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THE STUDENT'S GUIDE

TO

SURGICAL DIAGNOSIS

BY THE SAME AUTHOR.

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TO

SURGICAL DIAGNOSIS

BY

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PREFACE TO SECOND EDITION.

In preparing a second edition of this book I have endeavoured to increase its usefulness by adding some matters previously unnoticed, and by giving more in detail some important points in diagnosis.

My best thanks are due to Mr. Samuel Jackson, of Oldham, for volunteering several useful suggestions, and for kindly undertaking the preparation of the Index.

Christopher Heath.

36, Cavendish Square,
March, 1883.

PREFACE.

HAVING been a clinical teacher for some years, I have constantly been struck with the difficulty which even a well-read student finds in bringing his knowledge to bear promptly and efficiently upon the patient before him. The recognition of the several symptoms which the student has learnt in lectures or by reading can be best directed by the teacher at the bedside; but in his absence it is not always easy for the student to get a clue to the nature of the case before him. An attempt is made in the following pages to afford this assistance by grouping surgical affections anatomically, and by arranging the symptoms of each in the order in which they would strike a painstaking observer. No attempt is made to discuss the pathology or treatment of any of the disorders described, and the description itself

is purposely limited to the most salient points. At the same time, I have endeavoured to point out the differential diagnosis of affections likely to be confounded, and have in many cases employed the tabular method for convenience of reference.

I have to thank my colleague, Mr. Arthur Barker, for kindly reading my manuscript and making many valuable suggestions for its improvement, but I am alone responsible for all the statements contained in the work. I hope it may prove of service to those beginners in the study of surgery for whom alone it is intended, and from whom I shall gladly receive any suggestions for its future improvement.

CHRISTOPHER HEATH.

36, CAVENDISH SQUARE,
June, 1879.

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GUIDE TO
SURGICAL DIAGNOSIS.

CHAPTER I.

INTRODUCTION.

The object of the following work being to assist the student of surgery in forming a diagnosis of cases coming before him, it will be convenient to describe the method of reporting a surgical case in a hospital; for though all cases need not be reported in writing, it is by the study of this method that the greatest accuracy in observing will be attained. Imperfect observation must lead to inaccurate or, at least, haphazard diagnosis; and though experience may enable the surgeon to grasp the nature of a case as it were intuitively, it would be most unsafe for the inexperienced student to omit any of the steps by which an accurate diagnosis may be secured.

The habit of note-taking is one which must be adopted early in life, if it is to become easy and serviceable, and the briefest note made at the time of seeing a patient is infinitely more valuable than an elaborate record penned hours or days afterwards. *How* to observe, is an art to be attained only by practice; but *what* to observe in any given case can be learnt to a certain extent from books, provided the clue to the nature of the case is given to the student. This, it is the object of the following pages to furnish so far as may be; for it must be remembered that though in surgical descriptions the symptoms are arranged according to their order of importance and successively, in the living patient they are more or less commingled, masking one another, and requiring care for their disentanglement.

The following are the "Heads for Reports on Surgical Cases" used in University College Hospital for some years past with great advantage. They were compiled by Mr. Rickman Godlee, M.S., F.R.C.S., Assistant-Surgeon to the hospital, when he was Surgical Registrar, and have been revised by their author specially for this work.

HISTORY.

A. *General. Required for all cases except paragraphs marked*, which may be omitted in cases of simple injury.*

Date of Admission—Name—Age—Sex.

Occupation—How long followed—Previous occupations, if any.

*Manner of Life—Dwelling healthy or otherwise—Clothing—Locality in which patient has lived : and, if many, enumerate them.

*Family History—Married or single—Number of children ; and, if any have died, cause of death—Diseases, if any, in father or mother, sisters or brothers, uncles or aunts, or grandparents.

Previous Illnesses—Enumerate—If a disease be doubtful (as *e.g.* Syphilis), give symptoms in detail—The most important for a surgical case are Syphilis, Rheumatism, Gout, Phthisis, or Tumour.

Previous Injuries—Describe carefully.

*Present Illness—Exact date of commencement,† and character and sequence of each successive symptom—All previous treatment—Cause assigned, if any.

† Dates to be stated in days of month and not of week.

Present Injury—Method of infliction, by direct or indirect violence—Length of time between infliction and admission—Immediate effect with reference to consciousness, power of walking, &c.—Hæmorrhage, amount and character.

B. *Special points in History of some of the most important Surgical Diseases.*

1. General Diseases.

Tumours—Family history very important (to include Scrofula, Syphilis, Phthisis, &c.)—How and when noticed—assignable cause—Rapidity of growth—Amount and character of pain—If ulcerated, has hæmorrhage occurred.

If of Breast, special inquiry into previous condition of organ, number of children, state of genital organs, menstruation, hysteria, &c.

Acute Fevers (*Erysipelas, Phlebitis, &c.*)—Headache—Pain in back—Loss of appetite—Rigors—Vomiting—Diarrhœa.

Syphilis—Date of primary infection—Description of sore, and how soon noticed after infection—Character of succeeding bubo, if any—Nature and time of occurrence of all secondary symptoms.

Soft Chancre—Date of infection—How soon noticed—Number—Character of succeeding bubo, if any.

Aneurism—Special attention to occupation—Injury, Rheumatism, Syphilis, and Drink.

2. Bones and Joints.

Pay particular attention to :—Previous injury—Syphilis, Struma, Rheumatism, or Phthisis in patient or relatives—Gonorrhœa—Exposure to cold or Phosphorus-poisoning.

3. Deformities.

Congenital or acquired—Paralysis ; and if it has occurred, when and from what cause——Injury, when and of what nature—Neurotic history in family—If spasmodic, seek cause, central or peripheral.

4. Alimentary Canal.

Stricture of Œsophagus—Swallowing of irritating substances—Vomiting and power of deglutition—Pain—History of Cancer or Hysteria.

Stricture of Rectum—Syphilis—Dysentery—Cancer—Condition of bowels, habitual and recent, viz., relaxed or confined, passage of blood or mucus—Shape and size of fæces.

Hæmorrhoids—Disease of liver—Nature of occupation—General condition of bowels—Drink—If a woman, number of children.

Hernia—First appearance—Cause, *i.e.*, congenital, straining, change of habit of body—Reducibility—Previous strangulation.
If strangulated, exact period, *in hours*, of

commencement, and nature of pain and vomiting—Cause of strangulation—Last action of bowels and passage of flatus.

INTESTINAL OBSTRUCTION—Duration and character of symptoms (gradual or sudden)—Previous condition of bowels—History of Hernia.

5. GENITO-URINARY ORGANS.

MICTURITION—(*a*) Frequency by night and by day—(*b*) Pain before, during, or after—(*c*) Passage of blood—(*d*) Sudden stoppage.

Pain—Penis, Perinæum, Pubes, or Loins.

Rigors or febrile attacks with vomiting.

Urine—Naked-eye characters.

STONE—Duration of symptoms—Rheumatism or gout—Soil on which patient has lived, and frequency of calculus in the locality—Renal colic.

STRICTURE—Cause—Number of claps and duration and treatment of them—Nature of injury, if any; whether followed by hæmorrhage from urethra, and treatment—Previous treatment—Exact duration and progress.

PRESENT CONDITION.

A. *General for all Patients.*

STATE OF HEALTH—*i.e.* Nutrition—Emaciation—Disposition—Complexion—Muscular deve-

lopment—Premature decay, including, if necessary, state of arteries, arcus senilis, &c.

Pulse—Respiration (number and frequency)—Tongue, with inquiry into general condition of circulatory, respiratory, and digestive systems.

Urine—Reaction—Specific gravity—Appearance—Deposit (microscopically)—Presence or absence of Albumen and Sugar.

Menstrual History of all females between 14 and 45 years, viz. answers to questions:—Regular? If not, How often? How much? Is there excessive pain?

B. *Special for some of the most important Surgical Diseases.*

1. General Diseases.

Tumours — Position — Size — Shape — Consistence—Edge (defined or not)—Mobility—Condition of superjacent skin—Pain—Tenderness. And if present: Fluctuation—Pulsation — Translucency — Impulse on coughing — Glandular enlargement. Note the presence or absence of other tumours.

Abscess—Acute or chronic—Superficial or deep—Character of pus—Communication, if any, with internal organ or cavity or bone.

Aneurism—Amount of pulsation and whether expansile—Pain—Condition of pulse below—State of heart and vessels—Thrill and Bruit—Diminution in size upon pressure on artery above—Pressure signs.

2. Bones and Joints.

Expose both limbs and compare the two sides.

Measurements :—(*a*) of affected part: (*b*) of the limb elsewhere both in length and girth—N.B. Take definite points referred to an immovable bony prominence.

Shape and size of deformity, if any.

Presence or absence of fluctuation.

Amount of mobility :—(*a*) Active; (*b*) Passive.

Amount of pain :—(*a*) at rest; (*b*) in motion.

Condition of skin.

Temperature of part.

3. Alimentary Canal.

Stricture of Œsophagus—Position—Size—Reaction and Microscopical Examination of Vomited Matters—Amount of swallowing possible—Presence or absence of tumour, or symptoms of tumour in chest.

Stricture of Rectum—Shape and size of fæces—Frequency of Defæcation (Tenesmus, &c.?)—Result of digital examination—Result of palpation of abdomen.

Fistula—Size—Position of internal and external openings—State of lungs.

Hæmorrhoids—Internal or External—Amount of Hæmorrhage.—Prolapsus ani.

Intestinal Obstruction—Distension of abdo-

men, uniform or irregular—Presence or absence of tumour—Tenesmus—Character and frequency of vomiting—Peritonitis.

Hernia—Size—Shape—Impulse—Percussion note—Pain—Tenderness—Condition of bowels—Vomiting, and, if present, its nature and frequency—N.B. If scrotal, note position of testicle—Peritonitis.

Peritonitis—Expression and colour of face—Vomiting, nature of—Abdominal pain, tenderness or distension—Movable dulness in abdomen—Position of patient—Jaundice—Hiccough—Constipation.

4. Genito-urinary Organs.

Frequency of micturition by night and day at time of admission—Renal tenderness—Amount and position of pain, &c., as in taking the history.

Stricture—Number—Position—Size on admission.

5. Skin.

Ulcers—Describe exactly Position—Size—Shape—Depth—Edges—Base—Condition of surrounding skin—Surface (size and colour of granulations)—Discharge—Tenderness and Pain—Tendency to bleed.

Rashes—Position—Shape—Colour—Condition of edge (elevation and definition)—Notice whether colour disappears on pressure—Does it consist of a simple erythema or of papules, vesicles, scales, pustules, or tubercles.

C. *Special for Special Injuries.*

Simple Fractures—Crepitus—Unnatural mobility—Position—Nature (simple or comminuted)—Direction—Deformity (including shortening)—Amount of bruising—Amount of swelling—Vesication—Temperature of limb—Pulse below injury.

Compound Fractures—As above and in addition :—Size and position of wound—Nature of wound—Amount of hæmorrhage—Presence or absence of local emphysema.

Injuries of Head—Pay particular attention to condition of intellect, local or general paralysis, especially condition of bowels, bladder, and pupils—Pulse very important—Note urine particularly.

Injuries of Chest—Number and character of respirations—Hæmoptysis—Local or general emphysema—Physical signs on admission.

Injuries of Spine—Deformity or tenderness of spine—Paralysis to be noted exactly, including Bladder and Rectum—Anæsthesia and hyperæsthesia.

Injuries of Abdomen—Amount and continuance of shock—Position of pain and tenderness—Appearance of blood in urine or motions—If a wound, character of discharge—Vomiting—Hiccough—Jaundice—Be on the watch for Peritonitis.

Burns—Extent—Depth, *i.e.* redness, vesication, exposure of tops of papillæ, destruction

of whole of skin, destruction of subcutaneous fat or deeper — Shock — Vomiting — Pneumonia—Diarrhœa—Head symptoms—Œdema glottidis.

PROGRESS OF CASE.

No definite rules can be laid down for taking notes of a case in progress; the method will be the same as that indicated in the Present Condition, but some general principles may be of service.

1. All surgical appliances should be intelligibly described at the time of their application, and the length of time they are employed, with any modification, noted.

2. The steps of an operation are to be mentioned individually; also the dressings applied afterwards, and the frequency with which they are changed. Afterwards (*e.g.* in a case of amputation) the points to be watched are :—

a. The condition of the flaps themselves and their edges, their respective distances, &c.

b. The amount of surrounding inflammation.

c. The character and amount of discharge.

d. The period of granulation and nature of the granulations.

e. The period of removal of sutures or ligatures.

3. All treatment and diet is to be carefully recorded.

4. In all acute cases a note should be taken at least once a day, including pulse, respiration, and temperature; and in chronic cases twice a week, or less often in proportion to their chronicity.

5. In urinary cases, when operative interference is being carried on, the urine should be examined every day. Care must be taken that it is fresh, and its reaction observed, so that the exact time in the progress of the case when decomposition occurs may be noted.

CHAPTER II.

THE HEAD.

Scalp.

1. *In infants.*—A circumscribed puffy tumour of the scalp, found immediately after birth, and probably after a tedious labour, which pits on pressure, and is more or less discoloured, is a *caput succedaneum*, or limited extravasation of blood into the scalp, due to pressure sustained in the birth.

Caput succedaneum.

Nævus.

2. A congenital vascular mark or growth on the skin, varying in colour from red to purple, and often raised above the general surface of the scalp or skin, is a *nævus*, or "mother's mark."

Encephalocele, or meningocele.

3. A congenital tumour bulging out between the cranial bones, if pulsating, is an *encephalocele*, or if translucent is a *meningocele*. The most frequent situation for this is the occipital region, where the meninges protrude between two of the pieces in which the occipital bone is developed, and the tumour

may be large enough to give the idea of a monstrous "double-head." A protrusion too small to pulsate, or be translucent, may, however, take place between any of the cranial bones, or their subdivisions.

Congenital tumours.

4. A small hard tumour beneath the skin of the scalp moving with the tendon of the occipito-frontalis, as the muscle is put in action when the child cries, is a *fibrous tumour* attached to the tendon. A small fixed tumour is probably a *congenital cyst* of the periosteum (8), and may have perforated the bone, thus closely resembling in many points a small encephalocele (3).

Hydrocephalus.

5. A child with a large square head and a high forehead caused by the separation of the two halves of the frontal bone, the fontanelle being large and tense, is suffering from *hydrocephalus*. In these cases the veins of the scalp are greatly enlarged, and the eyes are unnaturally prominent and are directed outwards. Mere deformity of the head may be due to pressure during birth or the use of the forceps.

Cirsoid aneurism.

6. A tumour of the scalp, somewhat resembling a nævus (2) but more prominent and pulsating, being made up of tortuous arteries, which can be emptied by pressure, is a *cirsoid aneurism*, or *aneurism by anastomosis*.

Sebaceous cysts.

7. *In the adult.*—Multiple tumours of the scalp, varying in size from a pea to an orange, and of very slow growth, are *sebaceous cysts*, the contents of which are commonly solid, but may be semi-liquid, or, when very large, quite liquid, with distinct fluctuation. Rapidly growing tumours of the scalp are usually *sarcomata*, and will probably be found also in other parts of the body.

Sarcomata.

Congenital cysts.

8. Sebaceous tumours occur on the face, and are freely movable with the skin, but firmly-fixed tumours about the orbits and brows, over which the skin is stretched, are *congenital cysts*, connected with the periosteum, and requiring careful dissection for their removal. Occasionally such a cyst proves to be really a small encephalocele (3).

Gummata ulcerated.

9. Indurated spots about the scalp and face, tending to ulcerate and heal, leaving flattened cicatrices more or less circular in shape, are *gummata* due to syphilitic infection, either acquired or congenital.

Herpes facialis.

10. A crop of vesicles with inflamed bases appearing along the line of one of the branches of the fifth nerve on the forehead, is an example of *herpes zoster*, which may seriously affect the nutrition of the eye itself. The scars left by herpes zoster of the fifth, closely

resemble those of syphilitic ulceration on the face.

Nodes.

11. Painful swellings of the skull, soft and doughy at first, but becoming harder in process of time, and more painful at night, are *syphilitic nodes;* and it is to be remembered that similar swellings may be developed on the inner surface of the skull, giving rise to brain symptoms.

