitution," or central part of the body, suddenly appearing, in a visible and tangible form, locally, and therefore to be generally treated according to the lines laid down under heading 2.

Thus stated, the issue is plain enough, cancer is either local or "constitutional," and must be treated upon one of two opposite lines; and, of course, the known *effects* or *results* which have been obtained by various methods of treatment must be considered as relevant to the point in issue, because they may be considered as tests, in some measure, for or against the local or constitutional theory.

But fortunately or unfortunately, as the case may be, in medicine we may think what we like, and usually express our professional opinions with impunity; and some of us contend that cancer is *partly* a constitutional disease, and *partly* a local one. If Sir James Paget, who belongs to the third party, would *define* what he means by the terms "cancer," "local," "constitutional," "heredity," and precisely state how much of cancer is local and how much constitutional, the difficulty which arises might be overcome; but the limits of practical discussion having been transgressed, others step in and say (though not quite in so many words), "I am Dr. A., and I think cancer *almost* a local disease, *but* dependent," etc., and so on with all kinds of qualifications; the debate proceeds, and the apple of discontent was thrown down at the Pathological Society in 1874, when the late Mr. Campbell de Morgan read a paper entitled, "Observations on Cancer: its Pathology and its Relations to the Organism, and to other Morbid Growths."

Now, inasmuch as this very valuable contribution and the discussion thereon lasted four evenings, and the speeches of the very eminent men who took part in the proceedings are recorded, and can be carefully studied to the advantage of any one who wishes to find a condensed representation of the much-divided opinion of the medical profession on cancer—a useful purpose has been fulfilled by the Pathological Society. But as most of the speakers, for lack of proper definition, understood in a more or less different sense from his neighbour the principal technical terms which were imported into the speeches, I could not,

as I read them, refrain from thinking of the time-honoured lines :—

“Persuade a man against his will,
He’s of the same opinion still.”

Nevertheless, from this debate upon cancer can be culled a good deal of information bearing upon the local and constitutional theories. Mr. de Morgan, however, instead of putting this issue plainly before the meeting, wrote as follows :—

“The views which have been entertained as to the origin of cancer are various. We may, I think, embrace them under the following heads :—

“1. That a cancer tumour is the expression of a specific blood-condition ; standing in the relation to this blood-condition of a secretion to its gland.

“2. That a morbid material is present in the blood, which, coming into relation with an appropriate tissue, enters into combination with and causes the growth of the tumour.

“3. That the disease has its origin in the constitution at large, the tumour being only the local manifestation.

“4. That the disease is in its origin purely local.

“5. That, though local in development, there are general or constitutional conditions favouring its occurrence.”

This author also proceeds to say—

“I have mentioned hereditariness as one of the grounds for regarding cancer as not a mere local disease. I believe cancer is more frequently inherited than is generally admitted. We find the proofs of inheritance quite often enough to allow us to reckon this as one of its factors. In a large number of cases, moreover, in which no proof can be found of the existence of the disease in a progenitor, we can trace it in collaterals ; and it seems to me reasonable to conclude that in such instances, though the common parent may not have lived long enough to develop the disease, it was present potentially. Now, it is contrary to reason to conclude that the constitutional disposition, whatever that may be, is often present without the disease becoming developed. This must be the case where a

disease or peculiarity has skipped one or more generations. The peculiarity of the grandfather may re-appear in the grandson, though the father may not show it; yet the father must have something in him which he can transmit, though it never be seen in himself. . . .

"Before giving my reasons for attributing a local origin to cancer, it may be well to state the difficulties which lie in the way of my reception of the blood hypothesis. These are:—1. That all the facts in the history of a cancer can be explained without resorting to it. 2. That there are some facts which militate against it. 3. That, if we receive it, we must admit either that the same blood-poison aids in the formation of simple tumours, or that each tumour has its own especial poison. . . .

"There is nothing which seems to contra-indicate the presence of a blood-poison in cancer more than the well-known fact, that the disease, after operation, rarely returns in any of the ordinary seats of election. Scirrhus of the breast, for example, while it returns constantly in the skin, in the connective tissue, in the lymphatic glands, and in muscle, seldom returns in the opposite breast. This is as true of cases in which there has been a long immunity after operation as in those in which the disease returns rapidly. Were the disease seated in the blood, should we not probably find recurrence in those organs which we recognize as the ordinary seats of primary cancer? The same remark applies to medullary cancer of the testicle, to epithelium of the lip or tongue, and to disease of symmetrical parts generally. Surely, as more than half of all external cancers are seated in the breast, we should expect to find the second breast more frequently the seat of disease if the blood-condition were a determining cause. . . .

"As we shall see, the mere structural peculiarities will explain the differences in the degree of malignancy found in the various forms of cancerous and other tumours. In most cases the first notice we have is the appearance of a tumour, and in those of internal cancers or other allied

tumours the new growths may have attained a large size, and have spread and infected many other parts before any sign is shown of their existence. This is widely different from what we see in blood-diseases generally, in which some symptoms, inflammatory or other, precede or immediately follow the outbreak of local disorder. But what symptoms of cancer in its early stages can we find beyond those afforded by the mere existence of the tumour itself? Is it not rather the case that our suspicions are aroused by the very insidiousness of the local disease? There are some things, indeed, which do make us suspicious of a cancerous future; but they are purely local conditions, and may exist for years before any real malignant disease shows itself: when, for example, with cancerous antecedents we find an undeveloped testicle, or a breast which is unable to perform its functions, or when the skin is the seat of brown scales or moles, which as we advance in life become larger or perhaps irritable, or when the tongue is ichthyotic. So, too, we shall see without surprise a cancer grow where the lip has been long irritated by the pipe, or the tongue by a ragged tooth, or the scrotum by soot. In regard to this latter source of irritation a curious question arises. Chimney-sweeps' cancer used to be a very frequent disease. The disuse of climbing and the cleaner habits of the sweeps have greatly diminished the number of such cases. If, then, epithelioma be a blood-disease at all, the probability is, the number of cancerous persons remaining the same, that if the local seat be not found so often in the scrotum, it must be established elsewhere. Consequently we ought to find an increase in the frequency of cancer in other situations."

Mr. Jonathan Hutchinson's remarks, which were strongly in favour of the local origin of cancer, were substantially as follows:—

"Some fourteen or fifteen years ago I read a paper before the Hunterian Society on a similar subject, contending for the local origin of cancer, and I have ever since that time taught this doctrine to the students with whom

I have come in contact as earnestly as I could, because I think that in the belief in the local origin of cancer rests our only hope of dealing satisfactorily with it as surgeons. I also believe that our patients' interests are prejudiced most seriously by the sort of hesitancy in the belief of this doctrine by a large section of the profession. It must have happened, sir, to you and to all members of this society very frequently indeed, to see cases which, if treated on the theory of the local origin of cancer, at an early stage, might have been satisfactorily cured, but which, having been neglected, have been allowed to get possession of the body, to infect the blood, to infect the glands; and a disease which was curable in the early stage has become in the end totally incurable. . . . We still have a very considerable number which we can attack most satisfactorily if we believe that it begins as a local disease. Now, in contending that cancer is for all practical purposes a local disease, and that it is very important for surgeons to believe that it is such, I by no means wish to put aside the argument of those who say that it is also constitutional. I think Mr. de Morgan hit the point very exactly. So far as I understood his argument it was that cancer is a blood-disease. To use the expression, 'a blood-disease' is to mislead us. I was glad to hear the remark that fell from Mr. Simon to the effect that those who, in former years, perhaps somewhat erroneously, used this expression, had done so without any intention of excluding the solid elements of the body. No doubt it is, so far as it is constitutional, a disease of the solid tissues and not of the blood. I think the sooner we get rid of the expression 'blood-disease,' and use the term 'constitutional,' or 'disease of tissues,' the sooner we shall get to clear ideas on the subject. . . . To return, then, to Mr. Simon's question, whether we are to say that cancer is specific or not, I confess I do not attach so much importance to it as Mr. Simon appeared to do; because, after all, specificity is a relation. If I say a thing is specific, I mean that it is specific in relation to something else, and I have to define what each of these

things is from which I say it specifically differs. There is no doubt that cancer has peculiarities ; otherwise we should not need to have any name for it. There is no doubt, again, that almost all the morbid processes in the human body have a relationship, and what we have to define is rather the degree of relationship which they have to each other than to contend that this and that are so absolutely distinct that we are to say that this is one species and that is another species. We must define species before, as it seems to me, we shall gain any practical good by arguing whether cancer is a particular species or not. A separate species from what? Because it enters, I think, by degrees which it is very difficult to distinguish, into relationship with several other diseases which have been already alluded to this evening.

“ Illustrating its relationship, I would mention one which I think Mr. de Morgan has not alluded to—that is, the occasional transmutation in hereditary transmission. And this is a line of argument which I think may be applied in elucidation of many other diseases besides cancer. I think we might prove conclusively the essential relationship of different diseases, or diseases which have different names, by observing whether in hereditary transmission you get them transmitted. Say you get rheumatic gout transmitted into gout, or in the transmission of gout you get rheumatic gout as the product, then I hold that these two things stand in very close relationship to each other. . . . Then I wish to ask, as a matter of purely clinical fact, whether we do not sometimes observe in the hereditary transmission of a cancerous tendency transmutation, and whether we do not in that fact of transmutation get a proof of relationship. I allude especially to the distinction between innocent tumours and malignant tumours. I rather put the question to those who have more experience on that point than myself—whether it is not tolerably common to notice this. I believe the most definite instance of it is in respect to common warts. It has chanced that I have had some remarkable instances myself. I believe

that patients who are liable to common warts in unusual numbers will generally be found to have relations who have suffered from cancer. I believe this is an observation which came from that home of observation in reference to cancer—the Middlesex Hospital. Mr. de Morgan will correct me if I am wrong. I think it has been noticed there—and I can confirm it—that in several remarkable cases in which patients were covered from head to foot with warts, there were near blood-relations who had been suffering from cancer. And there has certainly been observed in hereditary transmission the same proof of relationship between the various forms of innocent growths and those strictly malignant. Then, as regards hereditary transmission, there is another interesting series of facts which should be carefully collected, as to what becomes of the children of parents who were cancerous at the period of birth or conception. I think we might easily collect a considerable number of instances of that kind, and I feel sure that we might get some interesting facts from them. It has happened to me to investigate these facts, in several cases in which very young children became the subject of cancer of the testis. I recollect especially one young lad, remarkably healthy and well grown who, at the age of eighteen months, became the subject of cancer of the testis. In his case there was a most definite history of cancer in near relatives. In several other instances I have seen the same thing. Then I think it should be observed also that the kind of cancer is often changed, that the mother who has suffered from cancer of the breast has a child who perhaps suffers from one of the various forms of cancerous action which attack different tissues of the eye. In passing, let me remark that I suppose we have come pretty much to the conclusion that the differences in cancers and malignant tumours depend on the tissue which the cancerous action commences in. The cancerous action, if we may be permitted to use such a term, is pretty much one and the same, and the differences depend upon the cell-tissue in which that

action begins. I say I think we very often see a transmutation in hereditary transmission. That which was scirrhus in the mother becomes, perhaps, soft cancer in the child. . . .

"I cannot help again thanking Mr. de Morgan for his very able paper, and for directing the attention of the profession to a most important point. I headed a short article that I wrote ten years ago, in the *London Hospital Reports*, 'The Successful Cultivation of Cancer,' and I recollect giving precise directions to those who wished to let their cases pass into cancer, how they should do it: how they should neglect a little ulcer, and let the patient go on, saying that he had nothing but a little wart on the lip; how they should let him go on smoking, and so cultivate cancer; or tell a man with a little nodule on his eyelid to put a little cream on, and that it was of no consequence, and that he might pick it from time to time, so that, trusting to the local origin of cancer, he might breed for himself some of the most malignant forms of the disease. My reason for adopting that title and using the style I did was my anxiety to direct the attention of students of the profession to the practical importance of acknowledging the local origin of a great number of forms of cancer, and the importance of very early treatment, if we wished to secure our patients against becoming constitutionally affected."

Afterwards Sir James Paget followed, who, in the course of an exceedingly lengthy speech, considered "that we must hold both a local and a constitutional element as a necessary condition in every or nearly every case of cancer that comes under our observation;" and he endeavoured to support his contention by excluding rodent ulcer from the category of cancer, by adducing reasons to support his view that cancer is hereditary, and by alleging that cancerous growths—notably those of the breast—recur in 499 cases out of 500 after complete excision, and by other more than doubtful assertions. Now, with all due deference to Sir James Paget's wide experience, I venture to think that he has gravely exaggerated the facts

when he says that cancer recurs 499 times out of 500, though, of course, that may have been so with reference to patients which have fallen under his own care or observation, in which case the results have been deplorable.

Whilst admitting freely that cancerous disease returns in a considerable number of patients after operation, I would ask Sir James Paget what he means by "complete excision"? If he believes that in the bulk of cases operated upon (even in the Metropolitan hospitals), that the cancerous growths have been *completely removed*, I am afraid he is mistaken.

Sir James's remarks were made in 1874, and although in the present year (1889) a very considerable advance has been made throughout the profession as regards improvements in operative surgery, and the almost universal adoption of the antiseptic technique—by which means the general mortality consequent upon capital operations has been enormously reduced, besides a more enlightened view on the part of the public as to the necessity of undergoing operations when recommended by competent authority,—yet I would undertake to say that of all the operations performed in the United Kingdom during the past year, which professedly had for their object the complete extirpation of cancerous disease, in more than half such cases particles of the growth were left behind. Under these circumstances I am never surprised to hear that patients operated upon successfully (!) for cancer have, within a few months, become the subjects of recurrence either in the scars or adjoining lymphatic glands.

Unfortunately there are different meanings which may be applied to the term "heredity," and Sir James Paget has ingenuously adopted one under whose mantle cancer can be considered hereditary; and then, by a little verbal alteration, the term "hereditary" merges into the term "constitutional," and the constitutional theory is proved!

Sir James says cancer is hereditary, because he "can without difficulty count, as actual facts, not less than one

in three of all patients with cancer in *whose families* * the occurrence of cancer is well known." If this be a definition of heredity, I am afraid we must count almost every disease as such.

"But this number does not nearly represent what we may very safely *assume* * to be the predominance of inheritance of cancer. A large number of persons die of internal cancer, and convey it to their offspring, though it is never known that themselves have been the subject of cancer, or at least never recorded."

I am prepared to admit that a good many people who have died of internal cancer are reported under the head of other diseases ; but then it is equally true that an equal number who die of diseases other than cancer, have their deaths erroneously ascribed to that disease.

"About half of them passed from the progenitor to the offspring as cancers, and as affecting the same organ, but this is a half which affects almost entirely the uterus and the breast, respecting the tendencies of which towards cancer I would speak hereafter ; but on the other half, which is the more characteristic in this respect, there is no rule at all. The cancer of the breast in the parent is marked as cancer of the lip in the child ; the cancer of the cheek in the parent becomes cancer of the bone in the child. . . .

"When a local disease is inherited it passes from progenitor to offspring in the same tissue, if not in the same place. A malformed finger may pass from parent to offspring, but a malformed finger does not generate a malformed heart or a malformed brain."

All will agree that a hereditary disease or condition is one which has been *transmitted* to the offspring from an ancestor ; but it requires very careful watching to enable us to discriminate between the *transmission* of a particular condition or its *coincidence* in parent and offspring ; and the matter is further complicated when we consider that some conditions may appear in the offspring *either* by

* Italics mine.

hereditary transmission, *or* by introduction into the system from without.

Let me illustrate what I mean by examples : a supernumerary finger is a hereditary condition, because its appearance cannot be explained upon any other hypothesis than by transmission ; the child is born with the supernumerary finger, which therefore must have been inherited. It is also purely local. Syphilis may be (1) *either* transmitted by inheritance, *or* (2) introduced into the system from without *de novo*.

But, as syphilis may originate *de novo* in the offspring, it may also originate by coincidence in both parent and offspring, in each case by introduction from without, and by coincidence the disease may occur in the child at a date prior to its occurrence in the progenitor.

With regard to syphilis we know very well how to decide the source of infection in cases which come before us ; but if we consider *how* we do so, some light may be thrown upon the question of the hereditary transmission of cancer by striking a parallel.

When syphilis is transmitted the congenital form is of a type peculiar to the ancestral form, and presents fixed and definite characteristics.

Assuming cancer to be hereditary, it ought therefore, by its transmission, either to acquire a certain definite type as in syphilis, or else *invariably* to reappear as a facsimile of the parent disease ; but Sir James Paget admits that it is only in about half the cases of what he considers instances of hereditary transmission that the same variety of cancer appears in a corresponding site in the offspring, and those cases happen to be principally of the breast and uterus,—Sir James omitting to qualify his arguments by drawing attention to the large numerical preponderance of cancer as occurring in these organs, and that therefore the appearance in parent and offspring can be explained upon the ground of coincidence better than on that of transmission.

I say cancer is not hereditary, first because, when it occurs

in families, such occurrence is only in one-third, one-tenth, or fewer instances, according to different authorities ; secondly, that *coincidence* in the case of a common disease, such as cancer, is sufficient to explain such occurrences ; and thirdly, that the supposed *transmission* of cancer, directly from parent to offspring, of a particular variety supposed to be transmitted to a particular site, has been improperly based upon a consideration of the commonest varieties of this common disease. As to the possibility of inheriting a *predisposition* towards the development of cancer, we are now entering a very nebulous atmosphere. Perhaps such a thing exists, perhaps not : speculation on both sides can be carried to great lengths. But we must not forget—since a suitable soil is necessary for the plant-like growth of cancer, and since some soils (individuals) are more congenial to its growth than others—that the favourable nature of the soil, or the reverse, may be transmitted by inheritance. All diseases are governed by pathological laws, some of which we can define and of others we are ignorant. Again, pathological laws are frequently correlated with physiological laws.

There is a pathological law by which epithelial cells may proliferate and invade contiguous structures, giving rise to the disease we call cancer.

There is a physiological law by which certain cells of epiblastic origin which form the germ-epithelium of the ovary actually *invade* the substance of that organ, which consists of mesoblastic tissue ; but the invasion is not progressive, the epithelial cells again rising to the surface and becoming the future ova. Still these two conditions, one physiological, the other pathological, are identical, so far as our present means of investigation enable us to judge, up to a certain point.

Sir William Gull and the late Dr. Moxon, among others, held views opposed to Sir James Paget on the nature of cancer, and as the reasons for their views appear to me to be more clearly expressed than those of many other speakers who took part in the debate at the Pathological

Society, I will quote their speeches in full, as they appeared in the *Lancet*.

"SIR WILLIAM GULL: I only wish, sir, that I had Sir James Paget's power of exposition; because, if I had, I think I should be able largely to demolish the charming structure which he has set before us of the constitutional origin of cancer. If you consider for a moment, and analyze the word 'constitution,' you will find that it has two very different meanings—a meaning with which we all agree, and a meaning with which we disagree. I take it that when Sir James Paget contends for the constitutional origin of syphilis from its hereditary tendency, he must refer to some condition of the ovum or spermatic fluid, or the two together, which whether conceivable or inconceivable exists. If we carry our minds to the very beginning of the impregnated ovum, and say that the mother or the father is to convey to this ovum a cancerous tendency, that must lie outside the blood anyhow, for there is no blood then and there; therefore the constitutional question must have relation to the constituents of the ovum at that time. Now, if we consider how this ovum develops, how (to use the technical expression, which really has no sort of meaning) it 'differentiates' into the various organs of the body—that is, that they form somehow or other—then, I take it, we must at last trace this constitutional condition to a local seat. The ovum has differentiated into the various textures of the body, and has been exhausted, if I may so say, in the formation of the organs. I think we are bound to admit that where the parents on one side or on the other have had cancer, it is apt to appear in the offspring; yet we are bound by the laws of all scientific inquiry to believe in localization somewhere. As the lawyers say, *latet dolus in generalibus*. Here, I think, is the mistake. We have got hold of a general expression in the word 'constitution,' which was true enough in the ovum, but ceases to be true in the adult, because there we can realize the conditions of localization, and there we

find that the ovum has differentiated into the various tissues of the body. And if there is one physical fact in the history of cancer more distinct than another, it is this—that certain of the organs are much more liable to it than others, whether it be the female breast or the os uteri. Admitting all that can be said about the constitutional origin, there are undoubtedly local seats of cancer. I challenge the constitutional theorists to tell me why it should not appear in any particular part of the intestinal tract, which it especially and particularly affects. There are certain points which we know it will affect—say the end of the œsophagus, the pyloric end of the stomach, the duodenum; then we get over twenty feet of intestine which it does not affect except secondarily, though it is equally vascular. There are very few primary cancerous ulcers of the jejunum; they now and then occur, but so rarely, Sir James Paget puts them at one in five hundred, and perhaps they are rather more rare than that. . . . Then we come to the lower end of the ileum, then to the cæcum, then to the sigmoid flexure. Sir Benjamin Brodie said that when you had cancerous disease of the colon it was never higher than the sigmoid flexure. I suppose he meant escaping the cæcum. The great fact still remains that cancer does show a predisposition to appear in special parts of the body. Therefore, while I fully admit the constitutional predisposition, I can only admit it when I have to do with an undifferentiated ovum. So soon as the ovum is differentiated into tissue, then I say that what is called a constitutional condition becomes a local one. I cannot but think that if we could investigate the first beginning of cancerous change, and could take away the part, we should for the time rid our patient of the cancerous tendency in the particular part or place. My own belief is that when you talk of blood-disease you are lost in conjecture; and when you begin to explain blood-disease by reference to such a disease as gout, you are still more lost in conjecture. For there is no proof whatever, as far as I know, that gout is a blood-disease; nor, indeed, that

typhoid fever is a blood-disease. The blood may be a channel of disease, whereby certain poisons may affect the texture; but (as I used to say when I lectured on medicine) assuming, if it were possible, a man to be all blood, he would not have typhoid fever, and he would not have gout. It is the textures which lie outside his blood that are the seat of those conditions which we call gout and typhoid fever. The blood is a very indifferent fluid; it has elements which are not indifferent, viz. the red and white cells, but quasi-blood is a singularly indifferent fluid, it has to be differentiated into a certain condition of tissue before it can assume and present the morbid phenomena of disease. Therefore, although I am not in the least able to supply all the steps of the reasoning, or adduce all the facts by which perhaps my mind would be influenced, I cannot but think that the question of constitution requires reconsideration, and that even syphilis as a constitutional disease may very much be reconsidered. Take the case of hydrophobia. I once saw a man (and the practice of medicine supplies us with many such instances) who was bitten by a dog, and it was thirteen years before he died of hydrophobia. Where did that poison lie? Not in his constitution, I take it—if you mean by constitution floating about anywhere and everywhere. I think it lay in the tissue that was bitten—that the poison lay there latent, producing but little effect till a certain time when some changes (this is hypothetical) came over the tissue and infected the man, and he died of the disease within thirty-six hours. I think it must have been lying in his tissues. Therefore I think, in dealing with malignant disease, as I have dealt with it practically, you must regard it as a local condition of the tissue then and there, however much the local development of it may have had to do with some inherited predisposition, which you may properly term constitutional.