Ivory exostosis.

12. Sinuses discharging pus, occurring in the forehead or scalp, are evidences of necrosis of the subjacent bone, often extensive. It is usually of syphilitic origin, and involves the whole thickness of the skull. An extremely dense chronic outgrowth from one of the bones of the skull is occasionally met with in a patient otherwise healthy, constituting an *ivory exostosis.* The most common situation is about the margin of the orbit and the upper or lower jaws.

Cephalhæmatoma.

13. A semi-fluctuating swelling, occurring shortly after the receipt of an injury, must be caused by blood effused beneath the pericranium, forming a *hæmatoma* or *cephalhæmatoma.* In children the blood is often effused beneath the periosteum of the parietal bone, and marks out very distinctly the shape of that bone. When some hours have elapsed,

more or less coagulation of the blood will have taken place, and the clot being softer in the centre than at the circumference will give the finger the impression of sinking into a hollow, and lead to the erroneous idea of the existence of a depressed fracture, unless care be taken to note that the margin yields to the steady pressure of the finger. When some days have elapsed, and redness with evident heat of skin are present, suppuration has probably occurred around the softened clot, but this can be decided positively only by a puncture.

Partial coagulation.

Suppuration.

14. A circumscribed puffy swelling of the scalp, occurring some days after an injury, is said to indicate a collection of matter beneath the skull, but is seldom, if ever, seen.

Pott's "puffy tumour."

15. *Hæmorrhage* from scalp-wounds, if severe, is usually arterial, and must be recognised by its colour, for it is seldom in jets. Profuse venous hæmorrhage is a serious symptom, indicating injury to the sinuses of the skull.

Scalp wounds.

16. An œdematous condition of the scalp, with redness spreading on to the face, followed by œdema of the eyelids or ears, occurring after a scalp-wound, is a symptom of *erysipelas* of the scalp. It is usually announced by a

Erysipelas of scalp.

rigor, great rise of temperature, and often by bilious vomiting.

Depression or fissure.

17. A *simple fracture* or *depression of the skull* may be masked by extravasated blood (13), and may be unaccompanied by brain symptoms. Hence, all cases of head-injury should be carefully watched, as inflammatory mischief may supervene.

Compound fracture.

18. A *compound fracture of the skull* is usually readily recognised with the finger, which feels the fissure, or the depressed piece of bone surrounded by overlapping edges.

Punctured fracture.

19. A *punctured fracture*, caused by some pointed instrument, is more apt to be overlooked from the small size of the wound; but is most serious in its nature, from the amount of injury inflicted on the inner table and dura mater, and hence requires prompt treatment.

Fracture of base.

20. A fall on the head may, without injuring the part struck, produce *fracture of the base* of the skull, with or without brain symptoms. Blood flowing from the ears in considerable quantity, followed by the continuous escape of clear watery fluid, is generally indicative of this accident; the gravity of which will depend upon the brain symptoms present at the time or supervening afterwards. Partial or complete paralysis of the facial

muscles of the injured side may occur at once from injury to the facial nerve in the temporal bone; or may come on some days later from pressure upon the nerve in the process of union of the fracture. In the latter case the paralysis is usually only temporary (33).

21. A patient, partially or completely insensible after receipt of an injury to the head, must have some affection of the brain, which may be due solely to the injury, or partly to the *influence of alcohol.* The odour of the breath and the previous history of the patient will throw light upon this; and it should be noted that a drunken man is usually quarrelsome when roused, and apt to resent interference. The pupils are usually contracted, and when the patient is roused they suddenly dilate, and recontract as the patient dozes off again. Alcohol.

22. The Brain.

Concussion.	*Compression.*	Concussion and Compression.
1. Symptoms follow immediately on the injury.	1. Symptoms follow immediately if due to depressed bone, but after an interval if due to extravasated blood or suppuration.	
2. Insensibility is only partial, and patient can be roused to answer questions.	2. Insensibility is complete, and patient cannot be roused by any stimulus.	

Concussion—continued.	*Compression—continued.*
3. Respiration is quiet, shallow, irregular, and sighing.	3. Respiration is deep, stertorous, and slow.
4. Pulse is quick, feeble, irregular or intermitting.	4. Pulse is slow, full, and regular.
5. Skin is cold and clammy.	5. Skin is hot and perspiring.
6. Pupils variable, generally contracted but sensitive to light.	6. Pupils dilated or unequal, and insensitive.
7. No paralysis of limbs or bladder.	7. Paralysis of one side and bladder.

Shock.

23. A patient who has received any severe injury suffers, more or less, from partial insensibility, failure of the heart's action, and a cold, clammy skin, constituting what is termed *shock*.

Concussion.

24. Symptoms closely resembling these, but of an aggravated character, and depending upon some violence done to the head, indicate the occurrence of *concussion of the brain*. A patient who has lain for some hours in a state of partial collapse from concussion of the brain will, when reaction has begun, not uncommonly vomit. By this the action of the heart is stimulated, and the supply of blood to the brain increased, leading to (1) return of consciousness; or (2) to the effusion of blood from a torn vessel, and the appearance of urgent symptoms of compression; or (3)

Reaction.

Secondary effects.

to an inflammatory condition of the contents of the cranium.

Return of consciousness.

25. The symptoms of *return of consciousness* are obvious; but it must not be supposed that the mental condition will at once regain its complete equilibrium. Some amount of confusion of ideas, coupled with a tendency to excitement, may be present for a day or two.

Effusion of blood.

26. The symptoms of *effusion of blood* will depend upon the vessel injured. If at the base of the skull or in the substance of the brain, it will be impossible to localize the mischief; but if one of the middle meningeal arteries should be torn or give way, the well-marked sudden supervention of symptoms of compression, coupled with unilateral paralysis, may sufficiently indicate a lesion on the opposite side of the head to warrant interference.

Inflammation of brain.

27. The symptoms of *inflammation* of the brain and its coverings are great heat of head, severe throbbing pain, with noises in the ears, a flushed face, and a hard, full pulse. Violent mental excitement, often almost maniacal, is apt to be followed by squinting, coma, and death from effusion.

Compression.

28. Total insensibility, with stertorous breathing and dilated pupils, points to *compression of the brain* from some cause. If im-

mediately following an injury, it is due either to depression of bone or effusion of blood; if occurring later, it is probably due to the effusion of blood; but if appearing after the onset of inflammatory symptoms, it is due, in all probability, to the formation of pus upon or in the brain, or to serous effusion into the ventricles (14).

Convulsions.

29. Convulsive movements, sometimes of a rhythmical character, superadded to symptoms of brain mischief, are usually indicative of some *laceration of brain substance.* The convulsive movements generally affect the limbs of one side more than the other, and will be found chiefly on the side opposite to that on which the cerebral lesion has occurred. Some of the symptoms of compression will probably be present.

CHAPTER III.

THE FACE.

Hare-lip.

30. A CONGENITAL fissure of the upper lip constitutes *hare-lip*, which may be single or double, and may be combined with fissure of the soft and hard palate.

Nævus and mole.

31. A "port-wine stain" or other "mother's mark" is a form of capillary *nævus*. Brown marks, often covered with hairs, are moles, and these may be combined with nævus.

Facial erysipelas.

32. A scarlet, burning hot condition of the skin of the face, accompanied in severe cases by œdema of the cellular tissue of the eyelids, so as to cause great deformity, and ushered in by vomiting, rigors and great rise of temperature, is due to *erysipelas*. This may be traumatic, spreading from a wound of the face or scalp; or idiopathic, in which case it almost always begins about the nose, or spreads from the throat through the nose.

33. A distortion of the face, in which the

Facial paralysis.

mouth is drawn to one side, is due to *paralysis* of the facial nerve, which may be consequent upon (1) exposure to cold, (2) disease in the temporal bone, or (3) brain affection. In a well-marked case the eye of the affected side is permanently open (the cornea being apt to suffer in consequence), and the rest of the face on the affected side hangs loosely on the bones, there being no muscular tone. The saliva is consequently apt to run out of the corner of the mouth, and the food to collect under the cheek from paralysis of the buccinator muscle. The healthy muscles, having no antagonists, draw the mouth over; and there is a marked contrast between the healthy, winking eye and the stony stare of the paralysed side.

From brain affection.

In facial paralysis consequent upon brain affection the nerve-fibres supplying the orbicularis palpebrarum generally escape, and consequently the eye is unaffected. The facial paralysis is for the most part on the same side as the paralysed limbs, and on the side opposite to that of the cerebral lesion.

Following fracture.

Facial paralysis may occur a few days after fracture of the base of the skull, from pressure on the nerve during the repair of the temporal bone, and this may be the only evidence of a fracture having occurred.

Mumps.

34. A swollen state of one or both sides of the face, coming on in twenty-four hours after some uneasiness and pain have been felt about the jaws, is due to inflammation of the parotid gland, and constitutes *mumps*. The submaxillary glands are apt to be involved, and sometimes the testicles become enlarged and painful.

Parotid tumour.

35. A tumour, of slow growth, in front of the ear may be a true *parotid* tumour, but is more frequently an enlarged lymphatic gland overlying the parotid gland, and movable upon it. A precisely similar tumour may be found in the submaxillary region; and a general enlargement of the lymphatic glands of the neck constitutes *lymphadenoma* (128).

Ecchymosis.

36. *Ecchymosis* or bruising of the face is usually the result of violence, but may be consequent upon the rupture of subcutaneous vessels from violent exertion, as in coughing. The colour will pass through the shades of purple, green, and yellow as the effused blood undergoes absorption.

Crepitation. Of air.

37. *Subcutaneous crepitation* is usually symptomatic of the escape of air into the cellular tissue, and may follow the act of blowing the nose after a fracture of the nasal bones. A subcutaneous clot in process of absorption will,

Of blood-clot.

however, occasionally give a crepitant feeling closely resembling that of air.

Ptosis.

38. *Dropping of the upper eyelid*, with inability to raise it, may be a congenital affection; but, following an injury, is an evidence of paralysis of the third cranial nerve. The diagnosis will be confirmed if, on raising the lid with the finger, the pupil of the eye is seen to be dilated and insensible to light, and the eye turned outwards.

Divergent strabismus.

Convergent strabismus.

39. *Inability to turn the eye outwards* indicates some paralysis of the sixth nerve; but the patient may be the subject of ordinary squint, both eyes being more or less turned inwards habitually, in the effort to focus a defective eye.

Myosis.

40. A *contracted pupil*, not dependent upon disease of the iris, is often the effect of an injury of the upper part of the spinal cord propagated through the sympathetic, but may be a symptom of opium administered internally, or of Calabar bean applied to the eye.

Mydriasis.

41. A *dilated pupil* may be a symptom of the administration of hyoscyamus or belladonna internally, or the local application of atropine; or may be connected with amaurosis, *i.e.* blindness dependent upon some affection of the retina or optic nervous apparatus, or due to

glaucoma (52). Following an injury it is an evidence of paralysis of the third nerve.

Hordeolum.

42. A *minute painful abscess* at the edge of the eyelid (commonly called a stye) must not be confounded with the cyst of the eyelid, a slowly growing tumour appearing beneath the skin of the lid, but always to be opened from the conjunctival surface at a point which is discoloured and thinned.

Tarsal cyst.

Ectropion.

43. A distortion, or drawing down, of the *eyelid* by an old scar may cause great deformity and discomfort from the overflow of tears; but the common "watery eye" is due usually to some obstruction of the lachrymal apparatus, which, if acute, may cause an abscess and ulceration of the skin to the inner side of the eye in the position of the lachrymal sac.

Epiphora.

Lachrymal abscess.

THE EYE.

44. *Effusion of blood* beneath the ocular conjunctiva may arise from the rupture of a small vessel during violent exertion, *e.g.* in whooping-cough of children. As the result of injury, the palpebral conjunctiva may be much discoloured by blood—the common "black-eye"; but blood beneath the ocular conjunctiva is more serious, and may indicate fracture of the anterior part of the base of the skull, and escape of blood through the orbit.

Subconjunctival ecchymosis.

45. A reddened condition of the *conjunctiva* covering the eye may be chronic or acute. If chronic, it depends ordinarily upon some irritation due to the eyelid, there being either (1) inverted eyelashes, (2) inverted eyelid, or (3) a granular condition of the lining of the lid, which must be everted over a probe, in order to bring the velvety roughened surface into view.

Trichiasis.

Entropion.

Granular lids.

Conjunctivitis.

46. *Acute conjunctivitis* may be recognised by the bright red colour of the injected conjunctiva, and the heat, pain, and lachrymation complained of, coupled with the feeling of dust in the eye. The possibility of a foreign body being lodged in the conjunctiva or cornea is to be always borne in mind, and inquiry should be directed to this point and a careful search made if necessary, by everting the lids over a probe, and by oblique illumination of the cornea with a lens. In the absence of a foreign body, the affection will probably prove to be simple conjunctivitis, unless there should be any possibility of inoculation with gonorrhœal matter having occurred. In that case prompt measures should be taken to close and protect the sound eye, and the diagnosis will be confirmed in a few hours by the occurrence of a profuse purulent discharge from between

Catarrhal ophthalmia.

Gonorrhœal ophthalmia.

the lids of the affected eye. In infants the same disease may be present from inoculation at birth, but both eyes are usually affected. Ophthalmia neonatorum.

47. In strumous children, the subjects of conjunctivitis, the leading symptom is the inability of the patient to face the light, but if a glance at the eye can be obtained, one or more little superficial vesicles on the conjunctiva may be seen, which, when they break, leave little ulcers on the sclerotic, or at the margin of the cornea. These must not be confounded with the true ulcer of the cornea. Strumous ophthalmia. Phlyctenulæ.

48. In a slightly reddened eye, a perfectly clear cornea may appear at one point to have lost a portion of its substance, there being a slight hollow left. This is the early stage of an ulcer of the cornea, but in the later stage of healing there will be more or less permanent opacity developed at the spot. Such a minute opacity is termed a *nebula*, but if of large size, it is a *leucoma*, and may have resulted from injury by caustic lime, or from a small-pox pustule. A milk-white patch on the surface of the cornea may be due to the incautious use of a lead-lotion, and is sometimes capable of removal. Ulcer of cornea. Opacity of cornea.

49. A *general opacity of the cornea*, with distinct blood vessels on its surface, and a Opaque cornea.

chronically inflamed condition of the parts, is mostly due to the irritation of granular lids.

Interstitial keratitis.

A perfectly smooth cornea, looking like ground glass in some portion and clear in another, is an evidence of congenital syphilis. Confirmation should be sought in the condition of the teeth, which may be "notched and pegged," in scars at the angles of the mouth, and in depressed nasal bones; and also in the general appearance of the patient, who will usually be about the age of puberty, and may present an abnormal prominence of the forehead.

Iritis.

50. A *contracted and irregular pupil* is a result of inflammation of the iris, recent or old, and is accompanied by a change in the colour of the iris from blue to green, or from brown to rust-colour. Well-marked beads of lymph are usually seen on the iris in syphilitic cases,

Syphilitic.

and the general signs of inflammation, viz. pain, redness round the cornea, and dimness of vision, are more marked than in rheumatic or even

Belladonna dilatation.

traumatic iritis. The dilatation of the pupil following the continued use of belladonna for the treatment of iritis, must not be confounded with mydriasis (41).

Cataract.

51. An *opacity*, varying from a slight haze to a well-marked whiteness, seen behind the iris, is caused by cataract of the lens, or its

capsule, or both. In early, and therefore doubtful cases the pupil should be dilated with atropine, and the eye illuminated obliquely by means of a lens, when the striæ in the cataract will appear white. If, on the contrary, direct illumination with an ophthalmoscopic mirror be employed, the striæ of early cataract will appear dark; while it will be found impossible in fully formed cataract to light up the fundus of the eye. Diagnosis of cataract.

52. *Pain in the eye* and over the brow, often sudden in its onset and most acute in its character, coupled with dilatation of the pupil and greatly increased tension or hardness of the eye-ball, are the symptoms of acute *glaucoma*. The early recognition of this disease is most important, since the prompt performance of an iridectomy appears to offer the only prospect of saving the eye. Glaucoma.