“I do not, therefore, quite partake of those feelings of hope expressed by Sir James Paget, that we may succeed in finding some remedy which shall just have the same

effect on cancer as that which has been produced on syphilis. It may be so, or it may not. With regard to the change that takes place, we have been told that it is a cell-change. Well, perhaps it is not a cell-change; perhaps it is the fluid outside the cells. Who knows? A cell is an organism of enormous extent; it is only our eyes being so feeble that makes us look upon it as a small indifferent thing. It may be infinitely more delicate than those great things which we see under the microscope, even though it be the fiftieth of an inch in diameter. I was therefore a little surprised at my friend Sir James Paget, when he referred to osteoid and scirrhus tumours, thinking that their hardness might be a kind of obstacle to their infecting the body so readily. Oh! those fluids, those queer things, those endosmoses and exosmoses, may act in places and parts that we know nothing about. Besides which, it is not unimportant, as Mr. Arnott has said, that it depends very much upon the place in which the tumours are situated. There are so many accidental positions. It is notorious that affections of the bone, where the veins are so large and where there is a peculiar condition of the vein, are very prone to spread. We know that abscess in bone is constantly attended by secondary abscesses over the body, so that hardness alone would not do. We must regard the accidental conditions of the situation of the part. If a man comes to us with a great lump in his side, we are obliged to tell him that we believe it is malignant disease. Of course he can only come when he gets it of sufficient magnitude for it to be palpable or for some suffering. We can make no diagnosis before, and, if we could, we could not touch it. Therefore the practical treatment of cancer by local operation must only refer to parts outside. In the Clinical Society I once said that, if I were to become the victim of cancer, I hoped it would be in my retina; and I have the same feeling still (though the case I spoke of was, as my friend Dr. Murchison has shown, one of spindle-celled sarcoma), because I should soon observe the defective vision, the eye would be quickly

extracted, and I think I should have a long immunity from the disease. Certainly clinical medicine shows that cases of operation on the eye have a longer immunity from secondary cancer than cases of operation elsewhere. I think that is a highly suggestive fact."

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"DR. MOXON: The course of the debate hitherto, sir, has been rather surprising to me because of the sweet and pleasant general agreement that one has found pervading the atmosphere. I could only compare it, not certainly to opponents bringing forward in any form opposite views, but rather to rival painters representing the same scene, one pointing to one part and saying, 'This is preferable,' and another indicating another corner and saying, 'Nay, direct your eyes here.' But it is not with that impression I approached the subject of cancer. To my mind there was something to discuss, especially as to the origin of cancer. It is true, when Mr. de Morgan brought forward his very eloquent paper, he did embrace views in a sort of Pantheon, if I may so speak, almost disregarding their natural oppositions and incompatibilities. I was scarcely prepared to find all the subsequent speakers equally bringing forward the opposite sides of the question, as though they could lie down together. It may be crudeness and incapacity on my part to perceive the ways in which opinions may shade into each other and become identical, however opposed, as red and blue are naturally; but to me it has always appeared that the local and the general view—localism and generalism—are essentially opposite, that they are not compatible, and cannot be held by the same person at the same time. As I understand the question, it may be put this way—Does the first cancer that appears in the patient's body generate the cancers which appear afterwards? does it precede them in every way? or, on the other hand, is there a general state of the whole system which is ready to put out cancers anywhere, and puts out the first in the same way as it puts out the second or third? It seems to me that no one can hold

those two views at the same time; one of them excludes the other. But then it might be that that opposition, although sharply definable, is nevertheless unimportant. Surely, sir, we cannot conceive that. It must be that that is the division under which all practical surgical differences must range themselves. If a cancer arises as a little patch in a person previously healthy, and then expands itself throughout the frame, so that, poisoned by that one spot, the life of the patient soon becomes hopeless through the effects of that spot upon remote parts, then surely the surgeon will have recourse to the knife, and as quickly as possible remove the first spot that appears. And if, as Sir James Paget says, after removing 500, he finds 499 recur, then he says, 'Let me remove it earlier.' He would even, as the Israelites of old, have published abroad the first sign of such a scourge, that people might from the very first moment of its appearance come forward and let the surgeon perform. On that view I can quite understand Mr. Jonathan Hutchinson's strong speech. He seems to me to be the only pure localist who has as yet given us his opinions; and in his readiness to come forward he spoke like a good surgeon. If I remember rightly, he argued in favour of his view because it would lead us to operate, as though pathological faith without works is dead. Taking the other view, and supposing that the general system is first charged with cancer, and that all the cancers that appear are but outputs of this general cancerous store, why should we operate at all? Should we not rather leave what exists alone, lest by removing it we should bring about a worse evil? That surely is the great question that we are here to discuss; and the distinction between those views is absolute, and it cannot be bridged over. You must either take one side or other of the question, or you must drop it altogether. But unfortunately there is another road, and you are not obliged to drop it altogether. You may adopt some doubtful, ambiguous word, and cover with that word the essential difference that there is between those two views;

and a word has been brought in which has largely played that part in the discussion—that is the word ‘constitutional.’ I heard in all the speeches the word constitutional used as if it were the opposite to local. Now, sir, I must protest with all my power against such a use of the word. It has been gravely argued here that if, when any person is subjected to a common kind of injury, his tissues react in an unusual way he must have a constitutional peculiarity. That argument is either a truism or a fallacy. If by it you mean that a part subjected to an ordinary injury, if it acts peculiarly, must be peculiar, that is a truism. But if you therefore conclude that the whole frame would, under similar circumstances, act in the same way, then your conclusion is a fallacy. There is no opposition whatever between constitutional and local. What, for instance can be more constitutional than one’s great toe, or one’s liver? What is constitution but (as I understood Sir William Gull to put it) the putting out in different localities things which were enfolded in the germ? So that really to become local is the very essence of being constitutional. I would even say that nothing is constitutional that is not local. But without dwelling upon that, let me say that I am only objecting to the use of the term constitutional, which, I conceive, must haze into limbo the whole question while we continue to use it in that ambiguous sense. But there is a good question before us, and that is this. Drop the word constitutional altogether; recognize that cancer is a disease which ultimately kills by becoming general, and which at first is local; and then the question is, Does the general condition precede and cause the local, or does the local condition precede and cause the general? Both of these views cannot be true; and the word constitutional, in its vague double meaning, had better be dropped out of the question altogether. That, I say, is a good question, because it is a realizable and soluble question; and although we may not be able to solve it now, yet I hope that the good and proper work of this society—the bringing

forward of items of fact which shall lead up to some conclusions—may tend in that direction, so that in time this soluble question may be solved. At present the mode in which the question is treated I will describe in this way. Some hold to the local view and others to the general, never allowing it to appear (through a politeness or gentleness to each other's views) that there is any actual divergence between them. One takes up his position for the local view, another for the general view, and each tries to press the origination of cancer from his own point—the local or the general. So they resort to a competition who shall show the earliest appearance—whether the localist shall show the earliest appearance in the spot, or whether the generalist shall show that cancer appears earliest in the whole frame. Now, I believe that cancer appears earliest in a certain locality—that cancer becomes general and fatal through the influence of a part first cancerous. In other words, I am strictly a localist. I will, therefore, very shortly place before the society those arguments or those facts and bearings which I think are capable of supporting that view. No one can be cognizant of the interesting facts that have been from time to time brought forward in this room without following one easily through these propositions: first, that cancer spreads in the part (we are not likely to forget that); secondly, that cancer runs along the lymphatics to the glands; thirdly, that cancer makes its way along the blood-vessels to organs remote through the medium of the circulation. Those are facts which are certain; there is no hypothesis about them. Let that thought govern your ideas, and then what room is there for any notion that a general state of cancer precedes a process of the kind? If it is at all probable that cancers come in spots, run along the lymphatics, and go away to remote parts, where is the room for general carcinosis? I will put it in this way. If any one conceiving himself to be a generalist allows me this, that, whatever is pervading the general system, something must have happened in a part, and, through that something

which has so happened in a part, the general system is afterwards affected,—that is, the affected part and the subsequent results on the general system that cause and constitute carcinosis—then, I say, he is a localist, and, however great he might be, and however eloquent, I should claim him as such. I said that cancer extends in the part, runs along the lymphatics, and goes to remote organs in the circulation. But there is another kind of evidence, for which, if I had Sir James Paget's eloquence, I should certainly claim a very special kind and form of recognition from the members of the society. I should like them to approach it in a peculiarly receptive attitude of mind, because it wants some delicacy to feel all its exquisite bearings. Let me give this as an instance. A man gets a cancer in his rectum; you examine that cancer, and you find it is a big one. He has got also cancers in his liver; you examine those cancers, and you find they are little ones. The great cancer in the rectum is obviously prior in time to the minute development in the liver; the one certainly precedes the other. But when you come to examine the cancers, what do you find? You find that the rectum cancer is rectum tissue. I am sure I may appeal to the experience of many pathologists here, when I say that we do find cases of cancer in the colon and rectum whose structure is really that of the Lieberkühn follicles of the mucous membrane of the gut. Well, that would not have been wonderful if, when we went to the liver, we found that the cancer exploding in the liver had taken the shape of the liver tissue, just as when exploding in the rectum it had taken the shape of rectum tissue. The generalist, if he thinks that there is any general state of cancer which comes out locally according to the nature of the part, must expect to find rectum cancer in the rectum, and liver cancer in the liver. I do not hesitate to say so, I have seen Lieberkühn follicles of exquisite construction in the liver itself. Lest any one should doubt me, and think that I am drawing on my own imagination, I will bring forward a very common instance. Ten months

ago there was a man in Guy's Hospital under my care with a monster tumour in the arm, near the shoulder. The poor fellow went to the bad and died. When we examined him we found in his lungs other small tumours. The bony tumour of his arm proved, on microscopic examination, to be osteoid chondroma, according to Virchow's nomenclature; the lumps in the lungs were bony too. There was a vast mass in the arm, and there were little bits in the lung. Obviously the arm-disease had preceded the lung-disease. And what had grown in the lung? Why, bone; and it was in bone that the disease commenced. If it were a general cancer pouring out cancer in the two parts, developing according to the part, we should have had lung in the lung and bone in the bone, instead of bone in both cases. Looking at these facts, how can the conclusion be resisted that it was in bone the cancer arose, and that the cancer must be interpreted in this way—that it was the acquisition on the part of the bone of a power of instilling its own nature upon the lung? I should like to use Mr. Simon's words; they are words that I have used for a long while. He spoke of a sort of spermatic influence, and the term is a very good one. It is more like generation than anything else. The bone became spermatic to the lung, so that it sent off its elements and colonized the lung with bone; and the lung became bone through a kind of spermatic influence from bone. I am putting it very hardly. I say, then, that another very powerful argument in favour of the local origin is this, that the first cancer that appears has a likeness of the part in which it appears; and the secondary cancers arising from the generalization, have the likeness of that first cancer; and those who doubt that they come from the first cancer, must show us why they have that likeness.

“Then there is another point which ought to be specifically, boldly, and clearly stated. I have here a little drawing which I made in 1866, to show that in the process of cancerous change a transformation of the individual cells is traceable. I mean that when, as in that instance,

liver becomes cancerous, you can see a liver-cell turn into a cancer-cell. Of course, you cannot watch the individual liver-cell. If we had the universal periscope, we might, no doubt, see what actually took place; but we are obliged instead to see a liver-cell as one perfect thing, and a cancer-cell as another perfect thing, and then, to our mind's eye, to perceive the gradations between the liver-cell and the cancer-cell—gradations so exquisite that you cannot see where any break in nature occurs. That is surely a strong argument. If you can find, as in that case, that the process extends from breast-cancer to the liver, and if you watch the change and see the cells changed as they stand, that is a strong argument in favour of the whole process being due to the influence of the original cancer. But what have we as opposed to this, which I think a very sufficient argument in proof of the local origin of cancer? For I would say, that if those facts can be proved in reference to all cancer, then there is no room whatever for any suggestion of general carcinosis; it takes the wind out of its sails; it is not wanted. When you prove that from the first cancer all that we call cancerous change and cancerous generalization does arise, there is no room for any other hypothesis; you have occupied the field, and whoever comes with another hypothesis knocking at the door is too late. But, unfortunately, it is not all so clear as that; because, through the necessary imperfections of many post-mortems, cases do continually crop up in which all this cannot be made out, and thus there exists a sort of limbo of imperfectly observed cases upon which the man who believes in general carcinosis may seize. He may then bring forward his arguments in support of that view, and try to invade the whole field from that doubtful corner. And what are his arguments? I do not like to touch upon the arguments which Sir James Paget so beautifully brought forward. I was delighted, as we all were, with his speech; and I was so impressed with it for a time, that it seemed to me that cancer must come, not only generally, but even out

of the blood. I came into the society with no such belief, and it was nearly a fortnight before I could ever venture to take up the paper and look at Sir James Paget's speech to see what it really was. It then seemed to me (it was a poetic moment, and I was by the seaside at the time) that it was like a beautiful cloud of a dying faith, and that when one held the cold hand of reason against it, it condensed into a very few drops. This is shortly all that Sir James Paget advanced. He said that cancer is hereditary, and then, in the next breath, he said, 'So, also, are enchondromata, fatty tumours.' Well, we dispose of that at once by saying this—inasmuch as we are in search of a distinction between the simple tumours and the cancerous, what is the use of bringing in any feature which is common to both? How can what is common to both, explain the peculiarities of one? But then Sir James Paget says it is not only hereditary, but it is hereditary in a very peculiar way; and the peculiar way was this, if I remember rightly, that the cancer does not only strike upon certain parts, but it spreads itself over a variety of organs in the organizations it successively attacks in the family. Now, I am obliged to shuffle a little in meeting that. First, let me say, I was not in the least prepared to find that Sir James Paget had come to the conclusion that of every three persons who have suffered from cancer one at least has been hereditarily tainted, because that very morning I had been in conversation with my distinguished colleague, Mr. Birkett, on that very point, and he left me with this impression (which I trust he will take the opportunity of contradicting, if I have misunderstood him), that with all his care and pains—and we all know what his care and pains are—after searching through the family history of numerous persons who had come to him with cancer, he was not able to say, with any confidence, that cancer was specially hereditary at all. This is very astounding, but not more so than that Mr. Erichsen and Mr. Hutchinson should say they never saw pyæmia in private practice; and that Sir James Paget and Mr.

Hewett should declare they had seen it repeatedly, as frequently as in hospitals. This leads us to the conclusion that individual experience is not to be accepted as establishing a universal proposition. I regret, if I should seem to say anything in disparagement of the importance and accuracy of Sir James Paget's observations—nothing could be further from my thoughts; it is only in justice to my position that I feel bound to say what I do. But I have another thing to mention. It will be in the recollection of all members of the society, that, on the first evening of the discussion, Mr. Hutchinson drew attention to the very interesting fact (I think he also claimed Mr. de Morgan as having observed it likewise) that warts appear in cancerous families. Well, if warts appear—and that is a new thing just observed, and we are still in a developing world—may not fatty tumours soon appear, and may it not likewise be shown that sarcomas, and I know not what, are also found in cancerous families? If so, then our proposition will take this form—that equally with non-malignant and malignant tumours, you have this peculiar development in all parts. Then I shall lay down my syllogism again, and say, what applies equally to the non-malignant and to the malignant can in no degree explain the peculiarities of the malignant. The last point that Sir James Paget brought forward was that cancer must be general because it so constantly recurs. Well, but the localists pride themselves on the perfection with which they not only explain the recurrence, but actually trace the way in which it does recur, and show how you can make it recur, by leaving a little bit in when you operate, by leaving a patch of gland, by operating so late that the lungs are affected, and so forth. Surely that cannot be an argument in favour of the general origin of cancer—I mean of its arising from general conditions—when the localists profess to be able to explain the whole of it. Sir James Paget said that cancer must be general, because a chance wound or injury produces cancer in parts, in the same way or by an

analogous process with that process in which we observe that tubercles, syphilitic, or other admittedly constitutional conditions likewise develop from unusual injuries. That is a long sentence, but what I mean is this—that there is such a parallelism between tubercle and cancer that if you hold tubercle to be constitutional, you must also hold cancer to be so. Now, sir, it is not three years since Mr. Simon, sitting in that chair, showed us proofs that tubercle arises locally. And have we not had specimen after specimen brought forward to prove that people get tubercles through old local patches of dirty cheesy remainders, bronchial abscesses, duodenal ulcers, and so on? All kinds of odd evidence we have had heaped up to show that tubercle comes as an accidental development from a really local disorder. I should be much more inclined to go with Mr. Simon's strictly philosophical view that he gave us in his most able and philosophical speech, when he classed cancer with tubercle. For myself, I would throw cancer and syphilis and tubercle together as disorders which become generalized from a local origin, and very rapidly become so generalized.

"I am very sorry to have occupied the time of the society so disgracefully long, but before closing my speech I should like to point out how wide are the bearings of the question we are discussing. Especially it strikes me that there is a most interesting and important analogy to fevers—the great epidemic fevers. Is any member of the Epidemiological Society present? One hears so little of the epidemiology of the epidemiologists, that we would be delighted if they would come forward and explain to us whether, when in the body corporate fever bursts out, it arises in any local unit of the community as a distinct disorder, and spreads from him contagiously, or whether it infects the body corporate as a body, and bursts out in Jones and Thompson and their successors as out of the general into the particular. Surely there must be a close analogy between the two questions. How vague an analogy, one can, of course, easily see. I can in my own

mind feel how long it must be before we can adopt a general formula that will solve these questions ; but I feel satisfied that when the solution of the question comes, some general law governing the whole must be discovered."

I think the following general propositions may be considered established :—

1. Cancer first affects the body locally ; spreads locally, and invades the body along definite tracks (lymphatic and vascular systems).
2. Cancer grows plant-like in a congenial soil.
3. Some soils are more congenial than others to the development of cancer (predisposition), and tissues peculiarly favourable to the propagation of cancer, or the reverse, may be acquired by inheritance.
4. The disease can be completely eradicated by surgical operations ; and when they fail, the inference is that they had not been undertaken sufficiently early or with sufficient boldness.

CHAPTER IV.

CANCER OF THE BREAST AND AXILLA.

ALMOST every variety of cancer is met with in the region of the breast, ordinarily becoming disseminated *viâ* the lymphatic vessels and glands located in the armpit. But cancer may also occur primarily in the axilla.

Cancer may originate either in the substance of the mammary gland itself, or in the nipple and areola.

CANCER OF THE NIPPLE.

Cancer may arise in the nipple in one of two forms : (1) as epithelioma ; or (2) as Paget's disease, otherwise called eczema of the nipple.

Epithelioma commencing in the nipple is a rare disease ; its physical signs and course are identical with the type already described.

Eczema of the nipple, or Paget's disease, the term being employed in a special sense, must be considered as the initial stage of cancer. It was first recognized and carefully described by Sir James Paget, whose account of it appears in St. Bartholomew's Hospital Reports for 1874 (p. 87 sqq.); and it is worthy of note that whilst Sir James appeared before the Pathological Society, as already shown, in support of the constitutional theory, yet, in his able contribution to the reports of his own hospital in the same year, he brings forward, in the following manner, evidence which strongly supports the localists' contention :—

"I believe it has not yet been published that certain

chronic affections of the skin of the nipple and areola are often succeeded by the formation of scirrhus cancer in the mammary gland. I have seen about fifteen cases in which this has happened, and the events were in all of them so similar that one description may suffice.

"The patients were all women, various in age from forty to sixty or more years, having in common nothing remarkable but their disease. In all of them the disease began as an eruption on the nipple and areola. In the majority it had the appearance of a florid, intensely red, raw surface, very finely granular, as if nearly the whole thickness of the epidermis were removed; like the surface of very acute diffuse eczema, or like that of an acute balanitis. From such a surface, on the whole or greater part of the nipple and areola, there was always copious, clear, yellowish, viscid exudation. The sensations were commonly tingling, itching, and burning, but the malady was never attended by disturbance of the general health. I have not seen this form of eruption extend beyond the areola, and only once have seen it pass into a deeper ulceration of the skin after the manner of a rodent ulcer. In some of these cases the eruption has presented the characters of an ordinary chronic eczema, with minute vesications, succeeded by soft, moist, yellowish scabs or scales, and constant viscid exudation. In some it has been like psoriasis, dry, with a few white scales slowly desquamating; and in both these forms, especially in the psoriasis, I have seen the eruption spreading far beyond the areola in widening circles, or with scattered blotches of redness, covering nearly the whole breast.

"I am not aware that, in any of the cases which I have seen, the eruption was different from what may be described as long-persistent eczema, or psoriasis, or by some other name in treatises on diseases of the skin; and I believe that such cases sometimes occur on the breast, and after many months are cured or pass by, and are not followed by any other disease.

"But it has happened, in every case which I have been

able to watch, cancer of the mammary gland has followed within at the most two years, and usually within one year. The eruption has resisted all the treatment, both local and general, that has been used, and has continued even after the affected part of the skin has been involved in the cancerous disease.

"The formation of cancer has not in any case taken place first in the diseased part of the skin. It has always been in the substance of the mammary gland beneath, or not far from the diseased skin, and always with a clear interval of apparently healthy tissue.

"In the cancers themselves, I have seen nothing peculiar. They have been various in form; some acute, some chronic, the majority following an average course, and all tending to the same end; recurring, if removed, affecting lymphatic glands and distant parts, showing nothing which might not be written in the ordinary history of cancer of the breast."

And then, after drawing parallels between the disease which he has so graphically described and other lesions of the skin and mucous covering of the tongue (ichthyosis), and parts of the intestinal tracts, where, he admits, cancer arises locally from protracted causes of irritation, Sir James Paget writes with regard to the treatment of eczema of the nipple—

"Should not, then, the whole diseased portion of skin be destroyed or removed as soon as it appears incurable by milder means? I have had this done in two cases, *but I think too late.*" *

Mr. Erichsen† points out that there are two ways in which this condition may be explained. "The disease of the nipple may be primary, and, by extending down the ducts to the acini, may finally determine the development of true cancer in the gland; or it is possible that the primary disease may be in the acini, and that, as a consequence of it, a morbid secretion may exude and irritate

* Italics mine.

† *Science and Art of Surgery*, 1888, vol. ii. p. 771.

the muco-cutaneous surface with which it comes in contact." Mr. Erichsen also quotes a case in support of the latter explanation.

As to diagnosis, there can rarely be any difficulty in distinguishing malignant disease of the nipple and areola from any simple tumour, such as a *nævus*, or from a cyst, and syphilitic lesions must be excluded by the history of the case, or by the test action of antisyphilitic remedies.

M. Darier, in a recent communication to the *Société de Biologie*, ascribes Paget's disease to the presence of psorospermia or coccidia, which can readily be detected microscopically, and are found in the offshoots of epithelioma of the nipple. He asserts that they were figured by Butlin in 1876, but then regarded as evidence of endogenesis.

Modern students are well aware that cancer is believed by a few to be due to bacterial agency in some form or other. All I can say is that the experiments of Messrs. Ballance and Shattock did not confirm that view, and that the germs found by them in malignant growths were of a non-specific character.

There may be specific germs, still undetected, which cause cancer, or there may not. We know clinically that cancer is contagious, because it may be reproduced either naturally, accidentally, or artificially by grafting; but its contagious properties must be of a very low degree.

At any rate, the treatment of Paget's disease, or of epithelioma of the nipple, must be undertaken very boldly if the practitioner hopes to save the life of his patient. A bare excision of the diseased parts, judged by the naked eye, is useless, as evidenced by Sir James Paget's report of two cases where these operations were undertaken too late.

Let me say, with all the earnestness that I can: if a woman is the subject of malignant disease of the nipple or areola, the growth being of small dimensions—of the size of a shilling or florin, more or less—the sooner the entire breast is amputated so much the better for the patient.