53. *Blindness of one eye* may exist for a long time without the knowledge of the patient, who at last discovers the loss accidentally. A white film seen floating at the fundus of an otherwise apparently healthy eye, is an example of detached retina which may be complete or partial, with a corresponding loss of vision, and is commonly met with in adult or advanced life. A button-like growth, with Loss of sight. Detached retina.

Sarcoma of choroid.

more or less metallic lustre seen at the fundus of a blind eye, is probably a sarcoma springing from the choroid, and occurs commonly in children. Its diagnosis with the ophthalmoscope should be determined with a view to early removal of the eye-ball.

THE EAR.

54. Bleeding from the ear after a blow may be from laceration of the pinna or meatus, or from rupture of the membrana tympani. Severe bleeding from the ear is one of the symptoms of fracture of the base of the skull, and is usually followed by the escape of clear fluid in large quantity from the subarachnoid space (20).

Hæmorrhage from ear.

Hæmatoma.

55. A circumscribed elastic swelling of the pinna, following a blow, is a *hæmatoma*, or collection of blood, which may either be absorbed or develop into an abscess.

Ruptured membrana tympani.

56. *Rupture of the membrana tympani* may be diagnosed by the consequent deafness, and by the fact that in most cases the patient, by forcibly expiring, with the mouth and nose closed, can drive air through the ear with a whistling sound. Inspection with a good light through a speculum will decide the question in doubtful cases.

Chronic discharge.

57. A slight *chronic discharge* from the ear may be due to irritation of the meatus from the

presence of cerumen or a foreign body, which should be got rid of by careful syringing before further examination is made.

Purulent discharge.

58. A *profuse purulent discharge* may be due to an abscess or a polypus of the meatus, but is very frequently accompanied by perforation of the membrana tympani, and more or less deafness. It is a symptom of serious disease of the middle ear, which may end suddenly in mischief propagated to the brain.

Diagnosis of abscess.

59. The diagnosis between an abscess of the meatus and the more serious abscess of the tympanum may be made as follows :—

Abscess of Meatus.	*Abscess of Tympanum.*
1. Patient in good health.	1. Follows scarlet fever, measles, or catarrh.
2. No crackling in ear.	2. Preceded by crackling.
3. Meatus swollen, and soon almost closed.	3. Meatus not swollen.
4. Pain slowly becoming intense, and referred to meatus and occiput.	4. Pain rapidly becoming intense, and referred to temporal region and angle of jaw.
5. No tinnitus.	5. Tinnitus very early.
6. Deafness only due to obstructed meatus.	6. Deafness early and extreme.
7. Auricle swollen and standing out from head.	7. Auricle natural. Puffiness over mastoid process.
8. Membrana tympani, if seen, natural.	8. Membrana tympani bulged outwards.
9. No vertigo or delirium.	9. Vertigo often, delirium frequently, present.

Deafness.

60. *Deafness* is often connected with obstruction of the Eustachian tube, and its

patency should be ascertained by making the patient expire forcibly with the mouth and nose closed, when he will be aware of a "click" and sense of fulness in the ear, which will disappear on swallowing. The condition of the throat, and especially of the tonsils (as to chronic enlargement), should always be investigated in cases of deafness. The application of a watch to the head, on the deaf side, will determine whether the auditory nerve retains its function.

61. Ulceration of the face may be the result of injury, or may be due to some specific disease, the accurate diagnosis of which is necessary for treatment. The age of the patient is important, infants suffering from various ulcers, due partly to struma, and more to bad feeding; whilst lupoid ulceration attacks young people, and epithelioma elderly ones, as a rule. The leading features of the principal diseases are given in the following table:

62. *Differential Diagnosis of Ulcers of the Face.*

Lupus.	Rodent Ulcer.	Epithelioma.	Syphilis.	Struma.
In young people.	In elderly patients.	In adult life.	(1.) In children.	In children.
Attacks skin of ala of nose.	Favourite position the skin of lower eyelid.	Attacks junction of skin and mucous membrane — lips, nose, eyelid.	Affects corners of mouth and margins of nose, with deep scars.	Superficial eczematous ulceration, with crusting on lips and nose, leaving no scars behind.
Commences in a discoloured tubercle.	Commences often in a brown horny patch.	Commences as a small irregular tubercle.	Commences often in vesicles or blebs.	
Ulceration superficial, and slowly spreading across the cheeks, healing at one part and breaking down at another.	Spreads steadily with no induration.	Infiltrates from the first, and extends rapidly.	(2.) In adults.	
No glandular affection.	No tendency to heal.	Glands involved.	Superficial, more or less circular multiple ulcers about any part of face, with scars of healed ones; or, deep unhealthy cavities from breaking down of gummata.	
Not usually painful.	No glandular affection.	Painful.		
	Not painful.			

THE NOSE.

Inflammation of.

63. A red, hot, and swollen condition of the ala of the nose may be due to a pimple or small boil within the nostril, or may be the commencement of erysipelas of the face. In the case of a pimple, the inflammation is confined to the ala, and there is throbbing pain, and upon inspection the pustule can be seen within the nostril. In *erysipelas* the skin of the whole nose is more or less affected, looking red and glazed, and the blush extending to the cheeks. The patient has a peculiar "skin-bound" feeling and some smarting, but no throbbing in the early stage; and the general temperature is raised three or four degrees.

Erysipelas.

Acne rosacea.

64. A chronic, red, tuberculated condition of the nose and face, may be due to *acne rosacea*, and in no way connected with intemperate habits. A generally hypertrophied condition of the skin of the nose, which is red and tuberculated, constitutes *lipoma*.

Lipoma.

Ulceration.

65. *Ulceration* of the skin of the nose may be due to lupus, rodent ulcer, epithelioma, syphilis, or struma (62).

Chronic discharge.

66. A *chronic discharge* from the nostril, if watery, is probably caused by polypus; if purulent, is usually due either to ozæna or suppuration of the antrum. In infants the presence of constant watery discharge from

the nose, with the characteristic "snuffles," is one symptom of congenital syphilis. Snuffles.

67. A constant, highly offensive discharge from both nostrils, containing greenish crusts, which come away on blowing the nose, is characteristic of ozæna; and it should be noted that the patient has ordinarily lost the sense of smell, and is unaware of his offensiveness. An inspection of the cavity of the nose will detect ulceration, which can also be found in the posterior nares by the finger passed behind the soft palate. Ozæna.

68. *Necrosed bone* may be detected with the probe in bad cases, particularly those of syphilitic origin, or following scarlatina. The possible presence of a foreign body, and consequent obstruction of the nostril in the case of a child, should not be forgotten. Necrosis.

69. An intermittent purulent discharge from one nostril, which is slightly offensive to the patient but does not affect the bystanders, is generally due to suppuration in the antrum. The diagnosis will be confirmed, if it is found that the discharge is increased by the horizontal posture in bed, and especially by lying on the sound side, when the pus is apt to trickle down the throat and cause nausea. Also if the teeth are unsound, and especially if Empyema of the antrum.

there are tender stumps; but any deformity of the jaw itself must not be expected, nor any bulging of the cheeks in ordinary cases. The mucous membrane of the nose is healthy.

Polypus nasi.

70. More or less *obstruction* of one or both nostrils in the adult, with occasional watery discharge, should lead to inspection of the nose with a good light. A grey or yellowish jelly-like mass, which reflects the light from its surface, is almost certainly an ordinary gelatinous polypus. The diagnosis will be cleared up by using a probe, with which the growth can be lifted away from the septum. The finger passed behind the soft palate will commonly detect large polypi hanging down into the pharynx. The influence of the weather upon nasal polypi should be noted, damp causing them to increase largely in size; also the shape of the nose externally, one side not unfrequently being bulged out by the growth within.

Vascular growth.

71. A *vascular growth* seen from the anterior nares may be merely a prominent inferior turbinate bone or a displaced septum. The careful use of a probe will clear up the diagnosis.

Obstruction.

72. A *vascular growth obstructing* the nares may either be a fibrous polypus growing from

the nasal cavity or from the base of the skull; or, if of a softer character and apt to bleed, may be a growth protruding from the antrum into the nostril. A careful examination of the posterior nares and pharynx, and also of the superior maxilla, will be necessary to clear up the diagnosis, which is always very difficult.

CHAPTER IV.

THE MOUTH.

Cleft palate.

73. The return of milk through the nose of an infant, who is fed with a spoon because it is found impossible to suckle it, depends upon a fissure of the palate; which may be complicated by a hare-lip with or without fissure of the gum.

Cracked lip.

74. A crack in the centre of the lower lip occurring in cold weather is a simple though troublesome matter, depending partly upon general health.

Chancre.

75. A crack or small ulcer, with an indurated base and enlargement of the submental glands, occurring in the female or in youth, is probably a *chancre*, and inquiry should be directed as to possible infection. The early affection of the glands, and the stationary character of the sore, will serve to distinguish it from epithelioma.

76. Slightly raised papules of a white colour,

with or without ulceration, may be found on the lips and at the angles of the mouths of persons suffering from *constitutional syphilis*, or infants the subjects of congenital syphilis. Attention should specially be directed to them in the case of "wet-nurses" or "nurse-children." Mucous papules.

77. A ragged ulcer, occurring mostly in the lower lip of smokers, and originating in a wart, is generally *epithelioma*. In advanced cases the skin around is hard and infiltrated, and the submaxillary lymphatic glands are enlarged and tender, or even ulcerated. Epithelioma.

78. A hot, swollen, and tender state of either lip, with a general brawny condition of the skin, coming on in twenty-four hours in a patient out of health, is a form of *carbuncle*, which is apt to be rapidly fatal from purulent deposit in the facial veins. Facial carbuncle.

79. A small, semi-transparent *tumour* of either lip, but more commonly the lower, slowly increasing without pain, is a cyst due to the obstruction of a mucous follicle. Mucous cyst.

Solid growths beneath the mucous membrane, feeling like shot, are caused by hypertrophy of the mucous glands.

80. Rapid, unhealthy inflammation and sloughing of the lips or cheek, occurring in ill-nourished children whose surroundings are Cancrum oris.

unhealthy, or who may possibly have been dosed with calomel "teething-powders," is an extension of *gangrenous stomatitis.* The gums and mucous membrane of the mouth will be found ulcerating and sloughy, and the teeth dropping out of the exposed alveoli. The breath is most offensive, and the patient in a very exhausted condition.

Ulcerative stomatitis.

81. Ulceration of the mucous membrane of the mouth and gums in children, constitutes the disease known as *ulcerative stomatitis;* or, if the parts are covered with aphthæ, or superficial ulcers having a white exudation, it is known as "thrush." This last must not be confounded with the much more serious disorder, "diphtheria," in which thick false membranes are formed about the tonsils and back of the throat, and extend down the air-passages.

Thrush and diphtheria.

Chronic ulceration.

82. Chronic ulceration of the mucous membrane of the cheek in adult life is irregular and fissured, and is usually of syphilitic origin; but in advanced life may be epitheliomatous, in which case there is more or less induration of the base of the ulcer.

Ranula.

83. A semi-transparent, bluish tumour beneath the tongue, very elastic and yielding to the finger, and giving no inconvenience

except from its size and position, is a *ranula* or mucous cyst, not usually connected with the salivary ducts, which can often be traced over the wall with a fine probe. A more opaque and solid cyst is occasionally met with in the same situation, containing inspissated sebaceous matter. This is of congenital origin.

Tongue-tie.

84. A difficulty in sucking may occasionally result from shortness of the *frænum linguæ*, commonly known as "tongue-tie"; or, in older children, an impediment of speech is sometimes supposed to depend upon the same cause.

THE TONGUE.

85. Morbid conditions of the tongue may be due to structural change in the organ, the result of disease, or may be simply evidence of general constitutional disturbance.

White-coated.

A *white-coated* tongue commonly accompanies any febrile disturbance.

Brown moist.

A *brown-coated, moist* tongue is an evidence of digestive disorder and over-loaded stomach or bowels.

Brown dry.

A *brown, dry* tongue is generally indicative of depressed vital power, and is found in the typhoid condition of patients dying from blood-poisoning.

Red moist.

A *red, moist* tongue is found in many feeble

patients, particularly those suffering from exhaustive discharges.

Red dry. A *red, dry* tongue is usual in cases of pyrexia, or inflammatory fever of any kind, but the prominent papillæ, with or without white fur (strawberry-tongue), are characteristic of scarlet-fever.

Red glazed. A *red and glazed* tongue is found in patients who are reduced to a debilitated state, in which they are unable to take, or at least to digest, food or stimulants.

86. The *mode of protruding* the tongue varies, and is often characteristic.

Tremulous. A *tremulous*, moist and flabby tongue is seen in feeble, nervous patients, especially in drunkards on the verge of *delirium tremens.*

Slow protrusion. A *slow, hesitating* protrusion of the tongue is highly characteristic of the confusion of intellect in a case of concussion of the brain.

Unilateral paralysis. A protrusion of the tip *to one side*, in the absence of structural disease, indicates paralysis of the muscles of the side to which the organ turns.

Syphilitic tongue. 87. *Structural changes in the Tongue.* A loss of epithelium in patches, leaving a glazed bluish appearance, is highly characteristic of tertiary *syphilis;* and in more severe cases,

there will be cracks or scars in the tongue, especially at the tip.

Mucous tubercles.

Flattened elevations constituting *mucous tubercles* may be found in syphilitic patients, even children, and when at the base of the tongue are liable to be mistaken for circumvallate papillæ.

Psoriasis linguæ.

88. A circumscribed *white patch* on the tongue, due to thickening of the epithelium, constitutes *psoriasis*, and may depend upon local irritation from a tooth or clay-pipe. The hypertrophied epithelium is shed from time to time, and then leaves a red surface for a short period.

Warts.

Hypertrophy of the epithelium occasionally takes the form of *warts*.

Ichthyosis linguæ.

89. Great *hypertrophy* or thickening of the epithelium combined with cracks, constitutes *ichthyosis linguæ*, which is generally regarded as especially likely to pass into epithelioma.

Fissured tongue.

90. Deep *irregular fissures* in the tongue, showing white cicatrices, the result of ulceration, are syphilitic in their origin, and are commonly found with the following.

Gumma.

91. A lump in the tongue, slowly developing and remaining stationary without pain for many months, is probably a *gumma* or syphilitic deposit, which may undergo absorption under

treatment and then leave a contracted condition of the tongue, liable to be mistaken, at first sight, for unilateral atrophy from paralysis.

Ulceration.

92. *Chronic ulceration* of the tongue is due to the local irritation of decayed teeth, and is also present in tertiary syphilis and epithelioma, the diagnosis between these two diseases being often very difficult. So much so, that it may be necessary to try antisyphilitic remedies tentatively for diagnostic purposes, or to remove a small portion of diseased tissue for microscopic examination, before a confident opinion can be formed.

93. The following table, altered from Fairlie Clarke, gives the leading features of the two principal diseases of the tongue :—

Differential diagnosis of cancer and syphilis of tongue.

Cancer.	Syphilis.
1. Generally over age of forty.	1. Generally under forty.
2. Begins at one side, generally at middle or posterior third.	2. Frequently in central line.
3. Shape circular.	3. Shape oval or oblong.
4. Pain acute and darting.	4. Pain slight or none at all.
5. Ulceration primary—*i.e.* the ulcer becomes indurated.	5. Ulceration secondary—*i.e.* the induration becomes ulcerated.
6. Tongue tied down and immovable.	6. Tongue free and movable.
7. Speech thick and indistinct.	7. Speech easy and distinct.

Cancer.	Syphilis.
8. Glands soon become enlarged.	8. Glands not affected.
9. Frequently attended by sloughing.	9. Never sloughs.
10. Increases steadily; sometimes rapidly.	10. Increases slowly, or remains stationary.
11. No amendment under treatment.	11. Amends under treatment.
12. Family history of cancer (?).	12. Syphilitic history and symptoms.

94. Badly developed teeth in childhood are an evidence of some interference with nutrition, depending upon congenital causes or improper feeding. Premature loss and decay of the temporary teeth may be an evidence of strumous diathesis. Notches in the borders of the permanent incisors, and "pegging" of the canines may be taken as collateral evidence of a congenital syphilitic taint. Mere irregularity of the borders, or transverse markings upon the permanent incisor teeth, are evidences of a former disturbance of health during the process of growth of the teeth.

The teeth.

Premature loss.

Syphilitic.

Marked.

95. Chronic *inability to open the mouth* may depend upon old cicatrices of the cheek, which can often be felt and seen; but the more common cause of closure of the jaws is spastic contraction of the masseter from irritation of the teeth, and specially of a wisdom tooth which has not room for its proper development.

Closure of jaws.

Trismus.

Sudden closure of the jaws may be due to *trismus* or lock-jaw, consequent upon some injury or operation: *vide* Tetanus.

Dislocation of lower jaw.

96. Inability to close the mouth, if of recent occurrence, depends upon some form of *dislocation of the lower jaw*. If the mouth is widely open and the chin prominent, with a distinct hollow in front of each ear, the dislocation is

Double.

double. If the mouth is only partially open, and the chin displaced to one side, the dislo-

Single.

cation and consequent hollow in front of the ear will be found on the opposite side. But a lateral displacement of the chin may depend

Fracture of neck.

upon a *fracture of the neck* of the jaw on the same side as the displacement; in which case considerable bruising will probably be detected in the region of the fracture.

Fracture of lower jaw.

97. Inability to close the mouth, and to speak articulately, may depend upon a *fracture of the lower jaw* from a blow or fall upon the face. The injury usually leads to laceration of the gums and consequent hæmorrhage from the mouth, and the displacement of the fragments is readily recognised by the irregularity of the teeth. Should there be no displacement, or should the fracture extend through the angle or ramus of the jaw, it will be necessary to grasp the two sides of the jaw and move

them forcibly in order to determine the existence of a fracture, of which, however, the patient is usually fully conscious, from his own sensations.

Neglected fracture.

98. A swollen, red, and painful state of the tissues covering the lower jaw, occurring some days after the receipt of violence (even of tooth-extraction), should lead to a suspicion of fracture, which from neglect may have induced inflammation, and possibly necrosis, of the inferior maxilla.

Inflammation from teeth.

99. A swollen, tender, and hot condition of the tissues of the face depends, in the great majority of cases, upon carious teeth, with a previous history of frequent attacks of face-ache. Examination of the mouth will show swollen gums, and the peccant tooth will prove exquisitely tender when struck sharply with a metallic body, and will probably feel to the patient slightly elevated from its socket.

Alveolar abscess.

100. An elastic fluctuating swelling in any part of the face, or for some distance down the neck, may prove to be an *abscess* due to diseased teeth, and the matter may have perforated the alveolus beyond the fang, without having in any way involved the crown of the tooth and mouth. Formidable looking elastic swellings of the temporal region are caused by matter,

due to disease of the lower jaw, passing beneath the zygoma and temporal fascia.

Necrosis of alveolus.

101. An unhealthy purulent discharge from the mouth, with great fœtor of breath, will be found commonly to depend upon *necrosis* of the alveolus, the consequence of neglected abscess. Bare bone will be readily detected with the finger or a probe.

Gingivitis.

102. A hot, swollen, and tender condition of the gum in an infant depends usually upon the irritation due to uncut teeth. The condition is important, since, if not relieved by timely lancing of the gums, convulsions and other serious results may ensue.

Mercurial gum.

103. A *red line* upon the edge of the gums, which are a little tender and spongy, accompanied by slight fœtor of breath and a metallic taste in the mouth, are the symptoms of mild mercurialisation; which may be increased to sloughing of the gums and profuse salivation by injudicious persistence in the administration of mercury.

Lead gum.

104. A *blue line* upon the edge of the gum is characteristic of lead-poisoning, and inquiry should be made as to employment and the presence of colic and wrist-drop.

Scurvy.

105. A general *spongy* condition of the gums, with, in severe cases, horrible fœtor and

sloughing, is produced by scurvy, and is often unsuspected when present in a mild form.

Epulis.

106. Growths about the gums, whether small and pedunculated or large and sessile, are classed together under the term *epulis*. If firm in texture and slow of growth, the epulis is probably *fibrous;* if more rapid and dark in colour, it will be *myeloid;* and if inclined to ulcerate and become painful, it may prove *epitheliomatous*. A general *hypertrophy of the gums*, causing them to overhang and bury the teeth, is occasionally met with in children.

Hypertrophy.

Tumour of upper jaw.

107. A gradually increasing prominence of the cheek, with more or less implication of the mouth, blocking of the nostril, and eventual double-vision from displacement of the eye-ball, points to some tumour of the superior maxilla. A careful examination with the finger, both externally and from within the mouth, will determine whether the tumour is of uniform consistence throughout, or whether it is yielding at the most prominent part, with possibly a feeling of crackling in the vicinity of the more elastic portion. In the latter case the tumour is cystic, and the crackling is due to the thinning of the bone by absorption. If apparently solid, attention should be directed

Cyst.

to the point of its origin, and the mode and rapidity of its growth. The nostril should be examined from the front with a good light, and the finger be carried behind the soft palate to investigate the growth from the posterior nares.

Tumour of lower jaw.

108. A chronic enlargement of the lower jaw should similarly be examined from without and from within the mouth, for the detection of any elastic or crackling portion.

Both jaws.

Abscess.

109. The fluid contents of a maxillary tumour may be *purulent*, but are more probably *cystic*. The number of teeth which have been cut should be noted, for a cyst in either jaw may be due to a misplaced or inverted tooth, and in this case there will be no solid growth.

Dentigerous cyst.

Cysts.

But cysts may be combined with solid growth contained in their walls, or be developed upon a solid tumour, and require tapping before the size of the growth can be accurately ascertained.

Solid tumours.

110. A solid tumour of either jaw may be simple or malignant, the diagnosis (which is often difficult) depending upon the rapidity of growth, and tendency to invade surrounding structures and to fungate, which characterise malignant growths about the face.

111. Glandular tumours secondary to epi-

thelioma of the lip or tongue become adherent to the lower jaw in their later stages, but must not be confounded with growths originated in the bone itself. Glandular tumours.

112. A congenital fissure of the palate may extend through the soft palate alone, or through both hard and soft palates, and may be combined with single or double hare-lip. In the latter case, the inter-maxillary bones are frequently displaced from their normal position. Cleft palate.

Perforation of the hard or soft palate by disease may leave an aperture with smooth edges, which cannot be confounded with the congenital fissures. As the result of ulceration, the soft palate may be adherent to the back of the pharynx, more or less completely shutting off the nose from the mouth, and leading to nasal intonation and loss of smell. Ulceration of palate.

CHAPTER V.

THE THROAT.

113. Pain in the throat, with difficulty of swallowing and thickness of voice, coming on in a few hours with general feverish symptoms, generally denotes acute inflammation of the tonsils. On inspection, the mucous membrane of the fauces will be found deeply congested and swollen, and the affected tonsil will be seen bulging out the soft palate, between the pillars of which it is placed. There is usually a good deal of tenderness about the angles of the jaws, and some swelling in that region.

Cynanche tonsillaris.

114. Chronic discomfort in the throat in children, causing them to breathe with the mouth open and to snore, accompanied by deafness, is commonly due to chronic enlargement of the tonsils. Inspection will show two large pale glistening masses in the fauces, the surfaces of which are generally pitted, and often present yellow particles of inspissated mucus.

Enlarged tonsils.

Ulceration of tonsils.

115. A uniformly injected, dusky red condition of the fauces is a common symptom of *constitutional syphilis*, and is often accompanied or followed by ulceration of the tonsils; which may be considered diagnostic of that disease, if both tonsils are affected with deep, nearly circular ulcers, having a grey surface, the rest of the tonsil being healthy. (The white patches of aphthæ, and the thick pellicle of diphtheria, resembling wash-leather, cover the whole tonsil and the fauces.)

Ulceration of pharynx.

Ulceration of the soft palate and of the back of the pharynx in adults, is nearly always symptomatic of tertiary syphilis. The ulcers have a yellow sloughy surface, and exude a quantity of thin purulent discharge (112).

Dysphagia.

116. *Difficulty of swallowing* is a common symptom of acute tonsillitis (113), but if coming on suddenly may be due to *acute inflammation of the pharynx*, which on inspection will be seen to be reddened and œdematous. This is most commonly seen in connection with acute laryngitis, and, when the epiglottis is affected, the food is almost invariably regurgitated through the nostrils (121).

Pharyngitis.

117. Absolute *inability to swallow* from paralysis of the pharyngeal muscles, if chronic, may be due to brain disease, but if acute generally

Erysipelas of fauces.

depends upon erysipelas of the fauces, in which case the parts will be seen to be of a dusky red colour, and to be absolutely motionless, even when irritated, the food passing into the larynx and producing violent cough.

Chronic dysphagia.

118. *Chronic inability to swallow* may be purely nervous or hysterical, in which case

Hysterical.

the patient (female), when induced to make the effort, never brings up the food again. If some obstruction to the passage of food apparently exists, the forefinger should be introduced into the pharynx, when, if the posterior wall is felt to be bulged forward by an elastic swelling, the case is probably one of post-pharyngeal abscess, connected with caries of the cervical vertebræ. Failing this, the finger should be passed as far as possible down the gullet, and will sometimes detect the upper

Post-pharyngeal abscess.

Epithelioma.

margin of an epithelioma, the cause of the trouble.

Organic stricture.

119. A patient with *organic stricture of the œsophagus* can swallow readily, but after a minute or two the food regurgitates into the mouth. Careful palpation may detect a thickening in the neck, or enlarged glands in front of the vertebral column, in cases of cancer; and the history will show the fact if the contraction depends upon the swallowing

of caustic fluids. The possible presence of a foreign body is to be borne in mind, and the cautious use of a bougie may serve to detect it. Gradually increasing dysphagia may be due to an aneurism of the arch of the aorta or its descending portion, and in the latter case the diagnosis will be most obscure.

Caustic fluids.

Aneurism of aorta.

120. *Violent cough* following immediately upon swallowing fluids is often a symptom of perforation of the trachea by cancerous disease of the œsophagus, in which case the expectoration will contain particles of the fluid swallowed.

Perforation of trachea.

121. *Difficulty of breathing*, if acute, may be due to a foreign body in the windpipe, or to affections of the larynx, heart, or lungs.

Dyspnœa.

When the breathing has the peculiar whistling sound of laryngeal obstruction, attention should be at once directed to the throat, when a foreign body may be detected, and removed with the finger; or it will be found, more probably, that there has been for some hours pain, with difficulty in swallowing, coming on after exposure to cold or, in children, following the inhalation of hot steam from the kettle. The finger passed down the throat will then feel the epiglottis much swollen, and the sur-

Laryngeal.

Scald of larynx.

rounding parts œdematous. The case is one of *acute laryngitis;* and prompt scarification of the swollen parts, or more probably laryngotomy, will be requisite to save the patient's life.

Acute laryngitis.

Foreign body in glottis.

122. A foreign body, such as a plum-stone or nut-shell, impacted in the glottis, will absolutely stop the breathing, the patient turning blue and rapidly dying, if active measures are not immediately taken to displace the foreign body by inverting the patient or performing laryngotomy. A similar body, if it has passed through the larynx to the trachea, will give rise to urgent symptoms of dyspnœa whenever it is coughed up against the vocal chords; or, if a coin, may become impacted in the trachea, and give rise to a whistling sound, which may be heard on auscultation. A foreign body impacted in a bronchus (usually the right) will lead to loss of breath-sounds, with want of expansion of the chest-wall of the affected side, and to exaggerated or puerile respiration on the healthy side.

In trachea.

In bronchus.

Heart-disease.

123. Acute dyspnœa may supervene upon various forms of *heart-disease*, and it will be noticed that the breathing is of a sighing, gasping character, but with none of the laryngeal stridor. An acute attack of dyspnœa may

be due to *asthma*, of which the patient is the subject. The attack is very alarming in character, the patient's face becoming dusky and the superficial veins injected, while he seems to be struggling for his last breath. There is, however, no laryngeal breathing, and on auscultation the chest will be found free from disease. The dyspnœa caused by acute *pleurisy* or a *broken rib* is very characteristic, the patient having no difficulty in filling his chest up to a certain point, when he receives a sharp stab in the side which makes him suddenly relax his muscles and involuntarily expire.

Asthma.

Pleuritic stitch.

124. Difficulty of breathing, coming on gradually, may depend upon disease of the heart or lungs, effusion into the pleura, or aneurism, and a careful examination of the chest should be made.

Chronic dyspnœa.

Dulness on percussion beneath the clavicles is symptomatic of tubercle; at the base of the lung, of pneumonia. Dulness over one side of the chest, with displacement of the heart to the opposite side, is symptomatic of fluid in the pleural cavity. Dulness over the central portions of the chest may be due to aneurism of the aorta, or to some mediastinal tumour, or to effusion into the pericardium, in which case

Tubercle.

Hydrothorax.

Aneurism. the dyspnœa will be urgent. When the dyspnœa is clearly due to aneurism, but doubt exists as to whether it is owing to actual pressure on the trachea or to spasm of the laryngeal muscles consequent upon implication of the pneumogastric nerve, which might be relieved by tracheotomy, it may be advisable to administer chloroform for diagnostic purposes, and should the breathing be relieved to operate at once.

Heart-disease. 125. Valvular disease of the heart may be diagnosed according to the following table (from Dr. Harvey):—

BRUIT, if *systolic*, and loudest at
Base = Aortic obstruction;
Apex = Mitral insufficiency.
BRUIT, if *diastolic*, and loudest at
Base = Aortic insufficiency;
Apex = Mitral obstruction.
PULSE, if *regular*,
Full or strong } = Aortic disease.
Jerking, resilient }
PULSE, if *irregular*,
Intermittent, unequal } = Mitral disease.
Soft, small, weak }

Aphonia. 126. *Loss of voice*, or huskiness, is a common

symptom of acute or chronic disease of the larynx, for the diagnosis of which laryngoscopic examination will be necessary. It is to be noted that even in complete *aphonia* the words are formed by the mouth and larynx, but no sound is produced; whereas in *aphasia* dependent upon brain-disease the power of forming words is wanting.

Aphasia.

CHAPTER VI.

THE NECK.

Hygroma.

127. Cystic tumours of large size are met with in children and are often of congenital origin. They constitute *hydrocele of the neck*, and have a varying amount of solid material connected with them. They may extend deeply in various directions in the neck, and even into the axilla.

Enlarged cervical glands.

128. A swollen condition of the lymphatic glands beneath the jaw, or along the sterno-mastoid may be acute or chronic. In both cases search should be made for a source of irritation in the mouth, in the ear, or on the scalp. Chronic enlargement of the cervical glands is common in strumous children, and may be found in adults, the subjects of general lymphadenoma. The glands in the lower part of the neck immediately above the clavicle are often affected in cancer of the breast. Enlargement of the sub-occipital glands is generally held to

Lymphadenoma.

be evidence of hereditary syphilis, if not due to irritation of the scalp from pediculi, etc.

Goître.

129. A tumour in close connection with the wind-pipe, and moving with it when the patient swallows, is an enlarged thyroid gland or *goître*. This may be unilateral or on both sides and not equally developed; and may be solid, cystic, or pulsating. The form of goître in which great prominence of the eye-balls is combined with anæmia and palpitation is known as *exophthalmic goître*.

Wry-neck.

130. Distortion of the neck may be due to contraction of the sterno-mastoid muscle, in which case the head is twisted so that the face is turned towards the healthy side.

Caries of cervical vertebræ.

Caries of the cervical vertebræ may be the cause of great stiffness and deformity of the neck, and abscesses resulting from it may point in almost any position (post-pharyngeal, 118).

Indurated sterno-mastoid.

131. A thickened condition of the sterno-mastoid muscle is not uncommon in newly-born children, and is probably due to a strain or slight tear of the muscular fibres in the birth, though it is thought by some surgeons to be a gumma and a symptom of congenital syphilis.

132. A pulsating tumour in the position of one of the large arteries of the root of the neck

Aneurism of root of neck.

will probably convey a thrill to the finger, and a *bruit*, or "bellows sound," to the ear applied to it. It may then be safely pronounced an *aneurism*, but it is by no means easy to be certain as to the vessel from which it may spring.

Carotid aneurism.

133. A *carotid aneurism* is under cover of the sterno-mastoid muscle, and on the right side will be fairly limited below. On the left side, however, it may spring from the thoracic portion of the vessel, and is liable to be confounded with aneurism of the arch of the aorta.

Subclavian aneurism.