Plenty of practitioners can be found to recommend for

such a case milder measures first. They will say the disease is so small they cannot be sure it is cancer ; that amputation is too heroic, and removal of the diseased tegumentary area quite as likely to prove successful as the more extensive operation. But these are false and paralyzing conclusions. If the simple excision of the affected skin be carried out, particles of the growth will probably remain beneath in the substance of the breast proper, the natural course of the cancer will merely be retarded a short time, and the case eventually swell the series of the four hundred and ninety-nine recurrences out of five hundred operations as narrated by Sir James Paget.

The sacrifice of an important and useful organ such as the eye, or a less important one such as the breast, should not be made except for a great gain.

Sir William Gull tells us that, if he were the subject of cancer, he would prefer that he should be attacked by the disease in the eyeball, because the globe could be enucleated whilst the disease was small. This is the attitude which should be adopted by any practitioner who wishes to benefit the public by operating for cancer. Now, if the excision of the eyeball for a cancerous growth about the size of a pea bears promise (as may be proved by the records of cases) of immunity from recurrence of cancer, it does so because, not merely the growth, but a considerable width of tissue beyond the affected area has been removed ; the anatomical limit prescribed by nature to the operator being the depth of the orbit. In the case of cancer of the nipple, a surgeon may remove with an infinitesimal amount of danger the entire breast, and, if he please, the pectoral muscles down to the ribs, and the axillary lymphatics as well. And as hopes of immunity from recurrence depend upon the freedom with which the tissues on the proximal side of the cancer can be removed, there is no part of the body (save the extremities) where hopes of permanent cure may so reasonably be indulged in as for cancer of the nipple, if only a sufficiently adequate operation be performed.

CANCER OF THE MAMMARY GLAND.

Almost every variety of cancer is met with in the mammary gland, the most common of all being scirrhus. The diagnosis of cancer of the breast in its earliest stage is always most difficult. An advanced case of cancer of the breast can ordinarily be recognized in a few moments, but quite the reverse obtains where the patient only complains of slight feelings of pain, of functional disturbance, of some slight retraction of the nipple, of some fulness, tension, or prominence, or small lump in the mammary gland.

The text-books on surgery offer very little help to students in laying down lines by which cancer of the breast may be recognized in its earliest stages; most writers assuming the existence of a well-marked case of cancer, and then pointing out the signs by which the particular variety must be distinguished from the others. Practically, the difficulty lies not in distinguishing the varieties of cancer in the breast from one another, but in distinguishing any particular variety of malignant growth from the benign formations which may simulate it.

Of the recognition of a typical example of scirrhus little need be said. A mass, of almost stony hardness, can be felt near the central part of the breast of a woman past middle age. The nipple will be retracted, and it, as well as the integument, will appear connected, as if by bands, to the growth beneath.

If the breast be ill-developed and pendulous the scirrhous mass will gravitate to its lower part, and by placing two fingers under the organ, the tumour can be recognized by *ballotement*. Its surface will be irregularly nodulated, but directly continuous with the proper glandular tissue. There will probably be no discharge from the nipple, or, if so, of a scanty character. The skin will be depressed over the growth, and there will be a slight enlargement of the superficial veins. If the disease have attained such dimensions that secondary growths in the lymphatic glands and

cord-like prominences of the vessels leading thereto be observed, the breast being fixed to the pectoral muscles, the neoplasm having invaded the skin, and there being small satellite growths around the parent growth present—if any or more of these phenomena exist, there need be no question raised as to the necessity for eliminating other conditions by differential or exclusive diagnosis. But when the scirrhus is of very small size, say that of a nut, or even half the size of a walnut and enveloped in the glandular tissue, the difficulty of forming an opinion, apart from exploration, becomes enormous: yet this is precisely the kind of case where excision of the breast would probably be the radical cure of the disease. If a small-sized scirrhus occur, as it occasionally does, near the periphery of the breast, its physical character will probably serve to distinguish it. If it arise in the centre of the breast, a substantial portion of the breast tissue lying between it and the surface, it cannot possibly be distinguished from a tense cyst except by exploratory puncture or incision.

Scirrhus of the breast commences in a most insidious manner in a large proportion of cases. A considerable area, or perhaps nearly the whole of the organ, becomes affected by minute particles of the growth, which, before they have become fused together, do not appear as a single isolable tumour, but give rise to a very tough consistence of the breast, which requires considerable care to discriminate from a simple non-malignant chronic induration of the organ.

If the breast be grasped between the fingers above and the thumb below, a similar sensation is conveyed to the touch, both in the simple chronic induration and in the early infiltration of malignant diseases, but it is often easy to distinguish between these two conditions by placing the palmar surface of the hand flat upon the breast; if the induration be of a simple character it disappears under this test, if malignant, the feeling of unnatural hardness remains. Doubt may often be cleared up by the application of iodide of lead or iodide of cadmium ointment,

spread upon lint and applied to the breast with strapping. If the swelling in the organ has been due to simple chronic induration it will resolve within a few days under this treatment, and the breast will present its ordinary healthy physical signs. On the other hand, should the infiltration be of a cancerous nature, the effect of the ointment and strapping will merely be to render the still normal parts of the breast flaccid, and the cancerous nodules will appear the more prominent. Cases still remain where doubt can only be cleared up by an exploratory puncture or incision, and the great importance of forming an accurate diagnosis at the earliest possible stage of the disease—that its recognition may be quickly followed by extirpation—renders it imperative for this means of diagnosis to be resorted to should the physical signs be obscure or present an ambiguous interpretation to the practitioner.

A small adenoid tumour in the breast is said to be distinguishable from cancer by its mobility; practically, however, the diagnosis cannot be made out until the time of operation. That does not, however, much signify; the only difference as to treatment being that, if a growth believed to be one of simple glandular tissue is found after its removal to be malignant instead, the surgeon must at once perform the major operation.

The multiple fibromata, or neuromata, so-called, which are generally located immediately beneath the skin, merely require a passing mention, and could scarcely be mistaken for cancer by any practised observer.

With regard to the cystic adenomata, the case is different, and the malignancy or otherwise of these growths cannot usually be ascertained without the aid of the microscope.

Very little can be said of the distinguishing characters of sarcomatous neoplasms which is not to be found in all the text-books; but to point out those features which distinguish these growths from the carcinomata is not of much practical value (save to students preparing for examina-

tion), because, whether the malignant growth be sarcoma or carcinoma, the same treatment must be adopted: but it occasionally requires careful watching to distinguish a sarcoma from an abscess of the breast; and should a mistaken diagnosis be made, the consequences of treatment based upon it would be in either event deplorable.

For malignant disease of the breast, the entire organ should be excised as quickly as possible. When the disease occurs during the course of pregnancy, the patient frequently desires the postponement of the operation till after child-birth. But this wish should especially be discountenanced, as the physiological changes in the organ during this particular period, with the attending afflux of blood, materially hastens the rate of the disease.

In considering the advisability of amputating the breast in the hope of radically curing cancer, such hope must always be estimated in direct ratio to the youth of the disease and the width of healthy tissue which can be removed beyond it. Amputation of the breast is one of the safest operations in surgery; the danger of the operation is but slightly augmented if the contents of the axilla are cleared out also; neither have I observed any material risk consequent upon the excision of large portions of the pectoral muscles which underlie the organ.

In performing the operation, the preliminary incisions should vary in accordance with the site of the growth. If the disease affect chiefly the central portion of the breast, the ordinary elliptical incisions, their long axes lying nearly horizontal are to be preferred. After these have been made, I have usually been able to remove the breast more expeditiously, and with less hæmorrhage, by seeking first the axillary and sternal margins of the organ, and then, by insinuating a couple of fingers around and beneath them, the breast can be grasped in the left hand and enucleated with a few touches of the scalpel.

The precise extent of the disease can now be ascertained, and any structures remaining in the wound, which were contiguous to the growth, must be removed in the freest

possible manner. If the breast was adherent to the fascia which clothes the pectoralis major, a considerable portion of the muscle should be removed with scissors, a mere removal of the fascia being inadequate ; and I am convinced the recurrence of the disease would often have been prevented had portions of these muscles been removed during operations. If the disease in the breast be of very small size, there may be no need to remove the lymphatic glands in the axilla. As a rule, these glands should be removed, either by enucleation with the fingers thrust into the axillary space, or aided by an incision carried upwards towards the axilla through the integument.

Of the readiness with which all bleeding-points can be secured, and as to the details for drainage and dressing, little need be mentioned, as these matters are familiar to every student. In operations in early stages, union of the skin by first intention can generally be obtained ; but whenever the disease is at all advanced, and the skin at all implicated, the latter should be removed with the greatest freedom. The wound will close quickly enough by granulating from the bottom, and very excellent results will be subsequently obtained by the aid of skin-grafting.

In the treatment of cancer of the breast, the destruction of the disease by caustics is recommended sometimes in preference to excision of the gland, and multitudes of caustics have from time to time been brought before the notice of the profession and the public. With the exception of a few special kinds of cases to be mentioned, the caustic treatment of cancer of the breast is widely inferior to excision with the knife. There are some cases in which caustics may be employed both advantageously and honestly, but their use has from first to last been associated with so much prejudice, ignorance, and quackdom, that they must be considered with a good deal of circumspection ; they must not be viewed in the light of fifty or even ten years ago as compared with excision, because the conditions have changed during these periods.

Fifty years ago, amputations and other capital opera-

tions were performed without anæsthetic agents, and it is not difficult to perceive the wide difference between excising a breast with or without the assistance of anæsthetics. To modern surgeons, who rarely perform even trifling operations without anæsthetics, the idea of performing a so-called capital operation in the manner of fifty years ago seems little short of butchery. Without anæsthetics, setting aside the agony, both actual and mental, entailed upon a patient undergoing such an ordeal, the dangers consequent upon shock (now prevented by anæsthesia) and hæmorrhage were often quite sufficient to prohibit the operation. Neither was it likely that the entire disease was excised even by the most experienced operators of the day. Excision of the breast, therefore, was a most dangerous and only palliative proceeding.

The dangers and pain consequent upon the after-treatment and dressings of the wound were in themselves sufficient to prevent any one, short of a Spartan, walking into an operating theatre with open eyes; and the use of caustics, painful though they were, procured temporarily as good or better results with fewer disadvantages than the ancient operative surgery of cancer. But the introduction of anæsthetics and antiseptics have strongly turned the scale the other way. The risks of the operation both immediate and secondary are now exceeding small; there is no acute pain, but merely the slight discomfort of the anæsthetic, for the patient to submit to at the time of the operation and during the subsequent dressings. Convalescence ordinarily takes place within a week or fortnight. On the other hand, the pain of the caustic treatment is only just tolerable, and, even since the introduction of cocain, complete local anæsthesia must be limited to a small area. When caustics are employed to destroy a cancerous growth of any considerable dimensions, the results are far inferior to excision or amputation under modern conditions. The bulk of the growth is hardly ever eradicated, and manifest local recurrence occurs ordinarily after the lapse of a few weeks. The caustics

are applied and reapplied, and this sad treatment goes on until the patient is relieved by death of a treatment which adds pain to that of the disease, which it ordinarily aggravates. However, in some cases of cancer of the breast in very old and debilitated subjects, where an open ulcer is found, and the subjacent tissues are immovably fixed to the ribs, the disease may be palliated and the offensive discharge arrested for a while by employing some kind of caustic. The local anæsthetic cocain should be employed. Some time ago I had a caustic paste made for me by Messrs. Hooper and Co., consisting of 20 grains of hydrochlorate of cocain, 120 grains of caustic potash, and 60 grains of vaselin.

The cancerous ulcer and its surrounding area is first well cleansed with pledgets of cotton-wool dipped in water, and then a weak solution of hydrochlorate of cocain (four per cent.) is painted over it. In a few minutes, a small quantity of the caustic paste is rubbed into the growth with a small wooden spatula, and the caustic quickly chars and destroys the tissues with which it comes in contact. By this plan a considerable quantity of cancerous growth may be destroyed in about twenty minutes, and the application may be repeated on three or four subsequent occasions after variable intervals.

Let me repeat, the only cases where caustics should be recommended are those where the affected area is small, and where, on account of some special surgical, anatomical, or medical reason, attempts to completely eradicate the disease by some feasible surgical operation are impracticable. In cases too far advanced for operation, Chian turpentine is perhaps the best drug which can be administered internally. It certainly has a specific action of some sort upon cancer, though its beneficial effects seem to be more manifest in cancerous disease of the tongue and uterus than in that of the breast.

The drug must be exhibited in full doses, in the form of an emulsion, extended over a long period. It appears to reduce the quantity of discharge from a cancerous

ulceration, and to mitigate pain. The toughness and infiltration, as appreciable to the touch, around the base of the cancerous growth, partially disappears under the influence of this medicament. Whether Chian turpentine or any of its congeners really possess powers which render the normal tissues insusceptible to the invasion of malignant growths or destructive to the growths themselves is a question of such great importance, that the mere fact of failures, reported by some, ought not to deter us from further investigating the matter, as there is the positive and authentic evidence of a few cases, recorded upon the highest authority, where Chian turpentine appears to have actually cured cancer. Neither can the specific action of arsenic be denied, in view of the results which have followed its internal administration or injection into sarcomatous neoplasms.

CANCER OF THE AXILLARY GLANDS.

Cancer of the axillary glands may be either primary or secondary. Ordinarily, cancer in these glands is sequent to the breast affection, and the appearances presented are so common as hardly to need any description. It is an error to suppose that sarcoma of the breast does not often generalize through the medium of these glands as well as through the vascular system. The difficulty, if any, which is met with in recognizing the enlargement of the glands which are affected with cancer of the type of the parent disease, is when they lie embedded in an unusually large quantity of adipose tissue. There may often be no enlargement of the glands perceptible to the touch, as examined through the skin, and yet, at the time of the operation, a cluster will often be unmasked upon the surgeon passing his forefinger into the axillary space. The fact that the glands become affected by the direct conveyance of cancerous material from the parent growth through the lymphatic vessels, must never be forgotten at the time of operating. Only too often the cancerous

breast and axillary lymphatic glands have been removed extensively enough, but some portions of the minute lymphatic vessels leading to the glands have been overlooked, naturally giving rise to local recurrence within a short interval of the time of the operation. Indeed, in a more minute knowledge than I am afraid many practitioners possess of the anatomy of the lymphatic system, lies the key both to the pathology and to the successful treatment of cancer by extirpation.

Primarily, cancer occurs in the axillary lymphatic glands either as scirrhus or as lympho-sarcoma. As the growth attains sufficient size to press upon the important vessels and nerves which traverse the boundaries of the space, the pressure signs of œdema and pain will appear. The treatment is, of course, early extirpation.

Cancer is rarely met with in the rudimentary breast of the male, but its recognition and treatment do not present peculiar difficulties.

CHAPTER V.

CANCER OF THE UTERUS.

THE uterus may be attacked by varieties either of sarcoma or carcinoma, but sarcoma of the uterus is so rare as scarcely to deserve mention.

By far the most common form of uterine cancer is that of epithelial type, originating from the cells and glands of the mucous membrane lining the interior or exterior of the cervix, and microscopically will be epithelioma, encephaloid, or scirrhus.

Cancer commencing in the body of the uterus is very rare, and fortunately so, for, on account of the difficulty which surrounds its detection in its earliest stage if it occupy this position, and the probability that the disease will have affected the parametrium before the organ has been excised—and this serious operation is the only radical measure at our disposal for cancer of the body of the uterus—renders the body of the uterus one of the most dangerous sites for primary cancer.

With regard to cancer commencing in the cervix uteri, the opposite conditions prevail. Next to the breasts, I believe the cervix uteri is the most common site for cancer ; and the cervix being readily accessible both to the touch and to inspection, not merely can any ordinary case of cancer of it be recognized immediately upon examination, but certain conditions which notably predispose to cervical cancer can also be recognized, which, being fortunately of a character readily amenable to treatment, it follows that a class forming a large proportion of the entire series of cases of cancer are preventable.

Out of all women at or after the middle period of life, when uterine cancer is most commonly met with, the cervix uteri will upon examination be found to present one of two general conditions.

First, the cervix will be of shape and outline more or less in conformity with the normal; perhaps a little conical; but the vaginal surface of the cervix will be clothed with healthy mucus membrane, the os exterum normal in outline, and there will be no laceration or erosion of the cervix. If such a cervix ever becomes affected with cancer we expect the disease to arise within the mucous membrane lining the cervical canal, as the result of chronic endocervicitis, and by radiating from this focus to infiltrate and cause a marked enlargement of the cervix, eventually breaking down and leaving a characteristic ulcer.

If the case be examined before ulceration with its marked physical signs has supervened, the cancerous process can ordinarily be affirmed by the smart hæmorrhage which will accompany the act of gently scraping the interior of the cervical canal with a blunt curette, or, if the instrument be applied more forcibly, by the ease with which portions of the cervical tissue will crumble away, the *débris* being the cancerous tissue. Of course, it is of the last importance to distinguish between the infiltration of the cervix due to cancerous deposition and the simple chronic induration which often simulates the more formidable condition. And the difficulty of so doing is increased when we remember that the chronic induration of the cervix so-called is often but the premonitory stage of cancer; therefore, if any doubt exist as to the nature of the indurated cervix under examination, the infra-vaginal portion of the cervix should be removed with a galvanic wire ecraseur, and examined microscopically. This is a very simple operation, and one quite unattended with appreciable risk. After the infra-vaginal portion of the cervix has been removed, any small focus of cancerous growth situated within the cervical canal will be detected. If found, it must be presumed that that portion of the

cervical mucous membrane remaining in the uterus above is, if not already infected, about to become so, and the operation must be completed by thoroughly scraping out the canal with curettes, and thrusting the conical point of Pacquelin's cautery around the denuded surface.

Such an operation will probably suffice to prevent recurrence of cancer in cases where the growth is exceedingly small and still quite localized ; and abnormal hardness or induration of the cervix is the chief sign by which the commencement of malignant disease must be suspected. If the disease have already extended so far that the normal mobility of the uterus is diminished, the mere excision of the infra-vaginal or even super-vaginal portion of the cervix will probably be quite inadequate to prevent local recurrence of the disease at some later period. Therefore the anticipated recurrence should be forestalled by excision of the entire uterus. Let me repeat that excisions of the infra-vaginal portion or supra-vaginal portions of the cervix uteri, which can be performed without opening the peritoneal cavity and with very slight risk to life, should be undertaken for cases of early cancer localized in the lower part of the cervix or for induration of the cervix so marked as to be considered premonitory of the advent of malignant disease. By this means an area of tissue above the diseased focus sufficiently wide to insure immunity from recurrence will have been removed, but if the neoplasm have transgressed this narrow limit, no operation short of excision of the entire uterus can be undertaken with hopes of radical cure.

In the consideration of cancer of the breast, even if only the nipple be attacked, excision of the entire breast is to be advocated. In some respects the nipple might be compared to the cervix and the breast to the body of the uterus. We know how important it is, when any organ is affected with cancer, that the entire organ should be extirpated, and the reasons why this principle is commonly departed from in early cancer of the cervix are that, owing to the peculiar conformation of the uterus, the cervix is to

some extent insulated from the body ; but, above all, the serious nature of uterine extirpation does not justify its performance whilst results prove the satisfactory nature of the minor operation.

Were the percentage mortality of vaginal extirpation of the uterus very low, like that of excision of the breast, then uterine excision should ordinarily be performed for cancer of its cervix. And I am not prepared to say that in a few years' time, after greater experience has been gained of the somewhat rare operation of vaginal extirpation of the uterus, it will be resorted to with far greater frequency than it now is, as certainly its dangers are not so great in the earlier as compared with the later stages of cancer.*

In a second and very large group of cases in which the uterus is examined at those periods of life when cancer most commonly occurs, the cervix is found lacerated in two or three places. These lacerations have occurred during labour ; and I believe that immediately after the birth of the child is the proper time to repair the cervix, if torn, by the insertion of a necessary number of sutures. If this were done the gynæcological departments of our hospital would be relieved of a considerable number of patients, and the sum total of women suffering from diseases peculiar to the uterus correspondingly diminished. A tripartite or bipartite laceration of the cervix is followed by ectropion, and upon one or other of the everted lobes of the cervix an erosion soon occurs. I say nothing of the leucorrhœal discharge or the various subjective symptoms which accompany this condition, but when it exists a most favourable site for the occurrence and growth of cancer is presented ; and if a badly fitting pessary be injudiciously adopted, or if a pessary be worn, and not cleansed and changed with sufficient frequency, the probability that cancer will supervene increases. The erosion on one of the lobes of the fissured cervix in time deepens into a distinct ulceration, and the lobe, increasing in size, forms

* The mortality of vaginal extirpation of the uterus may now be considered reduced to ten per cent.

the "tuberous" or "polypoid" or "cauliflower" cancer of the older writers.

Thus arise the very commonest forms of cancer of the uterus, not quickly and without warning, but some time after a laceration of the cervix has been sustained during parturition. As to the prevention of cancer in these cases, the repair of the cervix after childbirth, as already pointed out, can be effectively done in a few minutes, or after the period of involution is accomplished the cervix can be readily repaired by Emmet's operation. For my part, I think that in most cases it is simpler and better to remove the cervix above the lacerated portion with a galvanic wire, in preference to resorting to plastic operations, and especially if the fissures be multiple and deep, and the lobes present appearances deviating from the normal.

In March, 1886, I delivered two lectures at the Cancer Hospital on excision of the entire uterus for cancer, the basis of the lectures being the case of Mrs. R., in which destruction of the major portion of the cervix by caustics had failed, and where I performed successfully vaginal excision of the uterus on October 30, 1885. The fact that recurrence took place in the vaginal roof and parametrium—the patient dying on January 3, 1887, and having survived the operation one year and two months—in conjunction with an examination of the cancerous uterus after its removal, led me to believe, at the time I delivered my lectures, that excision of the entire uterus should be usually performed, to the exclusion of other methods of treatment, as soon as the diagnosis is established. For reasons already given, I now qualify this opinion, and would be contented with recommending the minor operation where the disease is exceedingly small. But if, after the performance of excision of the vaginal portion, the extent of the disease appears of wider limits than was believed prior to the operation, then is the accepted time to excise the remaining portion of the uterus, and, if necessary, the upper portion of the vagina. By neglecting to perform this operation till recurrence has taken place, its

gravity will be enormously increased ; and if the operation succeed, the prolongation of life will probably only be calculated by months. I have only on one other occasion, besides the case already referred to (and the complete history of which was published in my "Lectures"), performed vaginal excision of the uterus for cancer. I operated, on July 23, 1886, upon Mrs. S., æt. 67, for a case in which the entire uterus was infiltrated with cancerous deposition. The patient preferred to run the risk of extirpation of the uterus in preference to remaining in the intense agony she was suffering. I regret to say that this patient died four days after the operation ; but a post-mortem examination not having been allowed, I am unable to state the anatomical appearances of the pelvis.

As to the details of extirpation of the uterus by abdominal section I will say nothing, because, after carefully examining the records based upon the variously modified plans which have been proposed or carried out for excising the uterus, my view is that (apart from cancer of the uterus complicated by pregnancy or other unusual conditions), if the uterus is to be excised, the operation should be performed through the vagina. From numerous trials of different modifications upon the dead body, and from an investigation of the recorded examples both of failures and successes, the mortality should not exceed that of most other capital operations where the peritoneal cavity is opened.

Procrastination is the chief source of danger. Patients ordinarily take so much time to make up their minds before undergoing a capital operation for cancer, and usually find so many who advise them to hesitate before undergoing an operation which carries risk to life, and they waste so much time in considering cures, both genuine and apocryphal, which are brought before them through all kinds of channels, that the operation is only asked for as a forlorn hope to mitigate suffering or to prolong life, instead of being demanded in a very early stage of the disease, when its dangers would be relatively small and the hope of radical cure great.