134. A *subclavian aneurism* may affect one or more portions of the vessel. In the third and second portions its outline can be defined in the posterior triangle of the neck, and it will be found to make painful pressure on the brachial nerves. In the first portion the aneurism is deeply placed beneath the sterno-mastoid muscle and clavicle, and is apt to make pressure upon the great veins of the right arm and neck; also to cause laryngeal symptoms by pressure upon the recurrent laryngeal branch of the pneumogastric nerve; or by pressure on the sympathetic may cause contraction of the pupil. A sphygmographic tracing of the two radial pulses will show a

marked difference between them in the case both of subclavian and innominate aneurisms, the abrupt rise and fall of health being lost in a general curve. The radial pulse, in both subclavian and innominate aneurisms, is smaller on the affected than on the healthy side.

Innominate aneurism.

135. An *innominate aneurism* is to be felt beneath the inner border of the sterno-mastoid, and generally rises into the space between the two muscles of opposite sides. It bulges forward the inner end of the clavicle and upper part of the sternum, and commonly involves the aorta to a certain degree; giving rise to a varying area of dulness over the upper part of the chest, and more or less compressing the lung.

Aortic aneurism.

136. An *aneurism of the arch of the aorta* may simulate any one of the preceding forms. The more general bulging of the chest-wall, and more general impulse and thrill over a larger area of dulness, may help to a right conclusion, particularly if the veins of the left side are evidently obstructed by pressure on the left brachio-cephalic vein. Symptoms of pressure on the trachea or bronchus may accompany aortic aneurism, leading to deficient expansion of one or both lungs; but the absence of a *bruit* is no proof that the

tumour is not aneurismal, for it may be wanting or be masked by the powerful beating of a hypertrophied heart.

Fractured clavicle.

137. An irregularity of the clavicle with a history of preceding violence, such as a fall on the shoulder, is probably a *fracture*, which, if recent, will be at once recognised by the crepitus and pain caused by moving the arm. But in children the accident may be overlooked at the time, and attention be called only to the swelling due to callus developed in the process of cure. At this stage the appearances closely resemble those of a limited periostitis, but nodes on the clavicle do not occur in childhood, though they may be found in various stages in adult life.

Node on clavicle.

Dislocation of clavicle.

138. A *dislocation* of the inner end of the clavicle can only be produced by extreme violence, and the deformity is obvious. A displacement of the clavicle may be found in extreme cases of lateral curvature of the spine, and great bending of the bone itself is seen in cases of rickets.

Fatty tumour.

139. A *superficial* tumour in the region of the shoulder if of slow growth and painless, is probably fatty or sebaceous, and the former sometimes sends processes between the muscles. Enlargement of the lymphatic glands of the

posterior triangle may be due to irritation in the arm or breast, or may be evidence of general lymphatic disease (128). Abscesses connected with lymphatic inflammation are occasionally of large size.

CHAPTER VII.

INJURIES ABOUT THE SHOULDER.

Dislocation of outer end of clavicle.

140. Deformity of the shoulder following a fall, with pain, but *without* appreciable loss of voluntary movement in the shoulder-joint, is probably due to dislocation of the outer end of the clavicle upon the acromion process.

Fracture or dislocation.

141. Deformity of the shoulder *with loss of power* over the arm may be due to wasting of the deltoid, consequent upon an old injury; but if the injury is recent, there can be no deformity without fracture or dislocation. Investigation as to the direct or indirect nature of the violence inflicted on the shoulder will be advisable before inspection of the part is made, and then careful inspection and comparison of the injured and sound shoulders should be made before any manipulation is attempted. The following tables from Hamilton give the leading diagnostic features of four principal injuries.

142. *Differential Diagnosis of Injuries about the Shoulder.*

Signs of a dislocation. (*Cause, a fall upon the elbow, or sometimes a direct blow.*)	*Signs of fracture through the surgical neck.* (*Cause, generally direct blows, but in aged people frequently caused by falling on the elbow.*)	*Signs of separation of the epiphysis, only below age of twenty.* (*Cause, direct blows.*)	*Signs of a fracture of the neck of the scapula.* (*Cause, generally a direct blow.*)
1. Preternatural immobility.	1. Preternatural mobility often, but not constantly present.	1. Preternatural immobility.	1. Preternatural mobility.
2. Absence of crepitus.	2. Crepitus produced easily when there is no impaction, or when the displacement is not complete, but with difficulty when impaction exists, or the displacement is complete.	2. Feeble crepitus; less rough than the crepitus produced when broken bones are rubbed against each other.	2. Crepitus, generally detected by placing the finger on the coracoid process, and the opposite hand upon the back of the scapula, while the head of the humerus is pushed outwards and rotated.
3. When the bone is brought to its place it will usually remain without the employment of force.	3. When once the fragments have been displaced it is exceedingly difficult ever afterwards to maintain them in place.	3. Fragments when replaced are not easily maintained in place.	3. When reduced it will not remain in place.

4. Inability to place the hand upon the opposite shoulder, or to have it placed there by an assistant, while at the same time the elbow touches the breast.	4. The hand can be easily placed upon the opposite shoulder, while the elbow rests against the front of the chest.	4. The hand can be easily placed upon the opposite shoulder, while the elbow rests against the front of the chest.	4. The hand may generally, but with difficulty, be placed upon the opposite shoulder with the elbow resting upon the front of the chest.
5. Depression under the acromion process; always greatest underneath the outer extremity, but more or less in front or behind, according as the dislocation may be into the axilla, forwards or backwards.	5. A slight depression below the acromion, not immediately underneath its extremity, but an inch or more below.	5. The depression is not immediately under the acromion, yet higher than in most fractures of the surgical neck, perhaps one inch below the acromion process.	5. Depression under the acromion process, but not so marked as in dislocation.
6. Round smooth head of the bone sometimes felt in its new situation, and very plainly removed from its socket; moving with the shaft. Absence of the head of the bone from the socket.	6. Head of bone in the socket, and moving with the shaft when impacted. The upper end of the lower fragment being often felt distinctly pressing upward toward the coracoid process, its broken extremity being easily distinguished from the head of the bone by its irregularity.	6. Head of the bone in its socket, and not moving with the shaft. Upper end of lower fragment projecting in front when displacement exists, and feeling less sharp and angular than in case of a broken bone; indeed, being slightly convex and rather smooth, it may easily be mistaken for the head of the bone.	6. Head of the bone may be felt in the axilla but less distinctly than in dislocation; never much forwards or backwards; head of the bone moves with the shaft. Head of the bone not to be felt under the acromion process, although it has not left its socket.

7. Elbow carried outwards, and in certain cases forwards or backwards, and not easily pressed to the side of the body.

8. Arm shortened in the sub-clavicular dislocation, slightly lengthened in the sub-glenoid, and its length not changed in the sub-coracoid dislocation.

9. In taking the vertical circumference of any shoulder in which dislocation exists, by means of a tape carried over the acromion and under the axilla, an increase of about two inches over the sound side is found.

7. Elbow hanging against the side when the fragments are not displaced, but away from the side when displacement exists.

8. Length of arm unchanged, unless the fragments are impacted or overlapped, or both fragments are much tilted inwards. If the fragments are completely displaced the arm is shortened.

7. Elbow hanging against the side when the fragments are not displaced, but away from the side when displacement exists.

8. Length of arm not changed unless the fragments are overlapped, or both fragments are tilted upon each other. When the fragments are overlapped the arm is shortened.

7. Elbow carried a little outwards, but not so much as in dislocation. Easily brought against the side of the body.

8. Arm lengthened.

9. The coracoid process carried a little toward the sternum and downwards.

10. Pressing upon the coracoid process, it is found to be movable, and it is also observed that it obeys the motions of the arm.

Acute inflammation.

143. A swelling of the shoulder coming on a few hours after an injury, or in the course of an inflammatory disease such as rheumatism, or in pyæmia, with great pain increased by the slightest movement of the arm, is due to *acute inflammation* of the shoulder joint. The effusion distends the joint beneath the deltoid, and an elastic swelling can be detected with both eye and finger, filling up the natural hollow below the acromion, and to the outer side of the coracoid process. The patient will probably support the elbow with the opposite hand, keeping the arm away from the side, and in front of the body.

Chronic inflammation.

144. A similarly distended condition of the shoulder joint, coming on with little or no pain, is seen in *chronic synovitis*, occurring in strumous subjects. In both cases suppuration may occur, and the matter bursting through the capsule, may burrow under the deltoid, and point at the anterior or posterior edges of that muscle, some distance down the arm.

Tumour of head of humerus.

145. A condition very difficult to distinguish from the foregoing may be due to a malignant tumour of the head of the humerus. The elastic swelling and loss of movement cause the tumour closely to resemble chronic strumous disease of the joint, but the pain is

usually greater, and the introduction of an aspirator needle will give rise to free bleeding, and no reduction in the size of the swelling. In the later stages crepitus may probably be found from giving way of the neck of the humerus.

Enlarged bursa of deltoid.

146. A chronic swelling of the shoulder, giving undue prominence to the outer part, with some limitation of movement but no pain, may be due to distension of the *bursa* beneath the deltoid. The diagnosis will be confirmed if a soft crackling is felt when pressure is made with the finger, and the introduction of an aspirator needle will give exit to bursal fluid, possibly containing rice-like bodies. It is to be borne in mind that, in chronic affections of the shoulder joint, the articulation and bursa frequently communicate.

Sinuses.

147. *Sinuses*, left after the discharge of matter from the shoulder, closely resemble those leading to dead bone in the humerus; but if the joint is involved, any movement of it will give pain, and probably pressure of the head of the humerus against the glenoid cavity will give rise to grating indicative of *articular caries*.

Stiff shoulder.

148. *Limitation of the movements* of the shoulder following a bruise of the joint,

accompanied by pain when the limb is moved, and occurring in young or middle-aged persons, is due to adhesions which have formed about or in the joint. Forcible rupture of these adhesions by the manipulations of "bone-setters" will often restore complete freedom to the joint.

Rheumatic.

149. A painful condition of the shoulder with considerable loss of power, occurring in elderly people who complain of damp weather, is due to *rheumatic* affection of the ligaments. When enlargement of the head of the humerus occurs, with great limitation of movement and crackling or grating in the joint, the case may be considered one of *rheumatoid arthritis*.

Rheumatoid.

CHAPTER VIII.

THE UPPER ARM.

Fractured humerus.

150. Pain and loss of power in the upper arm, following an injury, may be caused by a *fracture* of the shaft of the humerus, with or without deformity due to displacement of the fragments. In very old or cancerous subjects, fracture of this bone from muscular action is not unknown. If the fragments are displaced, the fracture is obvious; but if not, the patient will probably be aware of grating on moving the limb, and the presence of *crepitus* may be easily detected, by grasping and slightly rotating the two ends of the bone. A compound fracture may be induced by one end of the bone perforating the skin, and the close proximity of the great vessels and their liability to injury are to be borne in mind.

Fracture low down.

151. A fracture of the humerus immediately above the condyles, may, if displaced, closely resemble a dislocation of the fore-arm back-

wards. However much swollen the parts may be, it will be possible to distinguish, with the finger, the prominent internal condyle, and to ascertain its relation to the ulna. With the fore-arm bent at a right angle to the humerus, the olecranon is in a straight line with the back of the condyle, and there is only room for the ulnar nerve between the two points of bone. In a dislocation of the ulna there will be a wide separation between the two bones, and if once reduced, they will maintain their proper relations ; whereas in the fracture, although the deformity can be relieved with ease, it is immediately reproduced by muscular action.

Diagnosis from dislocation.

Fracture into joint.

152. In a fracture of the humerus above the condyles, a *vertical split* often extends into the elbow-joint, giving rise to inflammation of the joint, and subsequent stiffness. This may be diagnosed by flexing and rotating the fore-arm, when the condyles may be found to move separately.

Separation of the lower epiphysis.

153. In young persons up to the age of sixteen, *separation of the lower epiphysis* of the humerus may occur, with symptoms closely resembling those of fracture above the condyles; but in these cases crepitus is less strongly marked, and may be absent altogether.

Acute periostitis.

154. A swollen and painful state of the shaft of the humerus, coming on a few hours after the receipt of a blow or exposure to wet and cold, or during an attack of scarlet or typhoid fever, is due to *acute periostitis.* In children especially, a brawny, œdematous condition of the soft parts is apt to supervene, with great heat of the part and rise in the temperature of the body; and in from twenty-four to forty-eight hours after the onset of the attack, an obscure sense of fluctuation may be detected. An early and deep incision, avoiding large vessels and nerves, will probably evacuate pus, and the edge of the knife will come into contact with bare bone, the case having developed into one of *acute necrosis.*

Sub-periosteal abscess.

Acute necrosis.

Abscesses in joint.

155. The foregoing condition, when overlooked or neglected in the early stage, is apt to lead to great destruction of bone, possibly of the entire shaft, with abscesses burrowing in various directions, and occasionally the formation of matter in the adjacent joints, although suppuration generally stops at the epiphysis. The occurrence of symptoms of *pyæmia* in the early, and of *hectic* in the later stages, must not be overlooked.

Pyæmia and hectic.

156. *Sinuses*, some of them possibly healed

Chronic sinuses.

and others discharging, in connection with considerable thickening of the humerus, point to necrosis which has undergone repair, the *sequestrum* being enclosed in a thick shell of new bone, through which *cloacæ* allow the discharge of pus. A probe introduced into one of the sinuses will probably touch bare bone, and the question of the propriety of its removal must be settled with reference to the date of the acute attack rather than the apparent mobility of the sequestrum, which is probably tightly locked in new bone. From six weeks to three months is the average time for a sequestrum to separate.

Sequestrum. Cloacæ.

Chronic periostitis and ostitis.

157. A chronic enlargement of the humerus, with constant gnawing pain, which becomes worse at night, is due either to *periostitis* or *ostitis*, and may be limited or general. Inquiry should be directed to the possible existence of constitutional syphilis, either acquired or hereditary.

Tumour of humerus.

158. A distinct swelling or outgrowth from the humerus, and particularly at its upper or lower ends, will be a *tumour*, the nature of which, though necessarily obscure, must be determined by reference to its rapidity of growth and consistence. Rapidity of growth, with great elasticity or softness, points to

malignancy; slowness of growth and hardness, to non-malignant or semi-malignant tumours. The extent to which the great vessels and nerves of the arm are involved should be carefully investigated, loss of pulsation indicating pressure on the artery; œdema pressure on the vein; and loss or impairment of function pressure on the nerves.

159. A dense, osseous *exostosis* may be met with attached to the shaft of the humerus, but a congenitally largely developed supra-condyloid spine bridging over the ulnar nerve, which is not rare, must not be confounded with disease. Exostosis.

160. Red lines running superficially up the arm, and particularly on its inner side, are *inflamed lymphatics*, and these will be traceable to some source of irritation in the hand or fore-arm. The patient will complain of a feeling of tightness, which prevents complete extension of the fore-arm, and the lymphatic glands above the inner condyle and in the axilla will be found tender and swollen. Angeioleucitis or lymphangitis.

161. A reddened œdematous condition of the skin of the pectoral region, with distension of the axilla, so that the arm cannot be brought to the side, is found in a later stage of lymphatitis, and is due to the presence of matter Axillary abscess.

in the axilla, or beneath the pectoralis major. In examining for fluctuation in such cases the rolling of the fibres of the pectoral must not be mistaken for fluid, and the examination should always be made along and not across the muscular fibres. In this stage the constitutional disturbance may be severe and the symptoms alarming, the pulse being rapid and feeble, the temperature very high, and the patient collapsed.

Axillary lymph-adenoma.

162. Chronic enlargement of the axillary glands may depend upon disease of the arm or breast, or originate from constitutional causes. The glands of the lymphatics from the arm lie along the axillary vessels, but those of the breast lie along the border of the pectoralis major, the lymphatics from them joining the deeper axillary glands. Hence, in recent glandular enlargement from breast disease, the lymphatic glands are readily felt and removed; but in long-standing disease deeper glands will be involved, in perilous proximity to the axillary vessels.

Phlebitis.

163. Dark red broad lines, with more or less hardness about them, traceable up the arm to the trunk, are *inflamed veins*, with clots or *thrombi* in them. These are generally found in combination with inflammation of a severe

type, such as erysipelas or sloughing phagedæna, with great constitutional disturbance.

Erysipelas.