As the result of investigations elsewhere published,* I have devised certain instruments to facilitate this operation, which I recommend should be performed in the following manner :—

1. There may be two semi-lunar vaginal incisions or one circular one. If the circular incision be chosen, the divided vaginal arteries can be readily secured by hæmostatic forceps. Before the incision is made, the cervix should be well drawn down, thoroughly exposed, and the finger passed along the line of the proposed section, which should be principally made with blunt-pointed scissors, or a probe-pointed bistoury. The bladder should be supported with a staff throughout the operation.

2. The ureters are to be separated from the sides of the uterus with the fingers, and the peritoneum stripped upwards over the organ as high as possible, so that after its removal a funnel-shaped peritoneal flap will remain.

3. The uterine arteries should be secured prior to division.

4. The uterus should not be flexed, since such a course involves great difficulty in dealing with the broad ligaments, and might add to the risk of sepsis from the cancerous cervix.

5. The broad ligaments are to be secured as follows :—The peritoneal cavity having been freely opened in front of and behind the uterus, tearing through the peritoneum with the finger-nails, the operator's left hand is to be introduced into Douglas's pouch, and the uterus pushed upwards towards the abdominal cavity in order to gain space. A loop of stout carbolized silk must be passed upwards in front of the uterus, by means of a staff shaped like a vesical sound, having a notch for the silk at the top of its beak. This loop can be caught by the tips of the left index and middle fingers at the summit of the uterus, and one end drawn downwards. By a similar manœuvre a second loop can be passed over the other

* *On Excision of the Entire Uterus for Cancer.* London : Wyman & Sons, 74-76, Great Queen Street, W.C.

broad ligament. Perforated shot are to be slipped upwards, each embracing a ligature, and clamped by pressure with a forceps, firm traction having been previously made upon the ligatures. The broad ligaments are secured close to the uterus.

6. Two courses are now open to the surgeon. By the first, a stout pair of Wells's pressure-forceps is applied to each broad ligament external to the silk ligatures, and the uterus then excised with scissors. In this case the silk ligatures will have served the purpose of temporarily compressing the broad ligaments and of depressing them into the jaws of the pressure-forceps. The forceps will be allowed to remain *in situ* for some hours, in order to prevent hæmorrhage, and the operation completed as in the case of Mrs. R. By the second course, double ligatures must be applied to the alæ vespertilionis, and these structures divided on either side between the double ligatures. The operation will then be completed by closing the peritoneal cavity, after the manner ordinarily adopted in abdominal operations.

It has been argued that the Fallopian tubes are part of the uterus, and therefore, unless they be removed also, excision of the uterus only, for cancer, is an imperfect procedure. Without discussing this debatable point, I will content myself by stating that after the excision of the uterus in the manner indicated, the operator can, if he please, draw down consecutively each appendage, apply a ligature, and remove it. But in so doing, care must be exercised to avoid including the ureters in the ligatures. Virginity naturally increases the difficulty of vaginal hysterectomy. In one of the operations I performed upon the dead body, the subject was a virgin, and it became necessary to incise the hymen in the median line with scissors. It was not necessary to divide the perineum, and the vagina was readily distended to a size large enough to admit the introduction of the entire hand. Deformity of the pelvis would seriously complicate the operation, and this or other conditions which occasion diminution of the genital

passage would guide the operator to choose the abdominal in preference to the vaginal operation, where hysterectomy is advisable.

UTERINE CANCER COMPLICATED WITH PREGNANCY.

When a woman, the subject of cancer of the uterus, becomes pregnant the complication is a most serious one. In the earlier months of pregnancy it is often next to impossible to diagnose the condition. The hæmorrhages from the cancerous cervix mask the sign of catamenial suspension which obtains during pregnancy; the fixity of the lower zone of the uterus, and sometimes the size of the cancerous growth, mask the sign of internal ballotement; the foetal heart is only audible during the later months of pregnancy; and should the foetus be dead, there will necessarily be an absence of its cardiac murmurs, and its active movements, which, were it alive, would conclusively demonstrate the existence of pregnancy.

The reported cases are not sufficiently large to lay down precise rules, which must be considered binding in every case, but I can recommend the following suggestions as useful to bear in mind:—

1. In cases of early cancer of the cervix complicated with pregnancy, the entire gravid and cancerous uterus can be excised *per vaginam*, prior to the third or fourth month of utero-gestation.

2. From the fourth to the sixth month, the cervix may be excised with a galvanic wire cautery, and premature labour induced.

3. From the sixth to the ninth month, the entire gravid and cancerous uterus had better be removed by abdominal section, should the extent of the disease be considered such as to constitute a bar to delivery.

As the operation of abdominal excision of the pregnant and cancerous uterus is exceedingly rare I cannot do better than quote the description given of it by Sir Spencer

Wells,* relating to a case which was, when performed on October 21, 1881, the only one of the kind followed by recovery and a temporary restoration to health:—

“The patient was secured as for ovariectomy; but, as it was necessary to keep a catheter in the bladder, an opening was made expressly for it in the waterproof covering. The vagina was plugged with thymol cotton, wetted with warm water, containing about one per cent. of phenol. I divided the abdominal wall in the middle line to an extent of about eight inches, from two inches above to six inches below the umbilicus. The uterus thus exposed was about the size of a large adult head. After turning it out I inserted four sutures in the upper part of the wound over a large flat sponge, so as to keep back the intestines, and protect the abdomen from needless cooling by the spray. I found the ovaries at a higher level and nearer to the fundus than was expected, and it was quite easy to secure the spermatic artery, first on the left and then on the right side, by transfixing the broad ligament below each ovary and tying with strong silk. I took the catheter as my guide in dissecting the bladder from the anterior surface of the uterus. The expanded uterine coats were very thin, like a tense cyst, and they soon accidentally ruptured. I punctured the protruding membranes, and a quantity of liquor amnii escaped. The next thing was to draw out the foetus, and tie and cut the cord; but I did not interfere with the placenta. I then separated the attachments between uterus and vagina, completely circumcising the neck, and securing by pressure-forceps all bleeding vessels as they were divided. The entire uterus, with all the diseased parts about the os and cervix, was thus removed. The forceps were then taken off successively, and every bleeding vessel tied with carbolized silk. Then taking out the vaginal plugs, I brought together the opening into the vagina, and the edges of the divided broad ligaments, with silk sutures. The pelvis was carefully cleansed, the wound closed as usual with silk sutures,

* *Diagnosis and Treatment of Abdominal Tumours*, 1885, p. 172.

and the ordinary dressing applied as after ovariectomy. The patient was under the influence of methylene for about seventy-five minutes, but the operation from beginning the incision to closing the wound was completed within an hour. Mr. Cadge kindly noted the time occupied by the different stages of the operation as follows:—

"2.35 p.m. Patient began to inhale methylene.

"2.41. Catheter and plugging vagina.

"2.50. Incision in abdominal wall.

"2.53. Uterus drawn out.

"2.56. Sutures in upper part of abdominal wall, dividing broad ligaments and vagina, removing foetus and securing vessels, till—

"3.10. Uterus removed.

"3.40. Ligature of vessels and sutures of vagina and broad ligaments.

"3.50. Closing of wound and dressing.

"3.55. Patient in bed."

This operation was performed when the patient was about a week over the sixth month after conception.

Cases of uterine cancer too far advanced for operations, or in which operations are for other reasons contra-indicated, should be treated locally by insufflations of charcoal, tannin, and iodoform judiciously employed, alternated with weak vaginal injections of some disinfecting fluid, such as corrosive sublimate (one in five thousand), permanganate of potash, or carbolic acid. In this connection must be pointed out the probably specific value of Chian turpentine, introduced to the notice of the profession by Dr. Clay, some years ago. Dr. Clay has published several cases of cancer cured by the internal administration of Chian turpentine, combined with other treatment; and, for reasons which are at present inexplicable, the drug appears to act most advantageously in cases of cancer of the uterus and of the tongue. Of course the objection raised to believing that this drug has cured any of the cases reported by Dr. Clay is that so many independent observers have tested the treatment and believe it to be useless. Doubt has also

been thrown upon the diagnosis of Dr. Clay's cases. But some of them have been reported in full in the *Lancet*, the diagnosis having been confirmed prior to the treatment by surgeons of the highest professional reputation.

In one case of uterine cancer, under the care of Dr. Bury of New Barnet, the diagnosis of encephaloid cancer was confirmed by Dr. Playfair, who was astonished to find, on examining the patient some twelve months later, that she was practically cured of cancer of which he had thought "she could not last many weeks." In this case, treatment by Chian turpentine mixture was commenced about October, 1883, with local applications of tannin and charcoal. The disease resolved within a few months, but the treatment was persevered in for nearly a year, and there was no recurrence of the disease when Dr. Bury reported the case in the *Lancet* in November, 1886.

Chian turpentine does not yield immediate results, and if employed should be given in full doses and exhibited over long periods. Personally I have not given this remedy the full trial which I desire. I have prescribed it in numerous cases of very advanced cancer; in these it has not prevented a fatal result, although there has usually been observed a diminution of the discharge and hæmorrhage from the ulcerated growths, with a *disappearance of the induration around their bases*. The growths indisputably assume an altered appearance whilst the patients are under the influence of this medicament, and as its use is of a perfectly innocuous character I do not consider it right to withhold it in apparently hopeless cases. On the other hand, I certainly have not sufficient confidence in its action to advise resort to this remedy to the exclusion of surgical measures in cases where the cancerous growths can be freely and completely eradicated without appreciable risk to life. But I hold that the abundant opportunities of thoroughly testing remedies reputed to exert a specific influence upon cancer afforded by those cases where the anatomical surroundings of the growths negative surgical interference should be made the most of, provided

there be any evidence, however small, which justifies the hope that benefit may follow the exhibition of the specific remedy. Knowing, as we do, that syphilomata will often resolve after full doses of iodide of potassium have been administered over lengthy periods, which were quite unaffected by small doses of this specific drug, and that a course of antisyphilitic treatment prolonged over two years is ordinarily recognized as necessary to eradicate syphilitic virus, we should not be surprised to find that Chian turpentine, or some other agent at present undiscovered, may procure a resolution of cancerous growths—acting not more empirically than mercury and iodide of potassium do upon lesions resulting from the syphilitic virus.

We have spoken of cancer as being a local disease, meaning one which commences locally and afterwards invades the system, and therefore the early destruction of its primary manifestation as its rational treatment. Syphilis, though a blood-poison, also invades the system through a point of inoculation, at which arises the hard chancre. Now, the hard chancre is nothing more or less than a small local laboratory from which in a few days the poison rapidly invades the lymphatic system. Admitting the very different and essential nature of the specific poison of syphilis from the cells which have become possessed of the specific powers of cancerous infiltration, yet in both instances the *materies morbi* is manifested locally; in the case of syphilis very rapidly, and in the case of cancer more slowly infecting the lymphatic system. It is only by the comparative slowness by which the lymphatics become invaded by cancer, I may repeat, that the reasonable hope of eradicating the disease by operation exists, if operative treatment be adopted sufficiently early to get beyond the disease.

In the case of syphilis, since almost never-failing specific remedies are now recognized, the importance of endeavouring to prevent the lymphatic affection by destroying the chancre before it has arrived at maturity is not so great—though that is a most rational form of treatment. I believe

syphilis can be aborted or prevented by the very prompt destruction of the primary chancre, as evidenced by a case I published in the *Lancet* (1886, vol. ii., p. 128), and that this course should be adopted, as it generally used to be before the specific power of mercury was known; yet the difficulty of seeing cases of syphilitic chancres sufficiently early to be able to destroy them in time to prevent lymphatic invasion by the virus is infinitely greater than to see cancerous patients in a correspondingly early stage. Practically, therefore, for syphilis we have two broad lines of treatment: first and most important, specific remedies, well known and tested—mercury and iodide of potassium; secondly, destruction of the primary lesion in its earliest possible stage, to prevent if possible glandular infection. With cancer, the two parallel courses are reversed in importance: we must first chiefly rely upon local extirpation by surgical measures, which are well-known and well-beaten tracks; and secondly we may try specific remedies so-called, about which we have more to learn.

CHAPTER VI.

CANCER OF THE VAGINA AND VULVA.

CANCER of the upper portion of the vagina is commonly the result of extension downwards from malignant disease commencing in the cervix, though, as a primary disease, cancer of the vagina is exceedingly rare. When found, an ulceration is noticed in the anterior or posterior fornix presenting the appearances of epithelioma. This condition may be caused by the continued irritation of a badly fitting pessary, and is distinguished in its early stages from syphilitic ulceration by the history of the case, by the physical signs, and by the failure of antisyphilitic remedies. The upper portion of the vagina, on account of its contiguity to the bladder in front, the rectum behind, and the peritoneum above, is one of the most dangerous sites for the occurrence of primary cancer. It is only in the very earliest stages that hope of extirpating the disease, either by excision or by scraping away the ulcerated tissue with its surroundings and freely applying Pacquelin's cautery, can be indulged in by the practitioner; and the choice between different operative measures must always be decided by the anatomical position and extent of the disease in the particular case under consideration. Examples of malignant disease of the clitoris, usually epithelioma, more rarely schirrus, and sometimes rodent ulcer, are cases more frequently met with in practice. The physical signs ordinarily render the diagnosis easy, though difficulty sometimes occurs in distinguishing rodent ulcer from lupoid, tubercular, or syphilitic lesions, any of which may form its precursors.

The early recognition of any form of malignant disease commencing in the clitoris or labia is of great importance, because, in such cases, the diseased tissues can be readily removed by the galvanic wire cautery, the growth having been isolated by transfixion beneath, with needles inserted at right angles to each other. If the vestibule and lower portion of the urethra be involved, the tissues can be safely removed as deeply as the os pubis, and the lower part of the urethra can also be excised, leaving no impairment of the urinary functions. The rapidity with which healing occurs after operations upon the vulva, and the sound cicatrices which ordinarily result, justify a good prognosis for early cancer of this region.

CHAPTER VII.

CANCER OF THE PENIS, SCROTUM, AND TESTICLES.

ABOUT five-sixths of the cases of cancer of the penis occur in those who are uncircumcized, and the subjects of phimosis. In most cases, epithelioma—the form of cancer of the penis nearly always found—is consequent upon venereal disease. The following case is in many respects very instructive:—

Some years ago a milkman consulted me on account of an offensive discharge which issued from beneath the foreskin, which was phimosed, inflamed, œdematous, and indurated in the region of the cervix. There were small hard buboes in both groins, and there was a history of excessive illicit connexion. I at once did what I would recommend to be done in every case presenting a similar history and similar physical signs—caused the patient to be anæsthetized, and, passing a director beneath the foreskin in the middle line, slit the prepuce with Pacquelin's thermo-cautery. The foreskin being thus laid open, the appearances were very much what was anticipated: a good deal of pent-up, offensive secretion was removed with pledgets of cotton-wool from a partly warty and partly ulcerated mass adherent to the corona glandis, the cervix, and the prepuce. The penis was thoroughly cleansed in a weak solution of corrosive sublimate, and the whole of the growth scraped away, and its base with those surroundings which were of an abnormal character touched with the point of the cautery. The patient was placed in bed, applications of iodoform ordered for the penis, and necessary medicaments (non-specific) prescribed internally.

At this juncture two propositions occurred to me: (1) that it was doubtful whether the disease was epithelioma or syphilitic ulceration approaching a phagedenic type; and (2) that no cutting operation was then admissible, as liable to promote septic infection through the incision.

Under the use of antiseptics the penis assumed a healthier condition in a few days, but then a rose-rash appeared on the chest, and there were other signs of secondary syphilis. Under antisyphilitic remedies, which were now pushed both locally and internally, the lesion on the penis did not entirely heal. Of course the œdema of the prepuce had subsided, but the growth and ulceration in the region of the corona reappeared.

The diagnosis was now unmistakable; the case was one of syphilis, and epithelioma coexisting, but the glandular enlargements in the groin were probably due to syphilitic infection only. The penis was amputated at a point about an inch in front of the pubes, and recovery was rapid. I strongly advised the patient to continue a course of anti-syphilitic remedies for two years, which he promised he would. But a few months later he saw me again, complaining of multiple swellings (gummata) over the cranium, and a slight reulceration in the stump of the penis. He told me he had discontinued treatment because he "felt quite well." He had unfortunately resumed immoral habits, and stated that the stump of the penis was quite adequate for the purpose of copulation; in fact, that he had not noticed any difference whatever in his capacity for coitus after the loss of five-sixths of the penis. Full doses of iodide of potassium with small doses of perchloride of mercury caused a speedy resolution of the cranial gummata, and the ulceration on the stump of the penis soon got well with applications of iodoform. I managed, with a good deal of difficulty, to keep the patient under observation for about a year, during which time he remained quite well, but he has not continued to report himself to me from time to time as requested.

This case is quoted as illustrative of epithelioma com-

plicated with syphilis and phimosis, complications of frequent occurrence in practice, and always leading to difficulties of diagnosis and of treatment.

When epithelioma attacks the penis, it usually arises beneath the foreskin from warts situated near the cervix or corona. Less frequently, the disease commences in the cicatrix of an old chancre, or as an infiltration and ulceration arising *de novo* upon the glans penis.

Accumulations of smegma preputii, beneath a phimosed foreskin, are not unfrequently the starting-point of cancer. A difficulty always arises in diagnosing epithelioma just arising out of venereal warts. The only tests which can be applied are the presence of ulceration of epitheliomatous type or of induration at the base of the growths.

The treatment of cancer of the penis can be summed up in the words, "early amputation;" and the sooner the operation is undertaken so much the better for the patient, for the following reasons: If the growth be small, and the diagnosis made as early as possible, before infection of the inguinal glands has occurred, the penis may be amputated at some point anterior to the pubes; the disease will be eradicated, and the sexual function not injured: but where the cancerous growth has already invaded the organ to a marked extent, and especially if deposition has taken place in the lymphatic glands, the entire penis must be amputated by Pearce Gould's method of dividing the scrotum, etc. Of course the lymphatic glands will also have to be excised, and the entire operation must certainly be deemed of a grave character; besides, other considerations arise, often rendering it expedient, after the penis has been completely extirpated, to remove the testicles also.

As long as we believe, with our forefathers, that prevention is better than cure, so long shall we sedulously recommend circumcision in all cases where the foreskin is long, or in cases of phimosis, as materially diminishing the chances not only of cancer of the penis, but also of the inception of syphilis.

Epithelioma is the form of cancer which peculiarly

affects the scrotum. The corrugations and anatomical characteristics of the scrotum afford a *locus minimæ resistantiæ* for the production of cancer.

Epitheliomatous disease is not so frequently to be observed now as in former days, on account of the abolition of chimney-sweeping by means of climbing the interiors of the chimneys. The soot used to lodge in the folds of the scrotum, and by its irritation produced epithelioma. Sir James Paget has pointed out that whilst soot has the peculiar property of readily inciting epithelioma in the scrotum, coal-dust has not. It appears to me that the particles of soot being finer than those of coal-dust, they would the more readily lodge, and be the more difficult to remove by washing from the folds of the scrotum. But epithelioma of the scrotum at the present day is a rare disease. It does not present any difficulty of recognition in its earliest stages. The scrotum is a part of the body isolable to a great extent, and any small-sized epitheliomatous growth in it ought to be freely excised as soon as detected, with an exceedingly good prognosis.

It seems difficult to understand how epitheliomatous disease can ever be allowed to attain considerable dimensions upon the scrotum; and if the disease has returned after excision or treatment by caustics, it would in most cases appear to be the result of inadequate treatment.

Both sarcoma and carcinoma attack the testicle. When sarcoma occurs it is usually the small round-celled variety, and both testicles may be invaded. This is one of the most fatal forms of cancer, occurring at almost any period of life, though usually in boys before puberty—before the spermatoblasts (epithelial cells) have undergone evolution. Round-celled sarcoma of the testis, if unchecked, runs its course to a fatal termination ordinarily within two years from its commencement. The disease generalizes through the lymphatic glands; and, after death, secondary growths can usually be found disseminated in most of the important organs. In every respect small round-celled sarcoma of the testis is one of the most malignant varieties of

cancer. Not so malignant, and rarer, is spindle-celled sarcoma. It never attacks both testes, and in a considerable proportion of cases undergoes cartilaginous degeneration. Non-malignant, purely cartilaginous tumours are occasionally met with in the testis; but as it must be impossible to exclude the existence of sarcoma-cells, early extirpation of such tumours must be recommended.

Sarcoma of the testis not infrequently undergoes cystic degeneration, and older writers usually have described such cases as cystic disease of the testicle.

Sarcoma, as already mentioned, is usually met with before puberty, and very commonly before ten years of age. When carcinoma attacks the testis, springing as it does from the cells of the tubuli seminiferi, which are of epiblastic origin, it occurs at some period after puberty, and usually after middle age. Only one or two writers have attempted to establish examples of scirrhus of testis; this form of cancer may therefore be passed by without further consideration. Encephaloid disease is the variety of carcinoma which attacks the testis, and it generalizes by the lymphatic system. It is hardly ever possible to make a differential diagnosis between sarcoma and carcinoma prior to operation. In both varieties there will be a tumour of more or less unequal consistence, and perhaps bossy outline. If the disease has attacked both testes, small round-celled sarcoma will be diagnosed; if cartilaginous masses be detected, spindle-celled sarcoma.

In the early stages of the disease, when, in the case of cancer of the testis, immediate extirpation is so imperatively demanded, it is often very difficult to make a diagnosis.

Hernia may usually be eliminated from the question by detecting the cord above the tumour; gummatous growths are rare in young, and tubercular growths rare in old subjects; and in distinguishing cancerous from syphilitic or tubercular growths, the history of the patient will guide the surgeon. Simple hydrocele may be readily excluded by its translucency; but it must never be forgotten that a slight

hydrocele frequently coexists with cancerous and also with other affections of the testicle. Rheumatic gout and common chronic orchitis may generally be distinguished without difficulty ; but the condition which is so commonly mistaken for cancer of the testis is a thick-walled hæmatocele. From this condition it is often utterly impossible to distinguish sarcoma of the testis, save by an exploratory puncture or incision. In any case where doubt exists, a free exploratory incision should be made through the scrotum and anterior layer of the tunica vaginalis. If the case prove to be one of hæmatocele, the coagulations should be removed, part of the cyst-wall excised, and the cavity drained : on the other hand, should the existence of malignant disease be demonstrated, the operation must be completed by castration.

For cancer of the testis early castration is the only treatment which can be recommended ; but the rich lymphatic supply of vessels from the organ render infection of the iliac and lumbar glands probable at a very early period of the disease. Sometimes patients desire castration to rid them of the painful scrotal tumour, even when the lymphatic glands are obviously implied, and it is hopeless to perform castration with more than a palliative object. If the iliac glands be only slightly enlarged or suspected to be enlarged, I am not prepared to say that attempts to procure the complete eradication of the disease should not be made by freely laying open the inguinal canal, and, having traced the lymphatic glands, to remove them wholly.

Cancer not infrequently occurs in a testicle retained within the abdominal cavity, or which has not descended lower than the inguinal canal. When a testis is lodged within the canal it is exceedingly liable to injury from accidents, or from compression by contraction of the abdominal muscles exerted upon it between the tendinous and bony structures of the inguinal canal. In any marked case of cancer of the incompletely descended testis there will be pain ; and, later on, absence of testicular sensation ;

and the swelling will soon commence to infiltrate the surrounding structures. In any case of doubt of malignant disease of the testicle, whether situate in its normal position in the scrotum, whether incompletely descended or retained within the abdominal cavity, let us earnestly recommend an exploratory operation.

CHAPTER VIII.

CANCER OF THE SKIN GENERALLY, AND OF SCARS.

THE cutis vera being developed from mesoblastic, and the epidermis with the superficial layers of the corium and the epidermic appendages being developed from epiblastic cells, it follows that both sarcoma and carcinoma may arise from the skin.

Sarcomatous growths are rare, but may arise from any part of the skin, the disease appearing as a more or less nodulated tumour, usually of round-celled type, though other varieties may be met with. Sarcoma usually occurs in connection with moles or warts, and its structure is pigmented, if pigment has existed in the tissue from which the malignant neoplasm has arisen. Although scirrhus of the skin is described by the older writers, as a primary growth it has usually been mistaken for epithelioma. The latter variety of malignant disease either occurs strictly according to the ordinary type, or as its sub-variety, rodent ulcer. Cicatricial cheloid (Alibert's) or lupus may occur—diseases which, though not epitheliomatous or strictly malignant, simulate the malignant family in some respects very closely.

The most important group of cases of epithelioma of the skin are described in other chapters, viz. epithelioma occurring in certain sites where the skin merges into the mucous membrane at some natural orifice of the body or cleft upon the surface, such as the orifices of the mouth, nostrils, vagina, rectum, and margins of the eyelids. Epithelioma is also met with arising at the navel. The corrugations of the scrotum are pointed out as a favourite

part of the skin for the development of cancer. Cancer rarely occurs upon the smooth, uninjured portions of the skin, but is found in connection with certain anomalous developments, such as warts or moles, and scars, whether of burns, scalds, wounds, or the cicatrized tissue succeeding the lesions of syphilis, lupus, struma, and some other diseases.

Cancerous diseases of the skin are, from every point of view, of the greatest interest and importance. Their scientific interest lies in the circumstances that, situated on the surface of the body, their mode of origin and course are open to the direct observation of the surgeon, and in nearly every case some well-defined cause may be recognized, though in various cases the most different exciting causes will be found. Therefore a great deal is known to us about cancer which would not be known, but only matter of conjecture, had we to rely only for information upon those cases of cancer which occur in internal organs. The practical importance of their early recognition and prompt extirpation is apparent when we consider how easily we can, in most cases of cancer originating in the skin, honestly affirm it to be a strictly local disease, and usually capable of permanent cure if only the patients will submit to operations which, perhaps extensive, or even sacrificial of some important part, are not dangerous to life. Further, from the knowledge we possess of the natural history of cancerous diseases of the skin, we are often in a position to say that some morbid condition, although not yet cancerous, will in all human probability shortly become so, and that the advent of malignancy may be *prevented* by extirpation of the tissue which is in the pre-cancerous stage.

I meant nothing more or less than this in 1887, when I objected to the teaching laid down by Sir James Paget in his *Morton Lecture*. Upon referring to the *Lancet*,* I find my letter concludes in the following manner:—

“ Finally, whilst disinclined to join issue with Sir James

* *Lancet*, 1887, vol. ii., pp. 1142, 1143.

Paget upon every point, his statement that we have not yet found a method for either the prevention or the cure of cancer cannot be allowed to pass unchallenged, for instances in which the disease has been cured are familiar to most practitioners; and though there is no common method applicable for the prevention of all kinds of cancer, there are recognized principles to be adapted to many of its varieties. As example, let me cite the premonitory induration of the tongue or lips in elderly subjects, caused by irritation from the stumps of teeth or by smoking, which will often spontaneously resolve upon removal of the exciting cause. Leucoma or psoriasis of the tongue, dependent upon local irritation coupled with syphilitic taint, may be resolved by antisyphilitic treatment sedulously carried out. Where cancer is presumed to be about to commence in the scrotum of a sweep, change of employment and cleanliness should be insisted upon, and suitable local treatment employed. *Cessante causâ, cessat effectus.*"

In this letter I merely endeavoured to remind those members of the profession (who might have been biased in the wrong direction by Sir James Paget) of the considerable portion of cases of cancer curable by early operation, or preventible; but Mr. Oliver Pemberton, of Birmingham, wished to argue the matter, and addressed a letter to the editors of the *Lancet*, commencing in the following terms:—

"SIRS,

"Mr. Jennings, in your last number, commenting on Sir James Paget's *Morton Lecture*, says, 'Instances in which the disease [cancer] has been cured are familiar to most practitioners.' As I read Sir James Paget's conclusion, it is that in his vast experience he has never yet met with an instance of cure. During forty years, in an almost unlimited field for observation, it has never been my lot to see one. If Mr. Jennings or Mr. Clay will lay before the profession a solitary instance in which any case infiltrating the textures immediately around its origin, or

contamination of the adjacent glands, has been cured by any mode of treatment—not excepting the use of the knife—a result will have been attained not hitherto acknowledged by pathologists. At present I am unable to regard the cases referred to and published by either of these gentlemen as being instances of cancer.”

A short correspondence followed between Mr. Pemberton and myself in 1887, and I was rather at a loss to understand why he should have written letters so much against the weight of evidence and of reason; neither was I aware, at the time when Mr. Pemberton entered the arena on behalf of Sir James Paget—who, by the way, might be considered well able to take care of himself—that twenty years previously he had published a very admirable work entitled *Clinical Illustrations of Various Forms of Cancer, and of other Diseases likely to be mistaken for them, with Especial Reference to their Surgical Treatment*. My readers will probably be no less astonished than myself, upon perusing a few extracts from the excellent work of Mr. Pemberton, published in 1867—to hear him say, in 1887, that during forty years, in an almost unlimited field for observation, it has never fallen to his lot to see a solitary instance of cure. Let us see what Mr. Pemberton wrote in 1867—

“When, therefore, we consider the uncertainty of diagnosis which belongs to this disease, in the period when interference is most desirable, and that the treatment by complete excision may, in many cases, *effect a cure whether the case be of cancrioid or of cancer*,* we are at a loss to account for the number of cases that present themselves in a hopeless state, attained not less by the apathy of the patient than by the indifference of the surgeon to an early interference.”†

Again—“W. D., æt. 23, single, by occupation a sweep, was admitted under my care in the hospital, October 21, 1861, on account of an ulceration seated in the scrotum.

* Italics mine. † Op. cit., *On Epithelial Cancer of the Lip*, p. 96

"*History.*—Is a healthy-looking man, with unimpaired strength. Five years since he perceived a warty growth, situated at the upper and front part of the right division of the scrotum. This enlarged, but did not ulcerate for two years. . . .

"*Present state.*—Nearly the entire part of the scrotum is occupied by an irregular-shaped warty ulceration. The edges of this are hard and elevated. The sore itself is pale in colour, and destitute of granulations; and in the centre, over the situation of the right testis, it is deeply excavated. On the left side there is a little hardness and enlargement of the inguinal glands.

"October 26th.—Under chloroform I proceeded to remove the affected scrotum. Finding the ulceration had extended so as to be adherent at one spot to the right testicle, I removed this gland in the ordinary way, in addition, both on this account, but chiefly to obtain sufficient healthy skin, to cover the large surface of wound after the complete excision of the ulcerated surface. Indeed, without this additional proceeding it would have been impossible to have covered the wound.

"The patient made a good recovery, retarded by some slight suppuration in the right groin.

"In June, 1864, W. D. was at work in a colliery in good health, and without any return of the disease.

"January 19, 1867.—W. D. was still at work at the colliery; he was without any return of the disease, and in good health.

"In regard for the tendency of this disease [epithelial cancer of the scrotum] in its true form to recur after removal, my own experience leads me to the belief that it is very great. Immediately it does reappear in the site or neighbourhood of the first growth, excision should again be carried out, and again and again as soon as it is surgically practicable.

"I repeat, an operation cannot be too early performed, so as to anticipate that deposit of cancerous elements which, sooner or later, takes place in these apparently

otherwise simple formations. *The surgeon may then fairly promise his patient the certainty of relief, and even the probability of a cure.** †

Mr. Pemberton also adds a chapter on "Epithelial Growths following Moles and Warts," in which several cases of great interest are recorded. Among these may be noticed, first, that of a woman, M. H., æt. 45, who, in April, 1863, was the subject of an irregular-shaped ulceration which surrounded the seat of the mole on the forearm, measuring two inches in its largest diameter. The skin in the centre, an inch long, was entire, and that around the outside of the ulceration was elevated, dark-coloured, and indurated. The surface of the ulcer was mostly clean and red, occasionally greyish in colour. There were no glands enlarged. Mr. Pemberton, on April 29, 1863, completely excised the affected part, including in his dissection the portion of skin containing the mole, as well as the ring of ulceration and a very free margin of the surrounding integuments, and passing deep enough to lay bare the muscles beneath. In June, 1867, when the case was reported, the patient remained well.

"The treatment necessary for these degenerated structures," adds Mr. Pemberton, "is free extirpation by the knife. I have seen the most lamentable results attend the use of caustics, and internal remedies can be of no service.

"Not only, where practicable, should a free breadth of skin be removed with the disease, but it is desirable also to take away a corresponding amount of the fascia beneath.

"The tendency will often be observed for the disease to recur in the cicatrix or near to it. It should again be removed, as the prospect of future immunity, in the absence of glandular affection, is found by observation to be by no means so unfavourable as might be expected from the recurrence. . . .

"When the disease is situated on an extremity, and is of such an extent as to justify amputation of the limb, this proceeding should be carried out within such distance

* Italics mine.

† Op. cit., p. 106.

from its seat as to secure the patient from the least probability of any of the local manifestation being left.

"I amputated the forearm in the following instance, where the appearance of the disease and the comparative rapidity of growth would have led me to anticipate scarcely so favourable a result as that which I now record."

Mr. Pemberton then narrates the case of a brewer, J. L., æt. 54, whose limb he amputated in the middle third of the forearm for a cancerous ulceration, chiefly confined to the entire dorsum of the index finger and the base of the middle one. It filled up the interval between the index finger and thumb; almost encircling the former. The disease had arisen from a wart which had been contused several times. Mr. Pemberton comments on this case—

"After a lapse of nearly nine years, this patient is without any return of his malady. Would a less complete proceeding have been attended by a similar result? The best answer to give to this question is to express very strongly my conviction that in these cases there can hardly be too vigorous a removal of disease. A mere excision of the affected parts, in the face of the confessedly doubtful degree of malignancy which many of these cases, in their earlier history, possess, cannot as a rule be successful.

"With this impression I do not hesitate myself to place before a patient the advisability of submitting to as early and complete an operation as practicable, more especially in those cases where the extremities are the localities affected.

"I believe that any considerable delay that hinders the treatment of the primary growth, when once it has become painful, or is increasing, adds greatly to the probability of speedy recurrence after removal. In the case of E. M., which follows, the wart-like growth was unchanged for five years, then for ten it was the seat of pain and slow increase. Within two months after removal it recurred in the cicatrix. The part was now amputated, but the glands became speedily affected, the disease recurred in the limb, and the patient sank in a little over two years afterwards."

The case of J. L., the brewer, first narrated, shows how, by prompt amputation through the forearm for cancer, situated at the back of the hand and roots of the fingers, an immunity from recurrence of nine years was gained; and it would be interesting, now that a further interval of twenty years has passed away, if Mr. Pemberton would give us the further history of this case.

The case of E. M.,* which is next described, was one very similar in character to that of J. L., but unfortunately an early amputation was not performed in the first instance at a considerable distance above the growth, but an operation was performed just barely skirting the neoplasm, and not widely enough of the infected tissue around. In fact, the treatment (as demonstrated by the result) appears to be just as bad in the case of E. M., as it was good in that of J. L.

E. M., æt. 48, and a laundress, first attended the out-patient department of the hospital in Birmingham in February, 1861. Sixteen years previously she noticed a small wart-like growth, about the size of a pin's head, in the cleft between the second and ring fingers of the left hand. After an interval of about five years, during which time the growth remained stationary, it began to grow and increase slowly in size up to Christmas, 1860, when it was of the size of a horse-bean, and had crept round so as to be situated on the palmar surface of the cleft. The investing skin remained quite sound until about a month before coming to the hospital, when she ran a hook in it, and the sore produced by this accident did not heal. In February the small tumour above described was manifest, into which an incision was made, but only blood escaped. The incision thus made did not heal, but assumed a typically epitheliomatous aspect. On April 3rd, the second finger was amputated, and the head and part of the shaft of the corresponding metacarpal bone were removed. The wound never healed completely, but in a few weeks the region soon reassumed an epithelio-

* Op. cit., pp. 118, 119.

matous appearance. On October 27th, amputation was performed through the forearm, and the stump healed ; but in about two months' time the glands at the inner side of the elbow became enlarged, the epitheliomatous disease gradually disseminated, and the patient died January 8, 1864.

The treatment of cutaneous cancer arising from warts is early extirpation of the malignant growth. It is only in a small proportion of cases, where the disease is of exceedingly small dimensions, and where some contra-indication against excision exists, that the disease should be treated by destruction by caustics. The caustic treatment sometimes yields satisfactory results in cases where the focus of disease is very small, but, even in such cases, the employment of caustics is only too often followed by recurrence upon recurrence, till finally the malignant growth has attained too considerable limits to be dealt with radically, or the internal organs have become implicated.

After excision of the affected skin and underlying tissues, repair of the gap may often be satisfactorily attained by skin-grafting; and, in connection with this subject, attention must be called to a recent communication to the *Lancet* * by Professor Esmarch, describing Wolfe's method of transplantation of skin-flaps. By this plan, a flap of skin is excised from the arm or other suitable part, of rather larger area than the denuded gap which has resulted from the removal of the diseased tissues—in order to allow for slight subsequent shrinkage; and the skin-flap so obtained is merely secured by sutures in the chasm which it is desired to close. This is an advance upon the old operation of transplantation by leaving the flap adherent by a narrow tongue to its original site for a few days in order to maintain its nutrition. It is pointed out by Esmarch, in his paper, that the results of Wolfe's method leave little to be desired.

When the disease under consideration occurs upon a limb, the cases published in surgical literature go to show that early amputation, performed at some point well above

* *Lancet*, 1889, vol. i., p. 113.

the disease, is the only means by which immunity from recurrence may be relied upon. And there are few cases exceptional to this rule.

When epithelioma arises from cutaneous ulcers of long standing, a syphilitic origin of these ulcers may often be ascertained, especially if they be situated upon the lower extremity. Epithelioma, in most cases where it arises from tertiary syphilitic ulcers, may be attributable to a neglect in the treatment of the syphilitic disease by preparations of mercury and iodide of potassium.

Naturally, the transition stages of a syphilitic into an epitheliomatous ulcer are gradual, and in practice cases will be met with in the transition stage which correspond neither with the type of a syphilitic nor cancerous ulcer as described upon paper. In any case where the cancerous ulceration has become palpable by its typical physical signs, the practitioner must not omit to treat the constitutional syphilis present in the patient by medicaments, whilst he also treats the cancerous ulcer from a local and surgical standpoint. The principles of treatment of cancerous disease arising out of syphilitic lesions, do not vary from those cases where this complication is absent.

Scar-tissue, from whatever cause arising, is prone to become the seat of cancer—especially when the cicatrix has resulted from a burn.

In Cashmir, where the natives are wont to burn themselves by sitting over hot braziers, epithelioma arising in the resulting cicatricial tissue is very common.

In this country, the cases of cancer arising in the scar-tissue which results from burns usually present well-recognized features.

In the first place, the disease develops out of scar-tissue of long standing, the patient often being past middle age, and the accident producing the burn having occurred in childhood.

Secondly, the disease commences as an ulceration of the scar-tissue, in some part where the cicatrix is subjected to the greatest tension, especially in any part situated

over some bony prominence, and exceptionally liable to injury.

Thirdly, after a period varying from months to years, the ulceration, which has shown little or no tendency to heal, assumes definite epitheliomatous characters. The edges of the ulcer will be hard, raised, everted, and of irregular outline; the marginal area being indurated and inflammatory. Nodulated granulations will be found growing from the ulcer, and the discharge will be foetid, indicative of the rapid destruction of tissue, drying in small flakes or crusts, which may partly cover the ulcer.

Fourthly, in due course, infection of the lymphatic glands will take place, and the disease disseminates in its ordinary manner.

Cancer of scar runs a very slow course, and the gland-affection does not usually occur till after the disease has been established for many months or some years. Treatment either by caustics or by scraping the growths away with a curette and applying Pacquelin's cautery to the base is not a satisfactory form of treatment, the disease usually recurring exceedingly quickly after its incomplete destruction by these means. From the application of the cautery, too, a fresh cicatrix, of similar production (*viz.* that of burn) to the original cause of the disease, is established.

For cancer in burn-scar tissue occurring upon the limbs amputation is the recognized and proper treatment; treatment by caustics, or scraping and cautery, being measures which only temporize with the evil, and especially inapplicable to cases in which the disease is extensive and situated in the region of a joint or over important vessels and nerves.

There can scarcely be any class of cases in which amputation is so imperatively called for as one in which the operation can be performed well above the site of this disease, with little risk to life, and in time to prevent dissemination through the lymphatic glands to the body.

"Especially . . . where amputation is necessitated by

the degeneration of the wounds produced by burns, . . . the surgeon is justified in holding out a fair prospect that the disease may never recur," wrote Mr. Pemberton, in 1867.*

Upon the very borderland of true malignant disease, lies the cheloid of Alibert, which is a fibrous growth, sometimes containing spindle-cells occurring in scar-tissue. Cheloid only partially possesses malignant properties. It infiltrates the surrounding tissues, but only to a limited extent, appearing as a dense, bluish-white, smooth, elevated growth in the cicatrix. If excised, the cheloid invariably returns locally, but never infects glandular vessels or organs. The most striking peculiarity of cheloid, perhaps, is that, if in the case of a patient the subject of this disease a trifling incision be made in some other part of the skin, far away from the growth, a cheloid will appear in due course in the newly formed cicatrix. Cheloid must therefore depend in measure upon some idiosyncrasy. Obviously, excision of simple cheloid growths must never be recommended. Physicians ordinarily recommend the application of collodion, or other means of repressing them mechanically. The plan of treatment which I have found most efficacious is destroying them by touching them here and there with the fine point of a Pacquelin's cautery, the surface having been previously painted with a solution of cocain to prevent pain.

Epithelioma occasionally occurs in lupus-patches, either in aggravation of the lupoid disease, or after its subsidence in the resulting scar-tissue. Dr. Bayla, of Tübingen, has collected forty-two cases of lupus-carcinoma, in one of which the disease commenced as early as the twenty-sixth year. Epithelioma occurring in conjunction with lupus, is ordinarily very malignant.

* Loc. cit., p. 123.

CHAPTER IX.

CANCER OF THE LIPS, NOSTRILS, EYELIDS,
AND FACE.

THE lower lip is a common site for epithelioma in elderly males. Mr. Rogers Williams, in an excellent paper published in the *Medical Press and Circular*,* points out that neoplasms originate in the lips in 2·2 per cent. of all cases—basing this calculation upon the records of 15,481 neoplasms. Of the 352 neoplasms commencing in the lips, of both sexes, only 12 originated in the upper lip; and of the 340 which commenced in the lower lip, 329 were epitheliomatous, all save three attacking the male sex.

Further, Mr. Williams has examined one hundred of the cases of epithelioma which occurred in the lower lip of the male, finding that the earliest age at which the disease appeared was 26 years, the latest 75·5 years, the mean age 52·4 years. It is also quite in accordance with common observation that in the male the lower lip is frequently affected with cancer during the sixth decenniad of life.

The comparative immunity from cancer in the lips which women enjoy, as contrasted with the frequency of its occurrence in the male, leads us to examine the different conditions of the lips in the two sexes. And in considering the etiology of cancer occurring upon external parts of the body, the antecedents of those parts, being readily open to inspection, lend considerable aid to the elucidation of the causes of cancer. Moreover, if investigations directed towards the causation of cancer occurring on some external

* May 1, 1889, p. 461.

and visible part of the body lead us to find that the disease has developed out of some palpable antecedent condition, it is not difficult to presume the etiology of many of the cancers arising in some internal organ, whose life-history yields evidence of conditions as likely to be precursors of malignant disease as those recognized upon the surface of the body. Now, the histories of cases of epithelioma of the lip leave three well-marked conditions standing prominently forwards as amply sufficient to explain almost every case of lip-cancer which falls under the notice of the practitioner, viz. smoking, syphilis, and jagged teeth ; and in the small proportion of cases where cancer occurs upon the lips where all or any of these conditions may be absent, some other condition, acting locally upon the epithelium of the part and inciting it to proliferation, will be found.

We may dismiss from consideration the question of smoking in women, because so small a number of them are addicted to the habit. Mr. Williams has found that "of 26 cases in which inquiries were made as to smoking, etc., 16 had been great smokers, and 8 moderate smokers ; 5 of the smokers had chewed as well ; 2 had never smoked or chewed." These figures tally very well with most surgeons' experience, and I am not overshooting the mark when I say 24 out of 26 cases (as found by Mr. Williams) of lip-cancer are caused by smoking ; and thus we have at least one well-recognized cause of cancer, common to the male, who smokes, almost absent in the female, who hardly ever smokes ; and not leaving open to us any room to seek for hereditary or other occult explanation of the occurrence of the disease.

In considering cancer of the breast, we have noticed its rarity in the male, in whom the organ is so rudimentarily developed, and, on the other hand, its very frequent occurrence in the female organ, which undergoes such singular and periodical physiological changes. Therefore, from the localists' point of view, the different conditions of the lips and breasts in the opposite sexes, considered with the

relative frequency of cancer, are serviceable to strengthen their position.

In regard to smoking as a cause of cancer, the habit operates in different ways—by the irritating effect of the smoke itself, varying in intensity with the kind of tobacco smoked, and by the direct mechanical irritation of the lip, by the cigar, cigarette, or pipe-stem. The most injurious of the various forms of smoking are the cigarette, the paper of which is apt to adhere to the lips, and the short, hot, clay pipe commonly smoked by the lower classes. The common people who smoke clay pipes are usually too careless to coat the end of the stem evenly with sealing-wax, by which means the stem can be rendered as harmless as a smooth amber mouthpiece. Those who are the subjects of any chronic affection of the muco-dermic juncture should certainly forego tobacco-smoking, particularly cigarette-smoking, unless the cigarettes are smoked through one of the many different kinds of mouthpieces which do not stick to the lips. The saltpetre with which most of the cigarette papers are impregnated, to cause them to burn evenly with the tobacco, exerts unquestionably an irritating action upon the lip.

By far the larger proportion of cases of epitheliomatous disease of the lip originate on either the right or the left side, and it is ordinarily the sides of the lips which are brought in contact with the pipe-stem by smokers. The disease originates occasionally in the centre of the lower lip, and, still more rarely, at the angles of the mouth.

Little need be said of the causation of lip-cancer by jagged teeth, because this cause is sufficiently obvious hardly to require description. Accumulation of tartar around the necks of the front teeth give rise to sufficient irritation to those parts of the lips or tongue with which they come in contact to incite the development of cancer in some cases.

As to syphilis, chronic secondary lesions on the lips are not infrequently the precursors of epithelioma. In the tertiary stage of syphilis a small gumma may appear on the lip, and its physical appearance may closely simulate

epithelioma. But the gumma will resolve under syphilitic treatment, though it is important to note that, if neglected, gummata will sometimes become converted into epitheliomata.