164. A bright red blush, from which the colour disappears on pressure to return immediately it is removed, combined with very perceptible heat of skin, is *erythema* or more probably *erysipelas* in the early stage, spreading upwards from a wound. The upper margin is well defined, and may be noted to be rapidly extending up the arm; but the blush fades off at the sides of the limb. Vesicles will be found after twenty-four hours if the case is at all severe. In all probability there will have been a rigor and sudden rise of temperature of the body, and the discharge from the wound will have diminished.

Phlegmonous erysipelas.

165. The above conditions, combined with an œdematous condition of the skin, show erysipelas of a more severe character, accompanied by correspondingly severe constitutional symptoms; and if a "boggy" condition of the limb has come on, the case is one of *cellulitis*, combined with erysipelas.

Cellulitis.

Bursitis over the olecranon.

166. A circumscribed fluctuating swelling at the back of the elbow-joint is due to inflammation of the subcutaneous *bursa*. This may be chronic and due to constant pressure,

as in "miner's elbow," or more frequently acute and dependent upon some injury.

Diffused bursa.

167. An inflamed and œdematous condition of the skin and subcutaneous tissues about the elbow, and reaching for some distance above and below the joint, may be due to neglect of an inflamed and suppurating bursa, which has burst subcutaneously, and induced

Cellulitis.

cellulitis of an extensive character. A similar condition may be found in any part of the hand or arm, as the consequence of a poisoned wound.

Erythema nodosum.

168. A hot, mottled, pink condition of the skin over the subcutaneous surface of the ulna of both arms, presenting at intervals indurations or knots, which are very characteristic, constitutes *erythema nodosum*. It is found in weakly children and young adults, and is always more developed over the shins than on the arms.

Syphilitic nodes.

169. Circumscribed swellings of a chronic character in the same situation, but more deeply placed, are *periosteal nodes* due to syphilis.

Aneurismal varix.

170. A dilated condition of the veins of the bend of the elbow, in which a distinct pulsation and thrill can be detected with the finger, is an example of the now rare affection called *aneurisimal varix*, in which, owing to a punc-

ture of the brachial artery through the vein in the operation of venæsection, a communication between the two vessels exists. On applying a stethoscope a characteristic rasping *bruit* will be readily heard. If a distinct sac intervenes between the artery and vein, with all the above symptoms, it is an example of *varicose aneurism.*

Varicose aneurism.

171. A bent elbow may be due to cured disease leaving slight adhesions in or about the joint, which the patient is unwilling to overcome by use; or to permanent adhesions, fibrous or osseous, which render the joint useless. The mere carrying an arm in a sling for some weeks will lead to passive contraction of the biceps, or this may be due to irritation of some branch of the musculo-cutaneous nerve from a cicatrix or puncture in bleeding. The administration of chloroform will probably enable the diagnosis and the cure to be effected simultaneously.

Bent elbow.

172. A hot, swollen, red, and painful condition of the elbow-joint itself, is indicative of *acute synovitis*, and the effused fluid produces a characteristic swelling behind the joint, obliterating the depressions below the two condyles. The fore-arm is placed between pronation and supination (thumb upwards),

Acute synovitis.

and at nearly a right angle with the upper arm.

Chronic synovitis.

173. A chronic swelling of the elbow-joint, painless when at rest, in which the bony prominences are obliterated and the range of motion much impaired, is due to *chronic synovitis*, with thickening of the synovial membrane. Hence in advanced cases a soft cushion is formed between the humerus and ulna, allowing of a certain amount of feeling of elasticity when the olecranon is forcibly pressed upon.

Sinuses.

174. *Sinuses* may form on the inner and outer sides of the elbow-joint, as the result of suppuration in the cavity, and, if upon moving the elbow grating can be felt, it is clear that *articular caries* has occurred.

Articular caries.

Suppuration.

175. A greatly swollen elbow, in which all the bony prominences are masked, and in which fluctuation is readily perceived, may be due to *suppuration*, in which case the ordinary signs of inflammation will be present in great intensity. But when the part is cool, and the temperature and pulse of the patient normal, it is due to *chronic effusion* into the joint, which if long continued will lead to disorganisation of the joint by stretching the ligaments. It is well to note that this may be

Hydrarthrosis.

met with in patients suffering from *locomotor ataxy*, and depend upon the affection of the spinal cord.

176. A distorted condition of the elbow, the result of an injury, is apt to be masked, almost immediately after the accident, by the swelling which rapidly supervenes. When difficulty in forming a diagnosis arises from this cause, delay is advisable in commencing treatment. Effusion after injury.

177. The leading diagnostic features of some of the principal injuries about the elbow-joint are grouped together in the following table (page 86):—

Differential Diagnosis of Injuries about the Elbow.

Dislocation of both bones backwards. (Cause, a fall on the palm.)	*Fracture of lower end of humerus. (Cause, a fall on the elbow.)*	*Dislocation of radius forward. (Cause, a fall on the hand in supination.)*	*Fracture of olecranon (transverse). (Cause, a fall upon the elbow.)*
1. Olecranon projects behind, and is on a higher level than condyles.	1. Projection behind larger and containing condyles, higher up the arm.	1. Prominence of head of radius in front of external condyle, with hollow behind it.	1. A gap in the posterior sharp border of the ulna to be felt, or a wide separation if dislocation of ulna forwards also exists.
2. Prominence increased on attempting flexion, and diminished on extension.	2. Deformity easily reduced with crepitus by extension, but at once reproduced by muscles.	2. Ulna in relation with internal condyle. Flexion to a little more than right angle easy, and then abruptly checked. Hand with thumb upward.	2. Fore-arm semiflexed, and cannot be extended voluntarily.

3. Olecranon and head of radius retain their mutual relationship, but have lost relation to the condyles.	3. Olecranon and head of radius retain relations to condyles, and move with them.	3. Slight shortening of outer border of fore-arm.
4. Fore-arm shortened in front only, and more or less fixed at right angles with upper arm; thumb upwards, fingers slightly flexed.	4. Fore-arm of normal length, but humerus shortened. Abnormal lateral mobility on upper arm.	3. Fragment freely movable.
5. Tissues in front of joint tightly stretched over lower end of humerus, and coronoid process, if broken off, to be felt there.	5. Sharp edge of broken humerus (rounded in case of separation of epiphysis) to be felt beneath soft tissues in front.	
6. Pain and numbness of little and ring fingers from stretching of ulnar nerve.		

Painful subcutaneous tubercle.

178. An exquisitely tender spot about the elbow, upon which the slightest pressure produces an agony of pain, is a *painful subcutaneous tubercle* developed upon a branch of subcutaneous nerve, and must be excised.

Neuroma.

179. A firm tumour, painful on pressure, and producing numbness in one of the large nerves of the arm, is a *neuroma*. This may be multiple, in which case there is usually less pain than when a single tumour exists. A neuroma is likely to follow any injury in which a large nerve has been severely wounded or divided.

Gummata.

180. Indolent indurations of the skin, subcutaneous tissue or muscles of the arm, and particularly in the neighbourhood of the elbow, are probably *gummata* due to constitutional syphilis. These, if left untreated, slowly ulcerate, causing multiple irregular openings in the skin, from which a thin purulent discharge takes place with sloughs of cellular tissue.

CHAPTER IX.

THE FORE-ARM AND HAND.

Fractured radius and ulna.

181. A deformity of the fore-arm following immediately upon an injury, and accompanied by loss of power, so that the limb is supported by the opposite hand, is due to a *fracture* of one or both of the bones of the fore-arm. The surgeon will easily detect irregularity in the subcutaneous surface of the ulna, but less readily in the radius; and crepitus will be felt upon reducing the deformity by extension.

Bending and green-stick fracture.

182. In children, *bending* of the bones of the fore-arm with possibly a "green-stick fracture" of the radius may occur, but care should be taken to compare the two fore-arms, lest an old deformity due to rickets should be mistaken for a recent injury.

Sub-luxation of radius.

183. In young children who have been forcibly dragged or lifted by the hand, pain and inability to supinate the fore-arm often result, which are due apparently to a partial dislocation of the radius. Firm and steady

supination of the fore-arm by the surgeon will at once relieve the symptoms, and be accompanied by a light "click."

Colles' fracture.

184. A distortion of the wrist, following a fall on the hand, is in the great majority of cases due to a *Colles' fracture* of the lower end of the radius, with the following symptoms. The hand is abducted so that the lower end of the ulna is unnaturally prominent, and there is more or less projection on the dorsal aspect of the wrist, with a corresponding hollow beneath, but as a rule there is no crepitus, owing to the impaction of the fragments.

Separation of radial epiphysis.

185. In young persons, a separation of the *lower epiphysis* of the radius will produce a deformity closely resembling a dislocation of the carpus and hand, which is a very rare accident. If the styloid process of the radius is in proper relation with the hand, and moves with it, the case must be one of fracture or separation of the epiphysis; whereas in *dislocation* of the carpus, the styloid processes of both radius and ulna project prominently beneath the skin.

Dislocation of the wrist.

Deformity.

186. Deformity of the arm with shortening of the radial border is apt to follow separation of the lower epiphysis of the radius, from subsequent want of growth in the bone.

Rickets.

187. An enlargement of the lower end of the radius in both arms, coming on slowly in ill-nourished children, is due to *rickets*, and is generally combined with more or less bending of the shafts of the radius and ulna, and of the bones of the lower limbs, with enlargement or "beading," of the ends of the ribs.

Myeloid tumour.

188. An enlargement of the lower end of the radius in the young adult is probably *myeloid*, and may grow to large size, pushing before it the articular cartilage, without involving the wrist joint.

Teno-synovitis.

189. A slightly swollen condition of the back of the wrist, with pain upon any movement of the hand or fingers, following some prolonged and unwonted exertion, is due to effusion into the sheaths of the extensor tendons beneath the annular ligament. On applying the hand to the part while movement is made, a crepitation will be felt, which might be confounded with the crepitus of fracture.

Ganglion.

190. A circumscribed elastic tumour at the back of the wrist, giving little or no pain, but sometimes connected with a feeling of weakness in the part, is a *simple ganglion* or cyst containing jelly-like fluid.

Compound ganglion.

191. An elastic swelling of the palm of the hand, projecting above and below the anterior

annular ligament is a *compound ganglion.* This often contains rice-like or melon-seed bodies, which can be squeezed from one part to the other of the cyst, giving a peculiar grating sensation. The disease may extend along the synovial sheaths of the thumb and fingers, causing great deformity.

Synovitis of wrist.

192. A swollen condition of the wrist, resembling a bracelet, with puffing of the synovial membrane between the tendons, is due to *synovitis of the wrist joint*, which will be acute if there be great heat and tenderness with general rise of temperature, but is more frequently chronic. The whole hand is then puffed, especially about the dorsum, and sinuses are apt to form leading down to caries of the carpal bones, which may be felt to grate together.

THE HAND.

193. A hot, scarlet, and swollen condition of the skin of a finger, spreading with smarting pain from a puncture, is an example of *erythema* depending upon an animal poison, and is therefore frequently met with in cooks and poulterers, and occasionally as the result of a post-mortem examination. Red lines spreading up the arm from such a wound are inflamed lymphatics, and the gland above the inner condyle, or those in the axilla, will probably be swollen and tender.

Poisoned wound.

Lymphatitis.

194. A swollen and extremely painful condition of the last phalanx of a finger, following a trifling injury, is probably the commencement of a superficial *whitlow;* and at a later stage, the matter may be found beneath the skin at the top of the finger, or around the nail, which will be loosened. Whitlow superficial.

A more serious condition is when the tissues over the last phalanx are acutely inflamed without any evidence of superficial abscess, giving rise to deep-seated throbbing pain, which entirely deprives the patient of rest. Here the inflammation involves the periosteum of the phalanx, and a free incision will be necessary for its relief, or necrosis of the phalanx will probably ensue. Whitlow deep.

A swollen and inflamed condition of the tissues of any part of the finger will come under the term whitlow, but these are seldom examples of the true thecal abscess, which is a rare affection.

195. A swollen, œdematous condition of the hand affecting both palmar and dorsal surfaces, but more distinct on the dorsum because of the thin skin, is usually due to deep-seated inflammation, with formation of matter beneath the palmar fascia. A very similar condition of the back of the hand alone may be due to cellulitis, Palmar abscess. Cellulitis.

consequent upon a poisoned wound or the bite of an insect in an unhealthy subject.

Foreign bodies.

196. The possible presence of a foreign body is not to be forgotten in examining all cases of inflammation about the hand, though the search for portions of a needle, which are exciting no irritation, is to be deprecated.

Necrosis of phalanx.

197. A finger, swollen and deformed, and presenting several sinuses through which pus exudes, is an example of neglected whitlow, with more or less disorganisation of the part. If the mischief is confined to the terminal phalanx, a probe will detect a bare and necrosed bone, which may be easily removed; but if grating is felt between the several phalanges as well as dead bone at various parts, it is obvious that the finger cannot be saved.

Onychia.

198. A chronic enlargement of the end of the finger, in a strumous or syphilitic child, with unhealthy ulceration and offensive discharge around the abnormally wide nail, is an example of *onychia maligna* so called, though the affection is perfectly amenable to treatment. Unhealthy granulations by the side of the nail are due to in-growing of the nail, the matrix of which has probably received some injury.

In-growing nail.

199. An intractable sore with red, elevated,

unhealthy surface, in the neighbourhood of the nail, occurring on the hand of a surgeon or any one liable to be brought in contact with syphilis, may be regarded as a *chancre* although no induration of its base is present, if the lymphatic gland above the inner condyle is enlarged, and the sore improves under local mercurial treatment. Chancre.

200. The nails of adults may be brittle and irregularly cracked so as to come away in scales, and this is generally due to syphilitic poison, the diagnosis being confirmed by the existence of *psoriasis palmaris*. In children the same thing may occur as the consequence of congenital syphilis. Diseased nails.

201. A swollen, indurated, but painless condition of the first phalanx of the finger, coming on slowly and showing no tendency to suppurate, is a localised periostitis or *gumma*, the result of constitutional syphilis, and is apt to end in atrophy of the phalanx and consequent shortening and deformity of the finger. Dactylitis syphilitica.

202. Dense, nodulated *tumours*, growing slowly to such a size as to lead to great deformity of the fingers from which they spring, are cartilaginous, but if more rapid in growth and softer are probably myeloid. Enchondroma.

Gout.

203. A swollen condition of the articulations of the fingers may be due to *gout*, which, in the acute stage, will lead to great pain and redness in the joints affected, and in the chronic form will give rise to great deformity, owing to the deposit of urate of soda in the form of "chalk-stones" or *tophi*, within or in close connection with the articulations. Occasionally, in very severe cases, ulceration of the skin takes place, with discharge of a white creamy fluid. Confirmatory evidence of gouty diathesis is to be sought in chalk-stones in the great toe and pinna.

Rheumatic gout.

204. A deformity of the fingers, consisting in chronic enlargement of the joints, at first from effusion in, and afterwards from nodular deposits near, the articulations, is due to *rheumatoid arthritis*. In the later stages more or less ankylosis of the joints occurs, with contraction of the fingers, so as to give a claw-like appearance to the hand.

Finger flexed.

205. A *flexed finger* may result from division or rupture of the corresponding extensor tendon; but if all the fingers are affected, together with the wrist, there is probably paralysis and wasting of the extensor muscles from lead-poisoning, or from some injury to or pressure upon the musculo-spiral nerve

Wrist-drop.

(e.g. by a crutch). Confirmatory evidence of lead-poisoning (plumbism) will be found in a blue line upon the gums.

Injury of nerves.

206. *Over-extended fingers*, the skin of which is glistening and absolutely devoid of hair, are due to injury of one of the main nerves of the arm supplying the flexors and skin. The temperature of the part is below the normal standard, and sensation is either much diminished or altered. The nails are usually much incurved.

Contracted finger.

207. A finger may be drawn down by the contraction of a cicatrix, as in whitlow, but more frequently by a contraction of the *palmar fascia*, which gives rise to a dense ridge, running up the palm to the finger.

Fractured metacarpus.

208. A painful and swollen condition of the metacarpus, following a blow, is probably due to *fracture* of one or more metacarpal bones. There may be no displacement or consequent deformity; but crepitus can usually be obtained by pulling upon the corresponding finger.

Fractured phalanx.

209. A deformity of a finger resulting from an injury will be due either to a fracture or dislocation. A fracture of a phalanx is obvious, but a dislocation may be overlooked unless care

is taken to compare the two hands, and to note any limitation of movement.

Ruptured ligament.

210. A sinking in of the head of one of the metacarpal bones may be due to rupture of the transverse ligament of the metacarpus.

CHAPTER X.

THE BREAST.

The virgin breast.

211. The healthy breast varies in size in different individuals, and in the same woman at different times. At puberty the breast becomes more prominent than in childhood, and not unfrequently is somewhat "lumpy" until menstruation is thoroughly established. At each menstrual period the breast is apt to be tender, and slightly swollen from sympathy with the ovaries.

Complexion.

The development of the nipple, and the colour of the areola around it, vary considerably with the complexion of the woman. A blonde virgin has generally a small and slightly prominent nipple with a pink areola, while a brunette will have a large nipple and a well-marked and even dark areola, with black hairs and sebaceous follicles well developed.

Pregnancy.

Enlargement of both breasts, with pigmentation of the areolæ and development of the seba-

ceous follicles, is one evidence of pregnancy, but cannot be depended on alone. Moisture of the nipples is a more reliable sign, and the presence of milky fluid almost conclusive. (See Abdominal Tumours.)

Prominent from spinal curve.

212. A healthy breast noticed to be more prominent than on the opposite side, in a girl about puberty, may be one of the earliest symptoms of lateral curvature of the spine. This is due to the rotation of the affected vertebræ, and hence the prominence of the breast is more common on the left side, the right shoulder "growing out."

Abscess beneath breast.

213. A healthy breast unduly prominent, in an adult, is probably due to the formation of an abscess beneath it. Fluctuation may be detected behind the breast, and particularly near the axilla, which is the best position for an opening. The occasional occurrence of cancerous tumours on the pectoral surface of the breast, so that the breast is rendered prominent, is not to be overlooked.

Inflamed breast.

214. A breast, swollen and tense, with large veins on its surface and unusually prominent, is probably over-distended with milk, and on examination it will be found to be affected with a chapped nipple, which prevents the suckling of the child. If in addition the skin

over the breast is red and hot, and œdematous in the dependent parts, an *abscess* has probably already formed, and should be evacuated by a prompt incision, although no fluctuating swelling can be detected. Mammary abscess.

215. A small nodule in the breast may be a chronic mammary tumour (adenoma), or the commencement of sarcoma or scirrhus, and the diagnosis is often difficult. Adenoma, sarcoma, and scirrhus.

Adenoma.	*Sarcoma.*	*Scirrhus.*
Patient under thirty, and single.	Patient any age.	Patient above thirty.
Tumour dense, but elastic and movable beneath skin and on deeper part of breast.	Tumour elastic and movable, but rapidly involving surrounding tissue.	Tumour hard and attached to deeper part of breast, though movable beneath skin at first.
Pain, if present, of a neuralgic character, and worse at menstrual period.	Pain not severe as a rule.	Pain severe and of a sharp lancinating character, and shooting down the arm.
Skin and lymphatics never involved.	Skin eventually involved, but no lymphatic enlargement.	Skin and lymphatics early involved.
Grows very slowly and varies in size.	Grows very rapidly, and apt to recur locally.	Grows rapidly, except in old people.
Nipple not retracted.	Nipple often exudes fluid.	Nipple often retracted.
No family history.	No family history.	Often hereditary.

216. An unmarried woman under thirty hardly ever has scirrhus, but over forty is

Scirrhus. probably more liable to it than a mother. The tumour may have grown to some size before attention is called to it by pain, and if near the surface will dimple the skin over it or retract the nipple, but if more deeply placed may attach the breast to the pectoral muscle. The enlargement of the lymphatic glands of the axilla or neck is the most important point in the diagnosis and prognosis of a case of scirrhus.

Cysts. 217. An elastic tumour of the breast may be a cyst, abscess, or tumour. Careful palpation will, in many cases, determine whether fluid is present or not, and occasionally fluid may be squeezed out of the nipple, but in doubtful cases a puncture alone will decide the question. If the fluid proves to be—

(1) pus, the case is one of abscess;

(2) milky fluid, the case is one of galactocele;

(3) clear fluid, the case is one of simple cyst;

(4) dark fluid, the case is one of compound cyst or cyst with sarcoma;

(5) watery fluid containing microscopic "hooklets," the case is one of hydatid.

The most elastic tumour is the sarcoma or the medullary cancer.

Large tumour of rapid growth.

218. A large rapidly growing tumour of the breast may be encephaloid cancer or sarcoma, or some benign growth probably combined with cysts. The presence of cysts negatives the idea of encephaloid cancer, and these should therefore first be looked for. Next comes the question of lymphatic enlargement, since cancer alone infiltrates the glands. Lastly, the condition of the skin, which in simple growths is merely stretched and thinned so as eventually to give way; while in medullary cancer it is infiltrated and thickened, and probably presents small flattened nodules at various points and is traversed by large veins.

Fungating tumour.

219. A fungating tumour of the breast may be encephaloid cancer or a sarcomatous growth with cysts. In the latter case the disease will be of long standing, and the skin having become thinned one of the cysts will have burst, and a growth taken place from its wall. This growth consists of granulation, and the parts around are healthy, there being no lymphatic enlargement. In medullary disease the growth is extremely rapid, the fungus bleeds readily, and the skin and lymphatics are extensively infiltrated.

220. The *skin of the breast* may be rendered hard and dense by deposit of scirrhus in and

Skin of breast.

beneath it, so as to produce a species of cuirass; or, more commonly, may be retracted and ulcerated, the ulcer being irregular, with sharp-cut edges and hard base. It may be thinned by cysts so as to appear blue, or may be infiltrated by medullary cancer so as to be thick and nodulated. It may be hot and reddened in inflammation of the breast, or red and œdematous when an abscess is pointing beneath. Occasionally, in a nursing mother it presents one or more little sebaceous tumours, constituting *molluscum contagiosum*, and derived from the child.

Nipple.

221. The *nipple* may be retracted congenitally, or from the growth of a scirrhous tumour beneath. It may be sessile congenitally, or become so by infiltration of the skin from encephaloid cancer. It may be cracked and fissured from irritation of the child's mouth, or may have mucous tubercles developed around it from contact with a syphilitic child. It may have an abscess developed in or around it, from blocking of one of the lactopherous ducts. The nipple and the skin around it may be the seat of chronic eczema, which may prove the precursor of cancer (Paget).

222. A *discharge* from the nipple is common in newly-born children of both sexes, and is

unimportant. In the adult a discharge of milky fluid implies, as a rule, pregnancy, but must not be relied on solely for a diagnosis. A discharge of serous or glairy fluid in the presence of a tumour denotes some cystic formation. A discharge of bloody fluid denotes some growth in connection with a cyst, or great vascularity of the cyst wall. A very scanty discharge of clear fluid is occasionally found in cases of scirrhus.

Discharges from nipple.

CHAPTER XI.

THE THORAX.

Congenital fissure.

223. Deformity of the chest wall may be congenital or acquired. A depression in the middle line of the sternum is a common congenital affection, and may extend to actual division or aperture. A prominent sternum with depression of the ribs on each side, constituting "pigeon-breast," is common in rickety children, whose weak ribs yield to the pressure of the atmosphere. It may be induced also by imperfect filling of the chest, consequent upon enlarged tonsils in children, who habitually snore and breathe with the mouth open. An unduly prominent sternum, with a more or less "barrel-shaped" chest, is commonly found in cases of angular curvature of the dorsal spine, and in these a tight string appears to be tied round the body in the position of the diaphragm, by which the abdominal wall is drawn in.

Pigeon-breast.

Gibbous chest.

Flattening of the chest wall at any part may be due to the absorption of fluid effused into the pleura, and in the upper part of the chest to the contraction of a vomica or phthisical cavity. Flattening.

224. A severe crush of the thorax may kill the patient outright, by rupturing the heart or great vessels; and when less severe, may render the patient insensible for some time from shock. INJURY TO CHEST.

225. Pain and difficulty in drawing breath are common symptoms of injury to the chest. A sharp, cutting pain, occurring at the same spot on each inspiration, so that the lungs cannot be properly filled, is probably due to a broken rib or ribs. In a thin subject, crepitus may be felt with the hand, or heard with the stethoscope, though not commonly; but great relief will be afforded by the support of the hand to the chest wall, until a bandage or plaster is applied. Dyspnœa. Cutting pain. Relieved by pressure.

226. A distinct depression in the chest wall may be due to the fracture of several ribs, or in children, to bending of the bones; but must not be confounded with the falling in of the ribs due to old pleurisy, or the contraction of a phthisical cavity. Depression of wall.

227. A crackling of the subcutaneous cellular

Emphysema.

tissue over the seat of a broken rib is due to *emphysema*, and is a proof that the lung has been injured. If unchecked, the emphysema may become very extensive. Subcutaneous emphysema may or may not be accompanied by a tympanitic condition of the corresponding side of the chest, due to distension of the pleural cavity with air, and constituting *pneumothorax*.

Pneumothorax.

Pleurisy.

228. A stitch in the side at each inspiration (which is shallow and catching), coming on a few hours after an injury to the chest, and accompanied by rise of temperature and pulse, and inability to lie down, is due to pleurisy; the characteristic rub of which may be heard with a stethoscope during the first few hours.

Dyspnœa.

229. Dyspnœa, with dulness on percussion and absence of breath-sounds over one side of the chest, following an injury, is due to the presence of fluid in the pleura, which may be blood, serum, or pus. If the pleura is much distended, the heart will be displaced towards the opposite side, and the apex will be found beating in an abnormal position. The nature of the fluid may be diagnosed by the time which has elapsed since the accident; thus blood is effused immediately, serum is the

Fluid in pleura.

Hæmothorax.

result of pleurisy a few hours later, and pus may occur in the later stages of pleurisy, or from decomposition of blood. The introduction of an aspirator needle is often the only method of determining the question as to the nature of the fluid present. Hydrothorax Empyema.

CHAPTER XII.

THE ABDOMEN.

Vascular navel.

230. A small red tumour found in the navel of young infants, is a vascular growth connected with the stump of the umbilical cord, and is unimportant unless it should be accompanied by the discharge of urine from a pervious urachus, or of fæces from an unobliterated omphalo-mesenteric duct.

Ectopia vesicæ.

231. A red, vascular protrusion in the middle line of the abdominal wall below the umbilicus, from which urine is constantly pouring, and around which the skin is cicatrised, is an example of *extroversion of the bladder*, which is usually associated with epispadias.

Exomphalos.

232. A protrusion of the navel or *exomphalos* is common in all cases of distended abdomen, and is important only when it contains intestine. The tumour may be of any size up to that of a child's head, and is usually tense and tympanitic, with distinct gurgling as the

intestine is returned into the abdomen. If vomiting is present with a large exomphalos, strangulation of the bowel should always be suspected.

233. White scars in the skin of the abdomen, scattered irregularly over the whole surface, are due to over distension of the abdominal wall at some period, and in the female are pretty conclusive evidence of a previous pregnancy. More circular scars grouped together may be due to the use of croton-oil or tartar-emetic ointment; and small triangular cicatrices, to leech bites; or groups of parallel linear cicatrices, to cupping. Scarring.

234. Dilatation and tortuosity of the superficial veins of the abdomen is a symptom of obstruction to the return of blood through the deeper veins from any tumour, and especially from cirrhosis of the liver compressing the vena cava. The rarer dilatation of the epigastric arteries occurs in obstruction of the aorta or iliacs. Dilated veins. Dilated arteries.

235. A relaxed condition of the abdominal muscles, so that they flap up and down with the ascent and descent of the diaphragm, is an evidence of paralysis depending upon some lesion of the spinal cord, in the upper dorsal or cervical regions. Paralysis.

Syphilitic eruption.

236. Copper-coloured, more or less circular spots with a scale upon them, are commonly scattered over the abdomen in secondary syphilis. These must not be confounded with the brown patches without scale found in *chloasma* depending upon a vegetable growth, which can be washed off with a solution of the hypo-sulphite of soda.

237. *Diagnosis of Abdominal Tumours.*

The following tumours are common to both sexes.

Ascites.

238. *Ascites*, or dropsy of the peritoneum, gives a uniform roundness to the lower part of the belly, when the fluid is small in quantity; or a general distension of the abdominal walls, if much fluid is present. The skin is tense and shining, and the umbilicus flat or protruding, the superficial veins being enlarged.

Fluid wave.

On palpation a distinct wave of fluid can be felt from one side to the other; and when the patient is recumbent the intestines float forward, giving a clearer note on percussion in front than in the loins, where the fluid collects.

Gravitation.

On turning the patient on his side the fluid gravitates to the lower part, and a clear percussion-note may be obtained on the higher side, provided the abdomen is not very tense.

In a case of moderate ascites it will be possible to map out the liver, stomach, and spleen by careful palpation and percussion; but if a large quantity of fluid is present, this will be impossible until paracentesis has been performed.

239. *A distended bladder* is in the median line, and bulges out the central portion of the abdominal wall. Percussion over it is dull, unless some coils of small intestine should happen to cover it, as not unfrequently happens, and is clear in both flanks when the patient is recumbent. Pressure over the tumour causes pain and a desire to micturate, and the use of a catheter results in its gradual disappearance. Distended bladder.

240. *Tympanites*, or general distension of the intestines, is not unfrequent in hysterical women, in whom *borborygmi*, or gurglings, are commonly heard. Extreme tympanites may occur in either sex as the result of intestinal obstruction, in which case the distended coils of small intestine may be felt and seen rolling about beneath the tense abdominal wall. Or it may occur as the result of peritonitis, in which case the intestines are usually fixed. The percussion-note in all cases is tympanitic. Tympanites.

241. *Solid tumours*, dull upon percussion,

Solid tumours.

and to be readily mapped out provided there is no ascites, may be connected with the liver, spleen, intestines, or kidney. A tumour occupying the right hypochondrium, and extending forwards to the middle line or beyond it, and downwards to the pelvis, dull on percussion and solid to the touch, or possibly

Liver.

with one fluctuating spot, will be the *liver*. The diagnosis will be rendered certain if the edge of the liver, with the notch in it, can be felt.

Spleen.

242. A tumour occupying the left hypochondrium, and extending forwards and downwards, dull on percussion and with a notch in its border, must be the *spleen*.

Fæces.

243. A small hard mass, slightly changing its position from time to time, will be either a mass of *fæces* impacted in the intestine, or a mass of cancer attached to its wall. Impacted fæces are most common in the large intestine, and give a somewhat doughy sensation to the fingers when steadily pressed against the mass.

Scirrhus.

Hard *cancer* is most frequent at the pylorus and at the lower end of the small intestine close to the cœcum, or in the sigmoid colon, and is perfectly unyielding.

Aneurism.

244. A *pulsating* swelling with a distinct heave and *bruit*, a little to the left of the

median line of the abdomen and above the level of the umbilicus, is presumably an *aneurism* of the abdominal aorta, or of one of its branches close to the main vessel. In thin persons the pulsation of the healthy aorta is easily to be felt, but there is no tumour nor any secondary effects of pressure.

Tumour in loin.

245. An obscure tumour in the loin can be best examined when the patient is recumbent, one hand being placed beneath the loin, and the other immediately below the false ribs, the abdominal muscles of the patient being relaxed as far as possible by flexing the thighs, and supporting the head and shoulders with pillows so as to flex the trunk. If it is a mass of fæces in the ascending or descending colon, it will be readily felt; but if an enlargement of the *kidney*, it will be more deeply placed, and the resonant colon will be found in front of it. The possible existence of a movable kidney must be borne in mind.

Kidney.

Cystic kidney.

246. A *fluid tumour* in the loin must be due, either to cystic degeneration of the kidney or to psoas abscess. The kidney may, owing to obstruction of the ureter, become enormously distended with fluid, so as to form a distinctly fluctuating tumour in the loin, which never finds its way into the groin.

The introduction of an aspirator needle from behind will determine the character of the fluid, and its point may impinge upon a calculus if cautiously manipulated. A psoas abscess, on the other hand, tends to pass into the groin, and fluctuation may usually be traced beneath Poupart's ligament into Scarpa's triangle, where an impulse will be felt on the patient coughing. Symptoms of caries of the spine, with, probably, irregularity of the spinous processes, will be found, if carefully looked for.