The common form of epithelioma of the lips, the disease arising as a small nodule, lying beneath the muco-cutaneous margin in elderly subjects, and usually traceable to some recognized and adequate cause, presents little difficulty as to diagnosis, neither should there be any doubt as to the proper treatment in such a case. The growth, with a sufficiently wide area of the surrounding tissue of the lip, must be excised, leaving a V-shaped cleft whose edges are to be adapted with hare-lip pins.

One would imagine that there should be a unanimity of opinion on all simple cases of early epithelioma of the lip as to treatment by excision; but in practice such is not the case, and many practitioners still recommend (in our opinion, improperly) the use of caustics. Granted that, in such early cases, the growths can be destroyed by caustic pastes, yet by these means sufficient of the healthy tissues around the growths cannot well be destroyed; whilst operations of excision must be considered as the most speedy and safe means of successfully eradicating the disease, and its recurrence need not be anticipated if the exciting cause or causes have also been removed, viz. by a course of antisyphilitic treatment, if there be any syphilitic taint; by abandonment of smoking; and by relegating the treatment of the teeth to a good dentist. Cases in which the disease has attained considerable proportions, either from neglect, improper treatment by caustics, or inadequate removal, are frequently presented to surgeons. It is difficult to say the precise limits which should negative, as being too far advanced for operations, radical measures; but nearly the whole of either the upper or lower lip may successfully be replaced by plastic operations.

Operations for cancer of the lip ought always to be undertaken before the lymphatic glands have become implicated. If the glands, however, be affected, they must

be excised in the freest possible manner, and it is a good plan to ligature any large arterial trunks in the neighbourhood at the time of the operation.

Epitheliomatous growths may appear upon parts of the face other than the lips, and they not infrequently are met with at the muco-cutaneous juncture of the nostril or eyelid ; or, more rarely, from the skin of the cheeks. It is impossible to discuss the question of epitheliomatous ulceration of the face generally, apart from rodent ulcer and lupoid ulceration with which epithelioma is so often confounded. The essential distinctions between these diseases are as follows :—The ulceration of lupus occurs usually in the young, and exhibits a tendency to heal spontaneously in some parts, whilst spreading in others. The margin of the nostrils are the most frequent site of exedent lupus, and the lymphatic glands are not affected. Epitheliomatous ulceration also occurs, as already mentioned, at the margin of the nostrils, but it is a disease attacking elderly people ; the lymphatic glands in continuity with the primary disease become affected in due course, and there is no natural tendency to repair ever exhibited.

RODENT ULCER nearly always commences in the furrow between the side of the nose and the lower eyelid, where the sebaceous glands are peculiarly abundant ; the lymphatic glands are never affected, but the ulceration presents marked and distinctive physical signs, and usually appears in elderly subjects. The margins of the ulcer are sinuous, inverted, and rolled over ; the discharge is very scanty, and the floor of the ulcer is florid, clean-looking, and rather glossy. Nevertheless the rodent ulcer, the epithelioma, and the lupoid ulcer present the pathological feature of new growth and ulceration co-existing ; all are malignant, and therefore deserve mention in this treatise. The treatment must depend upon the site of the growth. If the margins of the nostrils be implicated, the diseased portions should be thoroughly scraped away with curettes or spoons, and Pacquelin's cautery freely applied to the denuded structures.

A similar plan of treatment is to be recommended for rodent ulcer situated near the lower eyelid. But as the disease is certain to recur after some months or years unless its extirpation be really carried out effectually, considerations of disfigurement consequent upon the free extirpation of the rodent ulcer must yield to the fact that the parts can usually be restored to a great extent by carefully planned plastic operations. In operating for epithelioma of the eyelid, surprisingly good results can often be obtained, even where the disease has attained considerable proportions. Very small-sized ulcerations on the face may sometimes be treated by the application of caustic paste; but as a rule it will be found better to resort to scraping them away or excising them, general or local anæsthesia having been induced.

CHAPTER X.

CANCER OF THE TONGUE.

THE tongue may be attacked by most of the varieties of cancer, though very rarely by any excepting epithelioma, the occurrence of which is exceedingly common. Epithelioma of the tongue occurs about five or six times more frequently in the male than in the female. It has been pointed out that cancer generally is more common in the female sex, but if we exclude the breast and uterus, then cancerous disease is more prevalent in the male, the predominance being due to the cases occurring in the tongue.

Epithelioma of the tongue may commence from any part of the surface of the organ, but most of the cases may be divided into two main groups: first, those commencing on the dorsal surface; and secondly, those originating from one or other side or edge of the tongue.

When epithelioma arises from the dorsal surface of the tongue, it usually commences either solitarily in some small crack or fissure, or by multiple points from antecedent chronic inflammation, variously termed by different writers *ichthyosis linguæ*, *psoriasis lingue*, *leucoma* or *leucoplakia*. All these, to which more might be added, are synonymous terms. *Leucoma*, or *psoriasis* of the tongue, must be regarded as the frequent precursor of cancer, and therefore its careful consideration becomes of the last importance. Exceedingly rare in the female, and rarely of idiopathic origin, *psoriasis* of the tongue is usually due to the syphilitic taint, but the condition is aggravated by, or perhaps sometimes solely caused by, smoking.

It commences generally in those past the meridian of life, in whom some foulness of the mouth exists from neglected teeth, errors in diet, the drinking of ardent spirits and liqueurs, and some rarer irritative conditions which have affected the mucous membrane. First, there is a localized hyperæmia, the papillary layer being denuded of its protecting epithelium. Then the epithelium proliferates, and small white depressed patches, as if inlaid, may be noticed scattered here and there. A similar condition is frequently to be observed upon the lips or buccal mucous membrane. If patients apply for advice, as they rarely do in this early stage of the disease, a favourable prognosis may usually be given, but the gravity of the condition should at once be pointed out to the patient in the plainest possible manner. The teeth must be thoroughly put in order, smoking absolutely interdicted, the diet most carefully regulated, alcoholic beverages must, if allowed at all, only be permitted in a very diluted form, and to a very small extent. Whether or no a history of syphilis be elicited, it is well to prescribe a mixture containing small doses of perchloride of mercury and iodide of potassium, with or without the addition of Fowler's solution. In some cases resolution of the ichthyotic patches may be attained in the most speedy manner by fumigating the tongue with vapour of calomel. Of the several apparatus in use for this purpose the best is that introduced by Dr. Hugh Fenton, which consists of a small iron retort into which a small teaspoonful of calomel is placed, and having been heated with a spirit-lamp flame beneath, the vapour is blown upon the tongue with a small indiarubber bellows attached to the instrument. By this means a fine metallic film of pure mercury is deposited upon the patches, which, in all except aggravated cases, resolve after a few fumigations.

Schuchardt has traced the steps between buccal and lingual psoriasis and cancer of the cheek and tongue.* A case fell under his observation where psoriasis of the tongue had existed for many years in a dormant condition,

* Volckmann's *Sammlung*, No. 259.

but ultimately assumed the character of epithelioma. The tongue having been removed, the transition from the psoriasis to the epithelioma was demonstrated microscopically. Schuchardt also draws attention to the development of cancer of the penis from "psoriasis preputialis," by which he means a condition of phimosis with chronic inflammation of the prepuce.

The lesson to be derived from these observations is, that when a small isolated patch upon the membrane persists after the removal of all aggravating conditions and assumes a warty character, indurated around its base, the growth should be very freely excised by elliptical incisions. If the growth be of comparatively large size, say approaching the size of a nut, or if the patches and growths, though smaller, be multiple, the entire tongue had better be excised; and in the case of operations performed in the premonitory or early stage of cancer, the removal of the tongue may be regarded as a curative measure. The loss of a tongue is to the patient not so great a sacrifice as at first sight would appear. The small part of the base close to the epiglottis and pillars of the fauces eventually falls forward, and constitutes a miniature tongue. The faculty of speech, although impaired, still exists, and the patient will, in most instances, get on very comfortably with the diminutive organ.

When cancer occurs upon one or other side of the tongue, which is its most common site, there is not ordinarily much trouble as to the diagnosis. A small sore spot is usually first formed by the contact of the tongue with the inner surfaces of the molar and bicuspid teeth, with incrustations of tartar, faulty stoppings, or sharp edges. This soon becomes indurated around its base, the edges are typically rugged and everted, with a foul slough upon the surface of the ulcer, which bleeds very readily upon pressure. The chief difficulty in diagnosis lies in distinguishing the disease from a syphilitic gumma, which in the tertiary stage of syphilis not uncommonly develops in the tongue. A gumma usually occupies the central

portion of the tongue, and the ulceration is secondary to the syphilitic growth. In the case of epithelioma, the side of the tongue is usually the part affected, the ulceration proceeds from the surface inwards, and there is impaired mobility of the organ.

Partial removal of the tongue for cancer must not be recommended, save in exceedingly early stages of the disease.

I recollect the case of a woman whom I treated at the Cancer Hospital, and who first presented herself to me with an ulcerated epithelioma about the size of a sixpence on the left lateral border of the tongue. The disease appeared so small and isolable, that I thought I could certainly save the tongue. I ligatured the left lingual artery beneath the hyoglossus muscle, and afterwards excised the growth with a good wedge-shaped portion of the adjoining lingual tissue. There did not appear to be the smallest trace of glandular affection. The tongue got perfectly well within a few days, and the immediate result was excellent; but recurrence of the disease took place in the floor of the mouth in a few weeks. The fact must never be forgotten, in considering cancerous disease of the tongue, that both the vascular and lymphatic systems of the organ are exceedingly ample, and favour the growth and progression of cancer to an extent almost unparalleled in any other region of the body. Hence, in treating epithelioma of the tongue—the question of syphilis having been excluded by the history of the case, an absence of its physical signs, or by the negative results of antisymphilitic remedies boldly pushed,—if an operation is to be resorted to, nothing short of extirpation of the whole tongue and a considerable part of the floor of the mouth, with the adjacent lymphatic vessels and glands, should be contemplated. Such an operation is certainly severe, but need not be considered as dangerous to life in a case suitably selected, proper care having been given to operative details and proper antiseptic dressings selected.

There are, perhaps, more methods of excising the tongue

than for the performance of almost any other operation in surgery.

By Kocher's method a more thorough extirpation of the infected parts beneath the base of the organ and in the submaxillary space can be effected than by the other operations; and it, or some modification of it, should be selected for most of those cases of cancer where the side of the tongue and floor of the mouth are infected. In no situation can the effects of cancerous disease be more horrible from every point of view than when the tongue or mouth are implicated, and upon these grounds extirpation of the malignant growth is often recommended merely as a palliative measure, to mitigate distress, prolong life, check hæmorrhage, and remove the fœtor which attends the disease. When the bleeding from a cancerous tongue becomes profuse, ligature of the lingual artery is often necessary for its arrest. The secondary growths, too, often give rise to alarming hæmorrhage by ulcerating into some of the large vessels in the submaxillary or anterior triangles; in these cases, also, the ligature of the artery involved or of the common carotid is often advisable.

For dyspnœa, caused by pressure of the growths upon the trachæa, tracheotomy must be performed, and this operation may become necessary whilst excision of the tongue is being carried out.

In all cases of cancer of the tongue where operative proceedings are discountenanced Chian turpentine should be administered. The value of this drug for uterine cancer has been pointed out, and the same principles guide its administration for lingual cancer.

The various mouth-washes prescribed to diminish or destroy the fœtor of the discharge in malignant disease are too well known to need description. Where dysphagia exists, the propriety of performing gastrostomy should become the subject of consultation.

Malignant disease may also occur primarily in the lymphatic glands or salivary glands in the floor of the mouth.

In any case the disease must be recognized by its physical signs, and distinguished from non-malignant tumours, such as ranula, nævi, and simple adenomata.

Calculi embedded in the salivary ducts, abscesses, and enlargements of the bursa sublingualis submucosa can hardly be mistaken for cancer.

CHAPTER XI.

CANCER OF THE NOSE, NASO-PHARYNX, PALATE,
GUMS AND TONSILS.

THE cavities of the nose and naso-pharynx are sometimes the seat of malignant disease. Carcinomatous growths, encephaloid, and epithelioma, are exceedingly rare, especially the latter, in these situations.

Epitheliomatous ulceration, when commencing in the interior of the nose, is difficult of recognition in its early stages, unless situated in the anterior portion of the nasal chamber. From necrosis of the nasal bones, due to syphilis, struma, lupus and injuries, the disease has to be distinguished.

A sarcomatous growth of the nose and naso-pharynx appears, ordinarily, in the form of a solitary polypus, of a purely sarcomatous or fibro-sarcomatous composition. In the nose, the growth usually springs from the septum, less frequently from the floor or outer walls of the cavity, and is distinguishable from simple non-malignant polypi by being solitary, of a tough consistence, non-hygrometric, and by its readily hæmorrhagic qualities.

When a malignant polypus is found in the naso-pharynx, it is usually attached to and arises from the roof of the cavity, or the under surface of the base of the skull. The polypus may be of encephaloid nature, but is more frequently of the sarcomatous type.

A malignant polypus arising in either the nose or naso-pharynx, by its growth encroaches upon the neighbouring parts, causing prominences on the maxillary region of the face by extension forwards, on the palate by extension

downwards, or protrusions of the eyeballs by extension upwards, giving rise to the condition known as frog's face. If the growth be situated in the naso-pharynx, it can be recognized by the finger inserted through the mouth, or may be seen protruding below the inferior border of the velum pendulum palati. Naso-pharyngeal polypus ought to be easily distinguished from retro-pharyngeal abscess, with which it has been confounded; but polypus in this region has not infrequently been mistaken for an encephalocele, bulging through the base of the skull, and the deplorable result of treatment based upon a mistaken diagnosis need scarcely be commented upon.

As to treatment for malignant disease arising in the nose or naso-pharynx, preliminary exploratory operations are needed to gain free access to the disease. These are various, and the particular exploratory operation must be selected by which the readiest access can be gained to the base of the growth:—

1. The anterior portion of the nasal cavity may be opened either by an incision carried through the median line of the nose and upper lip, or by one commenced below the inner canthus of the eyelids and passing downwards in the naso-maxillary groove, around the cartilage of the aperture of the nose, terminated vertically through the median line of the upper lip.

2. Access having been gained by the latter incision to the front of the nasal chamber, its deeper portions may be exposed more fully by chiselling through the inferior maxillary bones (their soft covering having been reflected outwards), horizontally, in a plane above the level of the palate, and by afterwards forcibly depressing the anterior palatine portion downwards, but leaving the posterior and soft portion of the palate with its vessels and nerves undisturbed. The parts can be reunited after the object of the exploratory operation has been accomplished.

3. Rouge's excellent operation, which consists in dividing the labio-gingival mucous membrane horizontally, from the left upper to the right upper molar teeth, by gaining

access to the front of the nasal cavity over the anterior nasal spine, and reflecting the soft parts and nasal cartilages upwards over the face.

4. Exploratory incisions through the palate.

After the growth has been sufficiently exposed by the exploratory operation which has been selected, it must be severed from its attachments by burning through its pedicle with Pacquelin's cautery, or with a galvanic wire cautery. In some cases the neoplasm may be excised with scissors, a scalpel, or by chiselling it away, but the hæmorrhage consequent upon such procedures is often alarming and difficult to arrest.

During operations of any extent of the character referred to, there is always a certain danger contingent upon the passage of blood into the lungs through the trachæa. Some writers advise either that tracheotomy should be performed, and Trendelenburg's tampon cannula inserted into the trachæa, or an ordinary cannula employed, a sponge with a long thread attached, being pushed into the pharynx. In most cases, in the hands of skilful operators, these preliminaries may be dispensed with; but the operator should always be prepared to perform tracheotomy, or to infuse saline fluid into the veins in case of need, and he must be considered lacking in common care should he neglect to have the proper instruments for these operations at hand, as the patient's life may hinge upon the prompt performance of one or other of these procedures.

Cancer occurring primarily in the palate is rare; but it is sometimes met with in the form of epithelioma, or still more rarely as sarcoma. Epithelioma of the palate does not present appearances different from the growth as formed elsewhere. Sarcoma appears as a prominent, vascular, semi-fluctuating swelling beneath the periosteum, which might be mistaken in some cases for an abscess.

Save in cases where the malignant disease has advanced too far, the palate should be excised for cancer. This operation is far simpler than at first sight appears. One of the central incisor teeth must be extracted, and the

alveolar margin sawn through almost in the middle line. The incision must be extended through the middle line of the hard palate from before backward, by means of a narrow saw inserted over the anterior nasal spine into the inferior meatus. An incision through the labio-gingival furrow is then made as in Rouge's operation, and each half of the palate successively removed by chiselling through the maxilla, horizontally, a little above the level of the palatine process. The process must then be wrenched away from its posterior bony attachment, the velum being cut through with scissors, and the posterior palatine vessels grasped with Wells's pressure-forceps, or touched with the point of the platinum cautery.

Malignant epulis is the term applied to sarcomatous or epitheliomatous growths, springing from the periosteal margin of the alveoli. In all, except very extensive cases, they should be excised with a considerable width of the bone from which they spring.

Butlin * records twelve cases of primary cancer of the tonsil, in all of which microscopic examinations of the growths were made. Nine were cases of small round-celled sarcoma, one of spheroidal-celled carcinoma, and two of epithelioma. In all save one of the cases of sarcoma there were secondary deposits in the glands. In the exceptional case, the tonsil was removed by the thermo-cautery knife, and two years afterwards the patient was quite well and free of the disease. Of the other cases, two of which were operated upon with the galvano-cautery, three with the ecraseur, and the remainder by excision with the knife, all proved fatal by recurrence of the disease, though all recovered from the immediate effects of the operations and were temporarily relieved.

* *Sarcoma and Carcinoma*, p. 188 et seq.

CHAPTER XII.

CANCER OF THE BONES.

THE bones with their periosteum and vessels, being derived from mesoblastic tissue, cannot give rise primarily to malignant growths other than sarcomata. An apparent exception exists in the case of the upper jaw, the interior of the antrum being clothed with mucous membrane continuous with that of the nasal fossæ, and encephaloid carcinoma may arise from the glands of this mucous membrane. The older writers used ordinarily to treat of cancer, meaning carcinoma of bone, but, for reasons already given, when cancer occurs in bone it is as some form of sarcoma.

As distinguished by the characters of its component cells, sarcoma of bone appears either as small round-celled, spindle-celled, mixed-celled, or giant-celled (myeloid). Moreover, the sarcomata of bone are divided into two main groups, viz. those which arise from the interior of the bone, usually in the case of a long bone commencing in the cancellous tissue of an epiphysis, and termed "central" growths; and a group which arises from the periosteum, and termed "periosteal" growths.

The periosteal growths, again, occasionally arise from the outer surface of the membrane, such tumours being designated "parosteal," but far more frequently they spring from its inner surface, "subperiosteal." Practically, however, the parosteal growths may be dismissed from general consideration, and excluding, further, malignant disease of the upper jaw, cancer of bone may be arranged either as subperiosteal or central sarcomata. This difference of

origin is of the greatest importance to appreciate, because it carries with it other marked differences as to structure, diagnosis, prognosis, and treatment.

As to structure, an example of either growth may consist of round, spindle, or mixed cells, or of myeloid cells sparsely scattered; but myeloid cells are never present in large proportion in subperiosteal sarcoma, whilst in growths of central origin, four-fifths of their bulk may be constituted by myeloid or giant cells. Further, when myeloid cells exist in abundance in a sarcoma, they impart to it a maroon-red colouration, and thus by the naked eye the myeloid may be distinguished from the sarcoma whose cells are round or spindle-shaped, and which give a paler colour to the neoplasm.

Secondary changes are rare in the central sarcomata, but ossification and chondrification are common in subperiosteal growths. The central growths are more or less confined by the bony walls surrounding them, which retard their rate of progress, reducing their malignancy; but as a growth advances towards the surface the bone thins away before it, and when the bony layer has been reduced to the thickness of parchment or egg-shell, a peculiar crackling, which aids the recognition of the disease, can be elicited upon manipulation. The vascular supply, too, is more liberal towards the central than the subperiosteal growths, whence the pulsation, absent in the latter variety, is often met with in the former. The tendency to glandular implication and infiltration of the surrounding structures is less in the case of central than of periosteal growths; nor are secondary growths nearly so common in internal organs in conjunction with the former as with the latter variety.

From all these considerations it appears that ordinarily the prognosis is favourable in a case of central, but bad in one of subperiosteal sarcoma. For subperiosteal sarcoma of the extremities, very early amputation is the only surgical means upon which any hope of cure can be placed; but some surgeons incline to think that for the central variety of sarcoma, removal of the disease with

resection of portion of the bone in which it lies will be adequate. To my mind, it appears that, whilst admitting the far less probability of generalization in the latter than in the former case, there can be few instances where anything short of amputation can be considered sufficiently radical to extirpate the disease.

When sarcoma attacks, centrally, one of the bones of the vault of the skull, the growth is usually solitary, and not prone to infect the lymphatic system. Subperiosteal (subpericranial) disease, on the other hand, usually consists of multiple growths, which are very apt to generalize rapidly. A subpericranial sarcoma needs to be distinguished from a node, whether simple or syphilitic, from hæmatoma, and from Pott's "puffy tumour." The probability of other growths appearing shortly does not offer much hope of advantage to accrue from excision of a subpericranial sarcoma; nor must the further consideration be forgotten of the possible existence of a similar growth on the converse side of the bone. When sarcoma arises in connection with the dura mater, the growth usually first invades and afterwards perforates the calvarium as a fungating mass, which pulsates either on account of the size of its own vessels, or pseudo-pulsation may be transmitted from the brain beneath. Such a sarcoma is termed by the older writers "fungous tumour of the dura mater."

Sarcomatous disease of the bones not infrequently appears in conjunction with osteitis deformans.

Cancer of the upper jaw may occur either as sarcoma springing from the bone itself and its investments, or as encephaloid carcinoma commencing in the mucous lining of the nose or antrum. Tumours of the upper jaw may be either innocent or malignant, or cystic or solid. Both innocent and malignant tumour may also spring from the surface of the bone in front, arise from the interior of the bone, or press it forwards by expansion from behind. If the tumour be malignant, and situated either superficially, or, if deeply, with room to expand into the nasal fossæ or pharynx, its rate of growth will be rapid,

and the lymphatic glands will become affected early. Its tendency to rapidly infiltrate the surrounding tissues, and the irregularity of its contour (before it may have advanced to the ulcerative stage) will serve to distinguish it from an innocent tumour. The sensation of eggshell crackling, in any case, cannot by itself be regarded as distinctive of malignant disease, but ordinarily merely of a growth, innocent or otherwise, coated by a thin bony layer.

The early recognition of malignant disease of the upper jaw is often as difficult as it is important, and often cannot be made apart from exploratory puncture or incision. Fortunately these means are indicated in the treatment of the non-malignant tumours. An exploratory puncture will demonstrate the existence of dropsy of the antrum, of chronic suppuration within the antrum, or aid the diagnosis of a dentigerous cyst, if doubt remain as to whether the tumour under examination be one of these conditions, or of a soft cystic sarcoma. For every form of malignant disease of the upper jaw, before glandular infection has arisen, excision of the bone should be performed. Considered *per se*, excision of the bulk of the upper jaw, as ordinarily performed, through an incision carried down the side of the nose, and through the median line of the upper lip, with a short auxiliary incision running below the lower margin of the orbit, need not be deemed of a dangerous character; and if the malignant growth, on account of which the operation is performed, be small, and especially if centrally situated, an exceedingly good result may be anticipated.

On the other hand, if a case be presented to an operator where the submaxillary lymphatic glands are affected, where the growth has infiltrated the soft coverings of the face, or has ulcerated into the mouth and nose, the only good to be anticipated from excision of the jaw would be the temporary removal of a source of the greatest distress to the patient, but with the risks of a dangerous operation.

Sarcoma attacks the lower jaw in forms which may arise either from the periosteum or from the medullary portion.

The same principles of treatment apply both to sarcoma of the lower and upper jaws. In the case of the lower jaw the central are commoner than the subperiosteal variety.

Subperiosteal are commoner than central tumours of the clavicle, though this bone is but rarely attacked by malignant disease. The only objection to resection of the clavicle for malignant disease is the important anatomical relationship of the bone to the structures beneath it. Still, in well-selected cases, resection of the clavicle may be advantageously resorted to, especially for sarcoma attacking the outer extremity of the bone.

Sarcoma of the scapula is not a very uncommon variety of malignant disease. It ordinarily occurs about the age of puberty, and a typical case is described in the *British Medical Journal* of July 10, 1886. The patient was aged sixteen, and admitted in July, 1883, into University College Hospital, under the care of Mr. Heath. The natural outlines of the right shoulder were obscured by a roughly pyramidal swelling, the base of which was situated at the axillary border of the scapula, and the apex at about the middle of the supra-condylar ridges of the humerus. Amputation had been proposed six months previously, but had been then declined. On July 4, 1883, Mr. Heath amputated the arm at the shoulder-joint, and excised the scapula and outer portion of the clavicle. From this operation the patient recovered, and remained free from recurrence of the disease, which was of an exceptionally aggravated form, till Christmas, 1885, when a small lump was observed on the front of the chest. In May, 1886, this growth measured three inches in diameter, and it was excised. The patient recovered quickly, and no further signs of recurrence were observed when the case was reported in July, 1886.

When the humerus becomes the seat of sarcoma, either the growth appears in the head of the bone as a central neoplasm, or the shaft is the situation of a subperiosteal growth.

When the head of the humerus is attacked, the growth

tends in its early stage to expand the bone in a direction outwards. The expanded extremity of bone is also uneven in contour, and in due course there will be egg-shell crackling. The neoplasm does not invade the articular cartilages ; if very vascular there will be a bruit and pulsation somewhat simulating aneurism of the axillary artery. But the firmer consistence of the tumour, its position, the absence of bilateral expansatilty, and the fact that its dimensions are not lessened by compression of the subclavian artery, serve to establish the differential diagnosis. Enchondromata and exostoses are prone to occur at the upper epiphysial line on the humerus, but such growths are denser and more pedunculated than central sarcoma. As to treatment, some recommend excision of the head of the humerus ; and this might suffice if the diagnosis were established at a remarkably early period ; but in most cases amputation at the shoulder-joint will be the proper operation, and it may be advisable even to extend the area of the operation, as in Mr. Heath's case.

Subperiosteal sarcoma of the humerus appears as a swelling over some part of the shaft of the bone, producing a somewhat spindle-shaped aspect. The disease is certainly apt to be confounded with periostitis, but any doubt can be cleared up by an exploratory incision. Bearing in mind that the smaller the tumour, *cæteris paribus*, the greater the difficulty of diagnosis, but, if detected, the more hopeful the treatment, the importance of exploring any doubtful growth in the region of the humerus will be apparent. Subperiosteal sarcoma of the humerus is a very malignant form of cancer, and in most cases amputation at the shoulder-joint is to be recommended.

Central sarcoma of the lower extremity of the humerus is rare. Subperiosteal sarcoma attacks the shafts of the radius and ulna, and central sarcoma the extremities (usually the inferior) of these bones. Being situated further from the trunk than the humerus, the prognosis is far more hopeful ; and the same general principles already laid down

must be applied to any tumour of the radius or ulna in respect to diagnosis and treatment.

Sarcoma may also attack a metacarpal bone or phalanx, subperiosteally or centrally, but the disease is rare.

The sternum and the ribs are occasionally the seat of sarcoma. If the growth be detected whilst small, it may often be successfully removed with the portion of bone from which it springs.

The femur is the most liable of all the long bones to sarcomatous disease. Subperiosteal sarcoma may be either round, spindle, or mixed-celled, and is usually situated over the lower portion of the bone. Subperiosteal sarcoma of the femur is a most fatal variety of cancer, and has been known to run its course from start to finish within three months. The probability that amputation above the disease, through the shaft of the femur, will not be a safeguard against recurrence, and the great danger to life which accompanies amputation through the hip-joint, render subperiosteal sarcoma of the femur one of the most unfavourable kinds of case which falls under the notice of the surgeon.

Latterly a new method of amputation at the hip-joint has been introduced, viz. by a lateral vertical incision terminating in an oval, after the oval method of amputation at the shoulder-joint. The vessels can be secured as they are divided by this method, and the results will probably yield a far larger number of successes than those afforded by the flap operation. The patient is placed upon the sound side, and the sound thigh fully flexed and secured in that position. A vertical incision is commenced about two inches above the trochanter, and carried downwards along the femur for several inches. The operator dislocates the head of the femur from the cotyloid cavity, his assistants first abducting and afterwards adducting the limb. Whilst the limb is fully adducted, and the upper part of the femur forcibly pulled out of the wound, the knife must be glided down the inner side of the bone, separating the muscular attachments to as low a point as

necessary. Amputation is concluded by cutting across the soft parts, the femoral artery having been previously secured.

Central sarcoma usually selects the lower in preference to the upper extremity of the femur.

The tibia and fibula are often the seats of subperiosteal or central sarcoma. The subperiosteal form, when it attacks these bones, often fungates through the skin, a complication only very rarely met with in the case of the femoral sarcoma. The upper extremities of the tibia and fibula are those in which central sarcomata usually occur.

Sarcoma of these bones is, as compared with femoral sarcoma, a much slower growing form of cancer.

The same general principles apply to sarcoma of the lower extremity with regard to resection and amputation as for the upper extremity—with the reservation that, of amputations of the upper as compared with the lower extremity, the danger to life is greater in respect to the lower limb. As to the risks of amputations of the extremities, in reference to their position upon the limbs, the general rule is that the nearer the amputation is performed to the trunk, the greater the danger.

Of course the mortality of amputations depends more upon the various conditions which surround the case than upon the exact site of the amputation, and the general mortality of amputations has been enormously diminished during late years by the introduction of antiseptic surgery, improved means of controlling hæmorrhage during operations, as well as improvements in the administration of anæsthetic agents and other matters of detail.

Neither can any hard and fast line be drawn upon the limb below which amputation must be considered safe and above which dangerous. In the lower extremity, the risks of the operation must certainly be considered to increase from the knee-joint upwards. Anatomically, the hip-joint corresponds to the shoulder-joint, and the knee to the elbow, as contrasting the extremities; but surgically, and in respect to the comparative risk of amputation, the

knee-joint must be considered as more or less corresponding with the shoulder-joint.

A very valuable contribution, demonstrating how the risks of operative surgery have diminished in modern times and are still diminishing, will be found in the *British Medical Journal* for January 28, 1888, written by the pen of Mr. Dunnett Spanton, of the North Staffordshire Infirmary. He records the results of major operations performed in his infirmary from 1854 to 1887. The tables include the various amputations of the extremities and excisions of the joints; excisions of the breast, testis, penis, tongue; lithotomies, osteotomies, and other major operations.

The final results of all these operations at the North Staffordshire Infirmary come out as follows: From 1854 to 1858, 95 operations are reported, with a mortality of 14.73 per cent.; from 1859 to 1863, 119 operations, with a mortality of 16.8 per cent.; from 1870 to 1874, 136 operations, with a mortality of 17.65 per cent.; from 1879 to 1881, 263 operations, with a mortality reduced to 6.08 per cent.; and from 1885 to 1887, 161 operations were performed with only a mortality of 2.42 per cent. A considerable number of the amputations were performed for compound comminuted fractures of the bones, and it is well known that the mortality sequent to amputations for injury is greater than that sequent to amputations for disease. This latter point is well shown by Mr. Frederick Page, who has specially investigated the causes of amputation-mortality at the Newcastle Infirmary.

I conclude this chapter by adding the last contribution on this subject, as supplied to me by the courtesy of Mr. Page, because I think it deals very practically with the question of amputation-mortality, and supports my contention, that, if operation cases are properly selected, and the patients are carefully looked after, and surrounded with proper precautions, both during the operation and during the after treatment, operations of very considerable magnitude may be undertaken with every prospect of recovery.

RESULTS OF MAJOR AMPUTATIONS TREATED ANTISEPTICALLY IN THE ROYAL INFIRMARY, NEWCASTLE-UPON-TYNE, DURING THE LAST TEN YEARS AND NINE MONTHS.

By FREDERICK PAGE, Honorary Surgeon to the Royal Infirmary
Examiner on Clinical Surgery in the Universities of Edinburgh and Durham.

The following table gives the results of major amputations treated antiseptically in the Royal Infirmary, Newcastle-upon-Tyne, during the year 1888.

TABLE I.

Table of Major Amputations treated antiseptically in the Royal Infirmary, Newcastle-upon-Tyne, during the year 1888.

	INJURY.			DISEASE.			TOTAL.
	NO.	R.	D.	NO.	R.	D.	
Double Amputations ...	...	...	...	...	...	...	...
Hip Joint ...	1	...	1	...	...	...	1
Thigh ...	1	1	...	10	10	...	11
Knee Joint ...	...	...	...	...	...	...	...
Leg ...	4	1	3	2	2	...	6
Ankle Joint ...	1	1	...	13	13	...	14
Shoulder Joint ...	2	1	1	1	1	...	3
Arm ...	2	1	1	...	...	...	2
Forearm ...	2	2	...	3	3	...	5
Wrist ...	...	...	...	...	...	...	...
	13	7	6	29	29	...	42

The number of amputations is unusually small and the mortality unusually high. Of the 42 patients treated, 6 died = 14·2 per cent. Twenty-nine of the operations were

for disease, and among these there were no deaths. Last year we had 43 amputations for disease without a death, so that we have now had 72 consecutive amputations for disease without a single death. Of the 13 amputations for injury, 6 patients died, which is a mortality of 46·1 per cent., contrasting very unfavourably with the mortality following amputation for injury during the five previous years. From January 1, 1883, to December 31, 1887, exactly 100 major amputations were performed for injury, and four patients died.

The mere statement, however, that so many cases have been operated upon, and that so many proved fatal, is not of much value as a criterion of success or otherwise, unless details are given of each death, and it is with the view of making these statistical records valuable that I have now for a term of six years carefully tabulated the circumstances accompanying each death, the actual cause of death, and the age of the patient. We want, in an inquiry of this kind, to know particularly how many patients have died from blood-poisoning. That is the crucial question. Blood-poisoning is to a considerable extent an avoidable cause of death. The age of the patient is a matter of great importance—determining, as it does, more perhaps than any other single circumstance, the result of the case. We have been wonderfully free from deaths from blood-poisoning. During the five years preceding the past year only two cases occurred; but the following history of the six deaths in 1888 is less satisfactory than any preceding record.

PRECISE CAUSE OF EACH DEATH IN THE YEAR 1888.

1. Man, aged 49 years, amputation of the leg five months after compound fracture; stump very nearly healed; death from blood-poisoning. The blood-poisoning is supposed to have been due to the man spending several hours smoking in a water-closet.

2. Man, aged 44 years, upper arm crushed off close to shoulder joint by wheel of a locomotive. It was difficult to cover the wound with skin after dis-articulation ; sloughing took place ; death from blood-poisoning.

3. Man, aged 49 years, primary amputation of leg below the knee for compound fracture ; part of the foot of the other limb was removed at same time ; death in 14 days from blood-poisoning.

4. Boy, aged 14 years, primary amputation at the hip ; death in a few hours from shock.

5. Boy, aged 15 years, admitted from a distance with gangrene of foot, following compound dislocation of ankle joint received a week before ; death from tetanus six days after amputation below the knee.

6. Woman, aged 62 years, primary amputation of right upper arm for compound fracture. In addition there was a very extensive laceration of the soft parts of the left leg and thigh. The amputation remained sweet and progressed favourably, but the lacerated wound of the lower extremity became septic, and patient died from blood-poisoning 14 days after the accident.

It will be seen that of the six deaths four are returned as due to blood-poisoning. Two of these four patients were 49, one 62, and one 44 years of age. The other two were boys—one, aged 14 years, died soon after primary amputation at the hip, from shock ; the other, aged 15 years, from tetanus, which is regarded as a form of blood-poisoning by some eminent authorities. I do not think it wise to look upon these deaths from blood-poisoning as accidental ; and I feel they should stimulate us to most diligently search out and exclude every possible source of infection. I am perfectly satisfied that years ago the high amputation mortality in this hospital was due, to a large extent, to the circumstance that the surgical cases were dressed by the same persons who made the *post-mortem* examinations. I feel very strongly that the house-surgeons and the dressers ought not to be permitted to enter the *post-mortem* theatre or to frequent the dissecting-room

during their tenure of office. There is risk, to my mind grave risk, of infection being brought from those places, and it is an avoidable risk to which patients need not and should not be exposed.

The following table gives the results of amputations during the last six years—during the time that the precise cause of each death has been recorded.

TABLE II.

Table of Major Amputations treated antiseptically in the Royal Infirmary, Newcastle-upon-Tyne, from January 1, 1883, to December 31, 1888—a period of six years.

	INJURY.			DISEASE.			TOTAL.
	NO.	R.	D.	NO.	R.	D.	
Double Amputations 	2	1	1	...	...	...	2
Hip Joint 	1	...	1	10	7	3	11
Thigh 	16	14	2	79	76	3	95
Knee Joint 	4	4	...	1	1	...	5
Leg 	27	24	3	35	33	2	62
Ankle Joint 	15	15	...	53	52	1	68
Shoulder Joint 	5	4	1	7	7	...	12
Arm 	18	17	1	11	10	1	29
Forearm 	18	17	1	15	15	...	33
Wrist 	7	7	...	...	...	...	7
	113	103	10	211	201	10	324

Here we have 324 major amputations with 20 deaths = 6·1 per cent. ; 113 amputations for injury with 10 deaths = 8·8 per cent. ; 211 for disease with 10 deaths also = 4·7 per cent.

If we add the above table to one already published, giving the results of amputation from April 1, 1878, to December 31, 1882, we get the following results for the period of ten years and nine months.

TABLE III.

Table of Major Amputations treated antiseptically in the Royal Infirmary, Newcastle-upon-Tyne, from April 1, 1878, to December 31, 1888, a period of ten years and nine months.

	INJURY.			DISEASE.			TOTAL.
	NO.	R.	D.	NO.	R.	D.	
Double Amputations	2	1	1	...	...	...	2
Hip Joint	1	...	1	12	7	5	13
Thigh	32	25	7	116	110	6	148
Knee Joint	7	6	1	5	5	...	12
Leg	47	40	7	59	57	2	106
Ankle Joint	19	19	...	69	68	1	88
Shoulder Joint	8	7	1	9	9	...	17
Arm	29	26	3	17	16	1	46
Forearm	26	25	1	19	19	...	45
Wrist	7	7	...	...	...	...	7
	178	156	22	306	291	15	484

484 cases with 37 deaths = 7·6 per cent. Of these amputations, 178 were for injury, and 22 patients died = 12·3 per cent. ; 306 were for disease, and 15 patients died = 4·9 per cent.

CHAPTER XIII.

CANCER OF THE GULLET, LARYNX, LUNGS AND
HEART.

WHEN the gullet is attacked by malignant disease it is nearly always by epithelioma, though occasionally by sarcoma, and sometimes by encephaloid, colloid, and scirrhous; but examples of the latter varieties are so rare, that they may be dismissed from general consideration. The most usual spot for the commencement of epithelioma of the gullet is the posterior surface of the larynx; and as some anatomists assign this particular region to the lower part of the fauces rather than to the beginning of the œsophagus, a considerable number of the cases of cancer of the gullet are thus erroneously excluded from statistical tables. Nevertheless, if we include this region, considerably more than a third of all cases of œsophageal cancer must be assigned to the upper third of the tube, and most of the remaining cases may be divided as to origin between the spot where the middle third terminates in the lower third, and where the lower third perforates the diaphragm. Of course some cases of epithelioma originate from intermediate parts of the œsophagus.

The male sex is attacked by cancer in the gullet about twice as frequently as the female sex. In many cases the immediate exciting cause of the disease cannot be recognized, though probably all may be presumed to arise from some antecedent chronic inflammation. How varied are the causes which produce injury of the mucosa of the œsophagus are familiar to all students and practitioners. The imbibition of ardent spirits, liqueurs, and other alcoholic

beverages; very hot tea, coffee, or soup; the swallowing of unduly large morsels of food, of fish-bones, and other substances which may mechanically injure the passage; syphilitic and sometimes tubercular lesions, include the most common causes of cancer in this region. When the disease commences in the upper orifice of the œsophagus it may be recognized by examination with the mirror, or with the œsophagoscope, invented in 1880 by Sir Morell Mackenzie.

There is no difficulty in recognizing a stricture of the gullet, by the passage of bogies and by auscultating the œsophageal region by the side of the spine during deglutition. Neither is there difficulty in pronouncing the stricture to be of a malignant nature, when there are present hæmorrhagic expectoration, with muco-purulent discharge (assisted by microscopic evidence), progressive emaciation, pain during deglutition, and dysphagia. But these phenomena, or the more important of them, are absent during the earlier stages of the disease. Even when the neoplasm is situated above the level of the clavicles, it cannot usually be recognized by examination of the neck. Loss of appetite, contraction of the stomach, retching and vomiting upon deglutition, are general symptoms of œsophageal stricture, and do not point specially to its malignant origin. Paralysis of the crico-arytenoidei postiei muscles (especially the left one) from pressure upon the recurrent laryngeal nerves, of which the left passes round the arch of the aorta, and is the more exposed to pressure, may clearly be due to causes other than cancer of the gullet; but œsophageal cancer is more frequently met with in males between the ages of thirty and sixty than at other periods of life.

As to treatment, the question of extirpation of the disease can only be entertained where it is very localized and situated in the upper portion of the œsophagus. In such cases the expedience of excising the strictured portion and establishing a fistula into the œsophagus may be considered; but the heavy mortality which has been consequent upon this operation does not lend support to its

performance. So far as the immediate results of the operation were concerned, Czerny performed it successfully upon a woman, who survived a year before recurrence of the disease took place.

Œsophagostomy as a palliative procedure cannot be advised, on account of the proximity of the fistula to the diseased portion and its situation in the neck, together with the dangerous nature of the operation. The objection to treating cases of œsophageal cancer by the passage of feeding-tubes is that they must naturally irritate the growth in their passage, and accelerate the disease.

As soon as a diagnosis of cancer of the gullet has been established, gastrostomy is the operation which ought to be performed. The abdominal cavity should usually be opened by an incision two inches or two and a half inches in length, practised in the angular space between the left lobe of the liver and the left costal margin. The stomach will probably be contracted, but it is quite unnecessary to attempt to distend it, as recommended by some, by inflation through an œsophageal tube. By passing two fingers into the peritoneal cavity upwards, beneath the liver, the operator can reach the stomach with ease, and draw down a portion of its anterior wall through the abdominal wound. In stitching the viscus to the margins of the abdominal incision, two carbolized silk sutures should be first passed through upper angle of the incision and through the substance of the wall of the stomach, by which means the peritoneal surfaces of the stomach and abdominal wall will be brought into contact. The process must be repeated in respect to the lower angle of the wound, and afterwards three or four sutures passed on either side to adapt each edge of the wound with the stomach. The operation is to be completed by placing some iodized lint, smeared with oil or vaselin, over the wound and peritoneal surface of the stomach exposed in the gap. Three or four days later, after the general peritoneal cavity has become excluded by peritoneal exudation and adhesion, the stomach must be opened by a small incision, through which a full-sized

indiarubber catheter can be passed, and nutriment introduced. The object of the operation is to prolong life by affording rest to the cancerous portion of the gullet, and to prevent the patient dying of slow starvation, which is one of the most horrible forms of death with which we are acquainted. In some cases it may be advisable to attempt extirpation of the cancerous portion of the œsophagus, as already alluded to, preferably after gastrostomy has been satisfactorily performed as a preliminary measure.

In cases of cancer of the gullet, when death does not occur from starvation, or this mode of death has been prevented by gastrostomy, the patient succumbs from perforation of the tube into the mediastinum, air-passages, aorta, pulmonary or other large vessels. When the cancerous ulceration has eroded into a large vessel, dissolution occurs very rapidly, by one of the pleasantest modes of death. If ulceration occurs in the larynx or upper portion of the trachea, tracheotomy should be resorted to; or this operation may be performed in anticipation of the complication, when the anatomical position of the neoplasm renders the coincidence probable. Death by gangrene of the lungs, secondary growths, and septicæmia must always be mentioned as likely to be a natural termination of the disease.

Most of the varieties of malignant disease are met with in the larynx, but epithelioma only occurs with sufficient frequency to deserve mention. Any portion of the larynx may be attacked, but epitheliomatous growths nearly always appear upon one or other vocal cord or ventricular band. When the growth is subglottic in origin, there is greater difficulty both as to diagnosis and treatment.

In the early recognition of epithelioma of the larynx there is ordinarily much difficulty in distinguishing the disease from a benign papillomatous formation, though it can scarcely be confounded with the specific lesions of syphilis or tuberculosis.

The physical characters of the growth, with its tendency to rapid ulceration, seem to be the chief points upon

which the diagnosis must be established. The removal of a portion of the growth by forceps for microscopic examination is an important help to diagnosis; but it does not seem to be generally understood that the microscope often affords merely negative evidence, and sometimes only confirms what was already obvious from a laryngoscopic examination of the neoplasm.

Small malignant growths, especially if situated posteriorly, and upon or above the level of the true vocal cords, can generally be removed from the cocaineized larynx by forceps. Unfortunately, however, by these means sufficient tissue beneath the growth cannot be removed to insure non-recurrence of the malignant neoplasm. As to total extirpation of the larynx, the past results of the operation are so bad as hardly to leave any case in which it could be with propriety resorted to. Upon a different footing stands thyrotomy, to be followed by excision of the growth and surrounding soft structures of the larynx. It is now well known that the results, as shown by statistics recently adduced, exhibit this procedure also in a very unfavourable light; but the percentage death-rate consequent upon the operation itself is not very high—has been chiefly due to sepsis, which is usually preventible—and the recurrence of the neoplasm which has usually followed thyrotomy within a few months may be attributed to an inadequate amount of laryngeal tissue around the neoplasms having been removed with them, or to the operation not having been resorted to sufficiently early.

The treatment of cancer of the larynx for most cases, therefore, appears to be either thyrotomy (with or without preliminary tracheotomy), and excision of the cancerous neoplasm with its surrounding tissues, or the palliative operation of tracheotomy, which merely prolongs life by preventing death from asphyxia, but exercises no curative influence upon the malignancy of the laryngeal disease.

Cancer of the lung is exceedingly rare as a primary,

but very common as a secondary affection. The disease imitates the primary or parent growth, and accordingly all varieties of cancer may be met with in the lung, but cancer of the lung appears most commonly from extension from the breast. The advent of malignant disease in the lung will be suspected by the antecedent history of the case. There may or may not be marked physical signs of consolidation, and symptoms, such as cough, dyspnœa, and hæmorrhage. There is no surgical treatment of cancer when occurring in the lung, or in the heart, where it occasionally appears as a secondary manifestation, not infrequently pigmented.

CHAPTER XIV.

CANCER OF THE STOMACH, INTESTINES AND OTHER
ABDOMINAL ORGANS.

CANCEROUS disease is more common in the stomach than in any other part of the alimentary tube, save the tongue and lips. The most usual varieties of malignant disease are scirrhus, encephaloid and colloid, of which the scirrhus is the most common, and is usually situated at the pyloric end of the stomach. Sometimes a malignant tumour may arise at the cardiac orifice, or near the lesser curvature or even the fundus, but such cases even taken together would only constitute a small proportion of all cases of gastric cancer.

SCIRRHUS OF THE PYLORUS.

This is the commonest form of gastric cancer. Far more common in males than in females, it usually occurs in persons aged between thirty and sixty. It exhibits no marked selection in favour of either the rich or the poor, though the larger number of cases are found among the latter and more numerous class of the community. The disease is also said to be somewhat more common among publicans and toppers than among others. The frequency of cancer in the pylorus as compared with other regions of the alimentary canal is in favour of the local origin of the disease, the pylorus being a site particularly susceptible to injury from the passage of hard or indigestible masses of food; and in this connection it may be noted how old cicatrices in the mucous membrane are found *post-mortem* in the pyloric region, and the proclivity of cancer to

develope *de novo* from scar-tissue is dealt with in other chapters.

The diagnosis of cancer of the stomach is often by no means easy. I have known the gastric crises of locomotor ataxy mistaken for symptoms of pyloric cancer by a surgeon who ought to have known better, and the patient hastened out of the world by the ill-judged performance of gastro-enterostomy, although upon opening the abdominal cavity no tumour was detected in the pyloric region; and upon the *post-mortem* table no evidence of malignant disease or of pyloric obstruction was manifest. I have known the symptoms of gastric cancer mistaken for those of pernicious anæmia, and the patient treated by transfusion of blood, with the view of ameliorating or curing the anæmic condition. Real difficulty often lies in distinguishing a case of pyloric cancer from one of gastric catarrh, fibrous stenosis of the pylorus, or gastric ulcer.

Gastric ulcer usually occurs in people under thirty years of age, and often in domestic servants. Save those few cases of gastric ulcer where perforation of the viscus rapidly occurs, and the case terminates in dissolution in a few days, the ordinary course of gastric ulcer is very lengthy, tends towards cicatrization and recovery; the emaciation of the patient is only slight; hæmatemesis is sometimes profuse, and there may be melæna.

In pyloric cancer the patient is generally past thirty years of age, the vomiting is scanty, the hæmorrhage is slight (unless some fair-sized vessel has been suddenly perforated), and the ejecta are tinted a coffee-ground colour, sometimes containing microscopic evidence in favour of malignant disease. The emaciation of the patient is ordinarily great, and doubt may sometimes be cleared up by the detection of a nodular tumour in the pyloric region. The stomach will usually be distended when the obstruction is situated at the pylorus, contracted if the growth be located at the cardiac orifice. In the latter case vomiting ordinarily occurs during or after deglutition; in the former, towards the completion of digestion.

Of cachexia as a diagnostic sign, I will say little, because the cachexia consequent upon cancer of the pylorus may be mistaken for that of other diseases simulating the one under consideration ; and in the example above referred to, the cachexia of cancer of the stomach was wrongly deemed a sign of pernicious anæmia. The signs of simple fibrous stenosis of the pylorus will be merely those of obstruction.

The surgical treatment of scirrhus of the pylorus is resection of the infiltrated portion of the alimentary tube. The operation can, however, only have a very limited application. For any case where the disease assumes any form other than precise limitation to the pyloric region, the operation would merely add to the already perilous condition of the patient. Up to 1885 Sir Spencer Wells had only twice seen cases where he thought the operation could be seriously advised :—

“One patient was a captain of one of the Cunard steamers. He said he would submit to it after one more voyage to New York, but he died there ; and I heard afterwards that the disease was so confined to the pylorus that the operation would have been very easy. The other patient was a German tailor, who afterwards died in the Cancer Hospital, when it was found that the disease of the pylorus had just begun to involve the liver. Mr. Jennings tried to prolong life by injecting milk into a vein of the arm.”*

The only advantage to be gained by performing gastro-enterostomy in an advanced case of pyloric cancer would be a slight prolongation of life and temporary relief of obstruction, should the patient survive the effects of the operation.

Simple fibrous contraction of the pylorus is, I believe, often indistinguishable from scirrhus, except after microscopic examination. For simple stenosis, dilatation of the pylorus by insertion of the operator's fingers, after a small vertical incision has been made in the anterior

* *On Abdominal Tumours*, Spencer Wells (1885), pp. 208, 209.

wall of the stomach, a little to the cardiac side of the pylorus, has been shown by Loreta to be a very successful procedure. It may now be accepted as a canon in surgery, that an exploratory abdominal incision is to be recommended in cases of suspected malignant disease of the stomach, where a diagnosis cannot be arrived at by other means.

CANCER OF THE INTESTINES AND RECTUM.

Modern pathologists seem to agree that malignant disease of the intestines and rectum almost invariably occurs as columnar epithelioma, which in a marked proportion of cases undergoes colloid degeneration. All other varieties of malignant disease primarily occurring in these regions are exceedingly rare.* Stricture of some part of the intestinal tract is very much commoner in the female than the male, but if we exclude all cases of non-malignant stricture, cancer of the intestine is rather more common in the male than in the female. Primary malignant disease of the intestines constitutes about two per cent. of all cases of cancer. The primary lesion is ordinarily solitary, and selects the sigmoid flexure in an overwhelming numerical majority. Next in order of situation come the junction of the sigmoid flexure with the rectum, the lower part of the rectum, the descending colon, hepatic flexure, splenic flexure, cæcum and ascending colon, transverse colon, and small intestine. Of stricture of the rectum, the majority of cases are of syphilitic and the minority of cancerous origin.

In the small intestine, nearly half of all the cases of stricture result from the cicatrization of ulcers, nearly half from malignant deposit—in many cases probably sequent to the cicatrization of simple ulcers—and a small number of cases arise from miscellaneous causes. About two-thirds of all cases of stricture of the large intestine are cancerous.

Save in the lower part of the rectum, the diagnosis of

* I have recently seen a patient suffering from scirrhus of the rectum, under the care of Mr. Charlesworth, of Wandsworth.—C. E. J.

cancerous from other forms of intestinal stricture is usually surrounded with the greatest difficulty; but cancerous stricture generally occurs in persons about or over forty years of age, and is exceedingly rare under thirty. The symptoms are those of chronic intestinal obstruction, and the lower down the stricture may be situated, so much the later in the course of the disease will vomiting appear as a symptom. Paroxysmal attacks of pain, resulting from the difficulty of the passage of the intestinal contents through the strictured portion, rarer in the earlier and more frequent in the later stages of the disease, and which occasionally may be definitely located, is one of the chief positive diagnostic signs. The condition of the bowels is usually that of constipation, though occasionally constipation alternates with diarrhœa, and especially the passage of mucus. Rarely, the general condition is one of diarrhœa.

Examination of the rectum with the fingers, hand, or by the passage of bougies or tubes, is only of service to determine the location of a stricture within a short distance of the anus.

Copious injections, accompanied by auscultation of the bowels, sometimes assists the surgeon in locating the site of a stricture; but it must not be forgotten that fluids will often permeate a strictured portion of the intestine readily enough from below upwards, though with great difficulty from above downwards; a fold of mucous membrane may fall in a valve-like manner over the upper orifice of the strictured portion. In cancerous stenosis of the intestine, the neoplasm tends to spread circumferentially around the walls of the canal, and to produce a general infiltration of the affected portion of the tube. The disease probably exists for a considerable time before glandular affection and dissemination occur, but the growth is not usually of sufficient size to be detected by abdominal palpation, although pain may be occasioned by pressure over the affected spot. As the disease progresses, the fæces upon passing the strictured portion acquire a hardened, twisted, and diminished form.

The treatment of cancerous disease of the intestine will vary with the part affected. Early excision of the anus must be performed for epithelioma commencing primarily around the lower aperture of the bowel ; or, if the growth be located within three inches' distance of the anus, and be easily isolable, and especially if only a portion of the circumference of the rectum be affected, extirpation of the lower end of the rectum may be carried out. Some surgeons recommend a preliminary colotomy in such cases.

In all cases where difficulty of diagnosis exists, and the symptoms of obstruction appear dangerous to life or point to stricture of the intestine, abdominal exploration through an incision in the middle line, practised between the umbilicus and pubes, is the proper course of treatment. The abdomen having been opened, the operator should first examine the cæcum. Those coils of intestine which are inflated may be assumed to lie above, and those which are flaccid, below the strictured site. The operator should therefore seek for some flaccid portion of intestine which will usually depend into the pelvis, and trace the intestine upwards towards the stricture. Peritoneal adhesions between coils of intestine should be broken down ; and even when a stricture is found, the surgeon should bear in mind the possible existence of another in some other portion of the intestinal tract, and take advantage of the opportunity now afforded for manual exploration. Some recommend that the intestines should be punctured, where distended, with a capillary trocar, either before or during the operation, to relieve flatus.

When the portion of cancerous intestine is detected, there are two courses open to the surgeon : one is to resect the diseased portion, the other to establish an artificial anus, and the surgeon's decision must be guided by the peculiarities of the particular case under consideration.

The methods of performing intestinal resection are exceedingly numerous, and I can only describe the plan which, after consideration of all of them, I believe to offer the greatest advantage. My plan consists in

reuniting the divided extremities of the intestine, after excision of the diseased portion, by sutures, the process being facilitated by the insertion of a hollow cylinder of cocoa-butter or of gelatine, which dissolves shortly after the completion of the operation. The results of experiments which I performed at Ghent upon animals, at the suggestion of Sir Spencer Wells, have been described in the *Lancet*, and the specimens are preserved in the museum of the Royal College of Surgeons of England. My cylinders are cast in eight sizes, conical at the extremities. They afford a firm basis and support for the intestine during the operation, and will not collapse (like an indiarubber bag) if accidentally wounded by the point of the needle. The cylinders slowly melt during the first few hours after these operations, thus allowing time for adhesion of the peritoneal surfaces at the line of union, but not too slowly to form an obstacle to the passage of the fæces. The gelatine have the advantage of flexibility over the cocoa-butter cylinders. So far as can be gathered from three experiments upon dogs, it appears:—

1. That, whenever possible, the portion of intestine to be removed should be isolated from the general peritoneal cavity, by passing it through a small aperture in a sheet of transparent gutta-percha tissue.

2. That the section of the intestine should be slightly oblique to lessen the tension on the line of suture, and to prevent the great diminution of the calibre of the intestine at the seat of resection, which obtains when the division is transverse.

3. That a triangular portion of the mesentery should be excised, the base corresponding to the part of the intestine which is removed.

4. That after the piece of intestine has been removed, a cylinder slightly larger than the calibre of the intestine should be selected, in order to distend the portions to be united.

5. That the gap in the mesentery should be closed by a continuous suture; and that a double row of intestinal

sutures (each commencing where the mesentery joins the intestine), should be employed to maintain the peritoneal surfaces between the two rows in contact. The inner row should unite the edges of the pieces of the intestine; the outer row should include only peritoneum or peritoneum and muscularis. By this means sufficient peritoneal surfaces will be maintained in contact; but if only one row of sutures be employed, the edges of the intestine will curl away from each other, internal to that single line of sutures.

6. Fewer sutures should be employed for the inner than for the outer row, and the stitches in the latter *should not be more than one-tenth of an inch apart*.

7. A single continuous suture (for each row) should not be used; for if it be, when the intestine contracts after the operation, the ring of suture will not adapt itself to the lessened calibre of the intestine, and fæces will escape therefrom; whereas, if interrupted sutures be employed, when the intestine contracts, the points of suture will fall still closer together.

8. That Hageborn's flat needles are to be preferred, since they do not lacerate the peritoneum so much as the ordinary needles.

9. That silk, rendered antiseptic, should be used for the intestinal sutures: the braided, which will not kink, being better than the ordinary twist.

Quite latterly Dr. Abbe of New York has introduced rings of catgut, by which the operations of intestinal resection or of intestinal anastomosis can be expedited. If it be possible the strictured portion of intestine, according to Dr. Abbe, should be excised, and the ends closed by invagination and sutures. Portions of the intestinal tubes are now to be brought in apposition side by side, and a communication established laterally between the coils. Incisions are made into the coils successively, and into each is introduced a catgut ring, secured in position by the passage of a few silk sutures attached to it, through the wall of the bowel from within outwards. The apertures in the coils are then brought into contact by tying the

silk points of suture. Lembert's suture is afterwards applied around the anastomosis obtained, in order to facilitate peritoneal adhesion. The catgut rings become absorbed in a few days.

Of the medical treatment of intestinal cancer not much can be said, since the patient will certainly die of exhaustion from obstruction, metastases, peritonitis, or perforation, if the growth cannot be extirpated, and the formation of an artificial anus merely serves to prolong life and relieve obstruction and irritation of the neoplasm. Still, of medical treatment the chief principle must never be forgotten, that in cases of intestinal stricture, sedatives should be administered by the mouth and aperients by the rectum.

CANCER OF THE OVARIES.

Professor Leopold* of Dresden considers malignant disease of the ovary to constitute 22·4 per cent. of ovarian tumours; Schroeder's statistics give 16·6 per cent. Sir Spencer Wells and Mr. Butlin, after a careful examination of the former's cases of ovarian tumours, found it quite impossible to determine the ratio of the malignant to the non-malignant neoplasms. Not merely may sarcoma and carcinoma attack the ovary, but both forms of malignant disease may co-exist; and it has frequently struck me that the co-existence of carcinoma with sarcoma in various parts of the body is by no means so rare as many suppose.

One cannot fail to notice the tendency which some surgeons have, after removing tumours of considerable magnitude, to place them in their entirety in bottles upon the shelves of our museums, labelled with the initials of the patient, and the date of the operation. A great deal more good would accrue to science were such tumours carefully dissected throughout, the neoplasms destroyed, but their dimensions, rough characters, and microscopical appearances throughout carefully noted and registered.

* *Annual of the Universal Medical Sciences* (1888), vol. iv., p. 86 et seq.

With the limited knowledge we possess of ovarian cancer, whether papillomatous (epithelioma), colloid, encephaloid, or sarcomatous, we can only say that the smaller the growth, the less probability will there be of adhesions and dissemination to such an extent as to render the extirpation of the disease impracticable.

"Professor Freund,* in a recent lecture, related the history of a girl of eighteen years, with malignant disease of both ovaries. On the operating-table the ovaries were found to be so adherent to the uterus that all of these organs had to be removed together. When this had been accomplished, a carcinomatous nodule was discovered in a fold of small intestine. Preparations were made to exsect this portion of the bowel, when a more careful search revealed a large metastatic growth in the liver. All further operative interference was abandoned, and a rapidly fatal course of the disease was prognosticated. But to the surprise of all she recovered, and gained over twenty pounds in weight. From such a case as this, Professor Freund argues against the constitutionality of carcinoma from its very beginning, since, had this girl been encumbered with constitutional disease, she would not have gained in health and strength, and felt perfectly well for months after the operation. He declares that while carcinoma remains local, with no infection of the lymphatic or circulatory apparatus, and when not interfering with the function of any important organ, the surgeons should follow it relentlessly into almost every organ of the body."

Another case may be quoted as illustrative of the complications which the surgeon may have to encounter when operating for cancer of the ovary.

Billroth writes: "Three weeks ago I operated on a carcinoma of the ovary, which had grown through small intestine and the bladder. I cut away eight centimètres of small intestine, completed the enterorrhaphy; then I cut away the upper part of the bladder, uniting it with twenty sutures. The recovery was as free from fever as

* *Annual of the Universal Medical Sciences*, loc. cit.

in the simplest case, and the patient was discharged cured after twenty days." *

It may be noted here that, if resection of part of the wall of the

BLADDER

is contemplated, the operation may either be performed, as above narrated by Billroth, by incision through the peritoneal surface and reunion of the edges, bringing the divided peritoneal surfaces in the bladder into apposition in order to promote rapid adhesion ; or the operation may be performed after the method of Antal,† by which the bladder is first fully distended, and after the abdominal section has been made, the peritoneal covering of the bladder is peeled upwards and backwards out of the way, so that the operation is of an extra-peritoneal nature.

There has been published in the *British Medical Journal*‡ a brief account of eleven cases in which Sir Henry Thompson has removed tumours from the bladder, during the years 1885-1888, after the supra-pubic method of Dr. Garson, and Petersen of Kiel.

"The chief points attended to in this operation were, to commence with a fully, yet prudently distended rectum, followed by a fair distension of the bladder ; a sparing use of the knife, so that a ligature was very rarely necessary ; the opening of the bladder by a small incision sufficient to admit the finger, but enabling further enlargement to be made by dilatation only, since after this the opening contracts, and stitching is not necessary, and, moreover, appears to be generally not advisable."

It is unfortunate that the notes of these important cases have not been reported *in extenso* ; but from the outline of them referred to, I have constructed a table, showing at a glance the salient points of the cases, from which it appears—

1. That the youngest patient (No. 3) was aged 45 years, and the oldest (No. 1) 73 years.

2. That one patient (No. 6) died within eleven days of the operation.

* Letter to Sir Spencer Wells. † *Centralblatt für Chirurgie*, 1885.

‡ July 6, 1889, p. 1.

3. That in three cases (Nos. 4, 7, and 9) the tumours were probably completely removed, the patients are probably alive now, and it is hoped are completely relieved.

4. That in six cases (Nos. 2, 3, 6, 8, 10, and 11) the operations were incomplete—the growths having been inadequately removed.

5. That in most of the fatal cases the distressing symptoms were relieved, and life was probably prolonged in some of them by the operations.

6. That making full allowance for the difficulties which attend the extirpation of vesical tumours, the results of Sir Henry Thompson's cases cannot be considered satisfactory; and that where a growth is malignant, the portion of the bladder from which it springs had better be excised by elliptical incisions, and the edges reunited, after the manner of Billroth.

No.	Nature of Case.	Nature of Operation.	Result.
I.	Miss P., <i>æt.</i> 73. Vesical bleeding for a year and a half. Frequent micturition. Severe suffering.	October 17, 1885. Vesical papilloma discovered by digital examination. Suprapubic operation. Tumour size of orange removed.	Recovered from operation steadily. Symptoms relieved. Died nine months afterwards.
II.	A. S., <i>æt.</i> 55. Frequent micturition. Hæmaturia. Patient very feeble.	November 16, 1885. Bladder evidently filled by tumour. Suprapubic operation. Quantity of growth removed, leaving a firm hard base.	Recovery at end of a month. Died during following year, of recurrence. (Round-celled sarcoma.)
III.	J. A. <i>æt.</i> 45. Frequent micturition. Hæmaturia.	October 8, 1886. Attachment of growth to upper part of bladder detected by digital examination. Suprapubic operation.	Wound healed in a month. Relief of symptoms. Growth reappeared in 1887. Similarly operated upon by Mr. Maurice.

No.	Nature of Case.	Nature of Operation.	Result.
IV.	H. T. B., <i>æt.</i> 54. Long - standing symptoms of vesical tumour.	December 8, 1886. Large peduncu- lated papilloma- tous tumour wholly removed by supra-pubic operation.	Rapid recovery. In good health in Nov., 1887. No signs of re- currence.
V.	Capt. B., <i>æt.</i> 61. Papillomatous growth removed in April, 1885, by perineal opening. Recurrence.	February 26, 1887. Supra - pubic operation. Large papilloma re- moved.	Symptoms relieved. Never regained strength. Died in June, 1887.
VI.	A. W. P. K. (age not stated). Hæmaturia for many years. Dysuria.	March 21, 1887. Papilloma re- vealed by digital exploration. Fimbriated pa- pilloma removed by supra-pubic operation.	Fever sequent to operation. Died April 1.
VII.	Major B., <i>æt.</i> 62. Hæmaturia for eighteen months.	May 6, 1887. Small papilloma re- moved by supra- pubic operation.	Recovery delayed by phosphatic deposits, which are frequently being removed by lithotripsy.
VIII.	G. L., <i>æt.</i> 63. Symptoms of fifteen months' duration.	July 7, 1887. Tu- mour detected by digital ex- ploration. Supra- pubic operation.	Recovered, but died three months later from recurrence. (Epithelioma.)
IX.	N. I., <i>æt.</i> 57. Much blood lost during three months. Fragment of papilloma de- tected in urine.	July, 1887. Growth removed very like in form to preceding case.	Recovery retarded by phosphatic deposits. Wound eventually heal- ed soundly. Free from symptoms in October, 1887, and in active business.

No.	Nature of Case.	Nature of Operation.	Result.
X.	Col. B., <i>æt.</i> 59. Hæmaturia for three years. Round - celled and spindle-celled tissue detected in urine. Examined, April, 1888, with cystoscope. Tumour seen.	May 7, 1888. Tumour removed by supra-pubic operation.	June 28, 1888. Growth developed in cicatrix, and ultimately in original site. Died a month or two later.
XI.	T. C., <i>æt.</i> 50. Hæmaturia for four years. Papilloma detected in <i>débris</i> by the microscope.	June 22, 1888. Irregular tumour removed as near its base as possible.	July, 1888. Returned home; wound healed. Recurrence in cicatrix in Nov. Patient subsequently died.

CANCER OF THE KIDNEY.

The kidney may be attacked by either sarcoma or carcinoma, the former variety often occurring in the young as well as in the old, the latter attacking those past middle life. The number of cases operated upon are not sufficient to justify any strong assertions as to the advisability or otherwise of ever performing this operation; and the results naturally vary, not merely with the character of the disease, but with the skill of the operator.

Extirpation of a kidney can, of course, only be recommended where the remaining kidney is healthy. The smaller the size of the growth, the greater will be the probability of success. The advantages claimed for the lumbar operation are the better opportunities for drainage and an extraperitoneal operation. By the abdominal incision, a larger tumour may be removed, and a manual exploration of the interior of the abdominal cavity effected.

Sir Spencer Wells points out that, after excision of the kidney by the abdominal method, the posterior layer of the peritoneum, which was divided to reach the organ, should be reunited, and the smooth peritoneal surfaces brought into apposition.

CANCER OF THE PERITONEUM *

may lead to abdominal tumours of very different size and description, and is generally accompanied by more or less fluid in the cavity; or, as in a case mentioned by Ballard, by an effusion of gelatinous matter with great elevation of the diaphragm as in ascites, dulness on percussion everywhere but at the epigastrium and along the margin of the ribs on the right, and fluctuation in every part. The symptoms produced by this condition of the peritoneum have been sometimes so closely like those of ovarian cysts as to deceive men of very great experience. Among Sir Spencer Wells's cases, the co-existence of cancer has been sometimes so masked by the symptoms of ovarian disease that he has been led on by the hope of giving relief.

In all such cases suspicion of their real nature should be aroused if a patient has either a very thin and tense or an œdematous abdominal wall, anasarca of the lower limbs, general emaciation, a cachectic aspect, free fluid in the peritoneal cavity, and especially so if the loss of flesh and amount of pain are more rapid and severe than an ovarian or other innocent tumour would account for.

CANCER OF THE LIVER, SPLEEN, AND PANCREAS

are, from a surgical point of view, at present of little interest. The liver and spleen are most frequently affected with secondary growths, but even when cancer arises primarily in these organs, it is usually beyond the limits of surgical interference.

Sir Spencer Wells has, however, removed many pounds' weight of hepatic tissue in one case, the patient recovering; and a good recovery followed the removal of a hydatid tumour with a considerable portion of hepatic tissue by myself in another.

* Spencer Wells, *On Abdominal Tumours*, 1885, p. 21.

THE END.



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