Psoas abscess.

247. An obscurely fluctuating swelling in the *iliac region*, will probably be an iliac abscess due to disease of the pelvis or lumbar vertebræ, or of the sacro-iliac joint. The condition of this joint is best tested by forcibly squeezing the innominate bones together with pressure on the iliac crests, and then by attempting to draw them asunder.

Iliac abscess.

248. A *pulsating* tumour in the iliac region may be an *aneurism* of one of the iliac arteries, in which case there will be a well-marked expansile impulse and thrill, with a loud *bruit;* and if the common or internal iliac artery is involved, the femoral pulse on the corresponding side should be diminished. A pulsating tumour having many of the symp-

Iliac aneurism.

toms of aneurism may be due to malignant disease of the innominate bone, and the greatest difficulty be met with in the diagnosis.

Perityphlitic abscess.

249. On the right side, a fluctuating swelling in the iliac region may be due to a perityphlitic abscess, or abscess caused by inflammation of the cellular tissue around the cœcum, the acute symptoms of which will be present; and if perforation of the cœcum has occurred, there will be crepitation of the cellular tissue from the escape of intestinal gas.

Retained testis.

250. In the *male*, a solid tumour in the iliac region may be due to a retained testicle taking on inflammatory swelling (in which case acute symptoms of inflammation will be present), or developing medullary cancer with considerable rapidity. The absence of the testicle from the scrotum, which should always be investigated, will give the clue to the case.

Phantom tumour.

251. In the *female*, the possible existence of a "phantom tumour" must not be ignored, for occasionally the irregular contraction of the abdominal muscles gives rise to a tumour of such solidity as to deceive the most experienced surgeon, but disappears absolutely under the influence of chloroform. No doubt, some of these phantoms have been examples of loose

Movable kidney.

kidney, a condition in which the organ may be readily displaced, or of ovarian tumour.

Uterine tumour.

252. A tumour in the median line, rising out of the pelvis, is probably *uterine*, if it is not the distended bladder. Pregnancy is first to be eliminated by inquiry as to menstruation, by examination of the breasts, and by listening for the fœtal heart, which, after the fourth month, ought to be recognisable. Lastly, a vaginal examination will determine whether the *os uteri* is soft and velvety, as is the case in pregnancy, or admits of *ballottement*. All suspicion of pregnancy being removed, the introduction of the uterine sound will determine whether the long diameter of the uterus is greater than the average two inches and a half. Supposing the uterine sound to pass four or five inches readily, and to move with the tumour when pressed from side to side, it is obvious that the tumour is uterine, and probably a fibroid.

Ovarian tumour.

253. A tumour occupying one side of the abdomen, having grown up from the pelvis, is probably *ovarian*. It is dull on percussion and elastic to the touch, or, if of large size, may fluctuate distinctly. If no ascites is present, both flanks will be resonant in whatever position the patient is placed, but if there is fluid in

the peritoneum, the most dependent part will be dull, though the dulness over the tumour will not vary.

When fluctuation is present, but it is doubtful whether it is ascitic or ovarian, an assistant's hand pressed edgeways into the median line over the tumour will serve to break the wave of ascites, and thus clear up the doubt. Ascitic wave.

254. A cyst with such thin walls that the fluctuation closely resembles that of ascites is probably a cyst of the broad ligament (parovarium), and tapping will make its nature evident at once, the fluid being perfectly limpid, whilst that of ascites is yellow serum, and that of an ovarian cyst darker, and as a rule more viscid. Parovarian cyst.

CHAPTER XIII.

INJURY TO ABDOMEN.

Collapse.

255. A patient, after the receipt of some injury to the abdomen, is more or less collapsed. He is faint and pallid, and lies with the knees drawn up, and on regaining consciousness complains of pain at the seat of injury.

Vomiting.

256. Vomiting, if occurring immediately after the accident, or during reaction from the shock, is not of importance, provided no blood is ejected. If blood is mixed with the vomit, giving the appearance of "coffee-grounds," and intense pain complained of over the stomach, with rapid distension of the peritoneum and great thirst, the case is probably one of rupture of the stomach.

Ruptured intestine.

257. Pain in the belly, following an injury, may be due to bruise or rupture of the intestine, and is accompanied by vomiting of bile, and by constipation and distension of the intestines with gas, from paralysis of the muscular coat.

Internal hæmorrhage.

258. Great pallor and faintness, following an injury, are symptomatic of internal hæmorrhage, which may come from the liver or the spleen, or from one of the large vessels. Dulness of the most dependent parts of the peritoneal cavity will be found upon percussion, and the level of dulness will gradually rise as the blood collects.

Hæmaturia.

259. *Bloody urine* is a common result of an abdominal injury, but may also arise from disease. The voluntary evacuation of bloody urine is a nearly positive evidence that the bladder is not ruptured, and if the hæmorrhage is free, the bladder soon becomes distended again.

Renal.

When the blood is thoroughly mixed with the urine, rendering it smoky if in minute quantity; dark red if in larger quantity; or scarlet, with rapid spontaneous coagulation when passed or drawn off, the injury is in the *kidneys.*

Vesical and prostatic.

When the urine first passed or drawn off is lighter than the latter portion, which also contains dark clots, the seat of hæmorrhage is the *bladder* or *prostate.* The former probably in young and middle-aged patients, the latter in elderly men.

When the urine flows from the meatus

Urethral. without effort, or when, during micturition, the first portion of the urine is bloody, the bulk of it clear, and the last ejected portions bloody, the seat of hæmorrhage is the *urethra.*

Ruptured bladder. 260. A patient who has received a blow in the region of the bladder, followed by collapse, inability to make water, and burning pains in the groins, may be presumed to have his bladder ruptured. The diagnosis will be confirmed if on passing a catheter bloody urine and clots are evacuated, and particularly if, on the injection of warm water, it is found impossible to distend the bladder, and the patient is conscious of warm fluid in his groins. Should some hours have elapsed since the accident, the abdomen will be distended, and the catheter may, when passed into the bladder, find its way through the rent into the peritoneal cavity, and evacuate a large quantity of fluid, which will ebb and flow with the rise and fall of the diaphragm during respiration.

Ruptured urethra. 261. Hæmorrhage from the urethra is an evidence of injury of the canal from within by instruments, or from without by a kick, or blow from falling astride some hard body.

Intestinal Obstruction.

262. In all cases of acute intestinal obstruction, careful search should be made in all the ordinary and extraordinary situations of a hernia, so that strangulation may not be overlooked. Failing to find a hernia, the surgeon should make a careful examination of the abdomen by palpation and percussion, in order, if possible, to discover the position of the obstruction before tympanites comes on. Palpation and percussion.

263. *In the child*, careful examination may detect a sausage-shaped mass, dull on percussion, with a history of diarrhœa or violent straining, followed by the discharge of bloody mucus from the bowel. The case is then one of *intussusception*. Intussusception.

The finger introduced into the rectum may detect an intussusception of the large intestine when low down.

264. *In the adult* careful palpation and percussion may detect the elongated tumour of an intussusception, but more commonly simply a mass dull upon percussion. If this is yielding and doughy, it is probably a (1) fæcal accumulation; if quite hard, it may be a large (2) gall-stone, or a mass of (3) scirrhus. The history will show whether Fæces. Gall-stone. Scirrhus.

there has been (1) habitual constipation, or (2) jaundice, with pain about the liver, or (3) chronic difficulty in relieving the bowels, with pain and possibly bloody discharge.

265. More frequently nothing can be detected, or at most a little increase of dulness on percussion at one point, with no definite tumour. The case is then probably one of internal strangulation, from a twist of the bowel or some constricting band. If the obstruction is of some duration, the intestines will be fully distended with gas, and will be felt, or in a thin subject seen, moving under the abdominal walls, unless peritonitis should be present, or the patient have been brought under the influence of opium.

Twist.

Band.

Tympanites.

266. Persistent vomiting is almost conclusive evidence that the obstruction is in the small intestine. If occurring early, it is evidence of tight strangulation high up; but if stercoraceous, the obstruction must be at some distance down the bowel.

Vomiting.

267. In cases with a history of chronic and increasing difficulty in evacuating the bowel, ending in complete obstruction, the disease is almost certainly in the large intestine, and probably in the sigmoid flexure. An examination *per rectum* may detect cancerous deposit,

Chronic obstruction.

though it is frequently out of reach, when it may be detected through the abdominal wall if there is not much distension. In long continued chronic obstruction the peritoneum may become distended with gas, so as to render the abdomen extremely tympanitic, although the distended coils of intestine may not be perceptible through the thinned abdominal walls.

CHAPTER XIV.

TUMOURS OF THE GROIN.

Inguinal or femoral.

268. The diagnosis of a tumour of the groin will depend mainly upon whether it is inguinal or femoral—whether it is above or below Poupart's ligament, which is sometimes obscured by the overlapping of the tumour. This is particularly the case in a large femoral hernia, where the tumour turns up over Poupart's ligament, and closely resembles an inguinal hernia. The diagnosis is best made by carefully examining the ligament itself, which can usually be made out with ease; or by putting the finger upon or into the external abdominal ring, which, even in the female, can be readily made out. In health, nothing should be in the inguinal canal but the spermatic cord in the male, or the round ligament in the female, which latter is seldom to be defined.

In all cases of inguinal tumour in the male

the presence of the testicle of the corresponding side in the scrotum should be at once ascertained.

Inguinal Tumours.

269. A protrusion, noticed on coughing, at the internal abdominal ring or in the inguinal canal, is probably a *hernia*, if the testicle is in the scrotum. If large enough to lodge in the inguinal canal and form an elongated tumour, the protrusion is a *bubonocele*, and will be readily returned with a gurgle when the patient lies down, if it is intestine; or if omentum, will give the characteristic knotty feeling. Hernia. Bubonocele.

270. An elongated elastic tumour, lodged in the inguinal canal, which has an impulse on the patient coughing, and may be pushed up without being thoroughly reduced, is probably a *hydrocele of the cord.* If large enough to protrude out of the ring, it will be found closely connected with the spermatic cord, and will give a dull note on percussion. With care it may be demonstrated to be translucent. Hydrocele of cord.

271. An elastic swelling immediately above the outer part of Poupart's ligament, having an impulse on coughing, but dull on percussion and irreducible, is probably an *iliac abscess*, Iliac abscess.

which has not descended into the thigh. The diagnosis will be rendered easy if the swelling is large enough to fluctuate.

Lymph-adenoma.

272. *Enlargement of the lymphatic glands* which lie above or upon Poupart's ligament, is a common result of a sore on the penis or scrotum, but may arise from constitutional causes, in which case the glands are more apt to form one large mass. Glandular induration connected with a venereal sore is an evidence of its infecting character; but inflammation and suppuration, resulting in the formation of a *bubo*, show the local character of the sore, or may depend upon urethral irritation only.

Bubo.

273. A small elastic tumour, tender on pressure and producing a characteristic feeling of nausea when handled, is a *retained testicle*, and that organ will be absent from the scrotum. As a rule the testicle is not affected by coughing, but it may slip in and out of either abdominal ring, thus closely resembling hernia. A retained testicle may be accompanied by hernia, and has, rarely, been affected by hydrocele.

274. *Diagnosis of Inguinal Tumours.*

Hernia.	Hydrocele of Cord.	Iliac Abscess.	Lymphadenoma.	Testis.
Impulse on coughing.	Impulse on coughing (slight).	Impulse on coughing.	No impulse on coughing.	No impulse on coughing.
Reducible with gurgle.	Apparently reducible.	Non-reducible.	Non-reducible.	Non-reducible.
Clear on percussion if intestine.	Dull on percussion.	Dull on percussion.	Dull on percussion.	Dull on percussion.
Feels like intestine, or knotty if omentum.	Elastic feel, like small elongated bag of fluid.	Elastic, and possibly deep fluctuation.	Hard, well defined. Not tender unless inflamed.	Obscurely elastic and characteristically painful.

Femoral Tumours.

275. A large femoral tumour is either a hernia, a psoas abscess, or a fatty tumour; a small tumour may, in addition, be a gland or a femoral cyst.

Hernia.

276. A tumour with a distinct impulse on coughing, appearing below the inner end of Poupart's ligament, and reducible with or without a gurgle, is presumably a *hernia*. A larger tumour turning up over Poupart's ligament, clear on percussion and giving the feel of intestines, which when drawn down can be reduced beneath Poupart's ligament, is also a femoral hernia.

Psoas abscess.

277. A tumour with a distinct impulse on coughing, appearing beneath the outer part of Poupart's ligament, dull on percussion, elastic, and possibly fluctuating, is a *psoas abscess*. This tumour may, if large enough, be prolonged beneath the femoral vessels and form a large fluctuating tumour on the inner side of the thigh, and may be apparently reducible when the patient lies down, the fluid it contains being forced upwards by the pressure employed; but there will be no intestinal gurgle, and the tumour will return directly the pressure is withdrawn.

Lipoma.

278. A lobulated tumour of the groin, dull on percussion, with no impulse, and irreducible, is probably a *fatty tumour.*

Lymphatic gland, or femoral cyst.

279. A small obscure tumour, deeply placed beneath the inner end of Poupart's ligament, with no impulse on coughing, may be a *lymphatic gland* or a *cyst in the femoral canal.* The only importance of either is, that a small strangulated femoral hernia may be mistaken for it; but if there are general symptoms of strangulation, an operation will at once clear up the case.

Chronic lymphadenitis.

280. *Enlarged femoral lymphatic glands* depend upon some irritation of the skin of the foot or leg, commonly upon some trifling graze of the heel, which is overlooked. A general enlargement of the femoral lymphatic glands may be a part of general lymphatic disease from constitutional causes.

Lymphadenoma.

281. *Diagnosis of Femoral Tumours.*

Hernia.	Psoas Abscess.	Fatty Tumour.	Cyst in Canal.
Impulse on coughing.	Impulse on coughing.	No impulse.	No impulse.
Reducible with gurgle.	Irreducible.	Irreducible.	Irreducible.
Clear on percussion if intestinal.	Dull on percussion.	Dull on percussion.	
Feels like intestine, or knotty if omentum.	Elastic or fluctuating.	Lobulated.	Lymphadenoma. Hard and ill-defined.

Scrotal Tumours.

Reducible tumours.

282. Tumours of the scrotum are conveniently divided into reducible and irreducible, but the degree of ease with which a tumour can be reduced will vary.

Hernia.

283. An elongated tumour reaching from the external abdominal ring to the top of the testicle (which can be seen and felt below it), and filling more or less the inguinal region, is presumably a *hernia*. The diagnosis will be confirmed if there is a distinct impulse on coughing, and if the percussion note over the tumour is clear, showing that it contains intestine. The tumour is readily and completely reducible with a slip and gurgle.

Sac of hernia.

284. The sac of an old hernia is irreducible, and hence after the contents are returned there will be a swelling of the scrotum left, which, when the sac has become thickened by the long continued pressure of a truss, may be mistaken for bowel or omentum. In more recent herniæ and in congenital hernia an empty sac may be mistaken for a varicocele (286).

In children.

285. In a child a scrotal hernia is not common, and if the swelling is confined to the scrotum, the groin being clear, it is pro-

Hydrocele. bably a *hydrocele.* The careful use of a light will settle the question of translucency, and it will then be advisable to ascertain whether the fluid can be returned into the abdomen, con-
Congenital. stituting a *congenital hydrocele.* If the vaginal process of peritoneum is large, the fluid will be readily returned when the child lies down and will re-accumulate when he stands up; but the aperture is often small; and time and care are required to reduce the swelling, which slowly refills.

Varicocele. 286. An elongated knotty swelling of the tissues above the testis, which is soft and tender, or possibly atrophied, occurring in a young man, is probably a *varicocele.* It is more common on the left than the right side, and when small the enlarged veins feel like a bundle of worms, but may be large enough to resemble intestine and to have a very distinct impulse on coughing. The tumour is readily reduced by pressure when the patient lies down, but without a gurgle, and, while pressure is maintained on the abdominal ring, fills again without any effort on the part of the patient when he stands erect.

Hydrocele of cord. 287. An elongated or ovoid tumour which is elastic when grasped by the fingers and can be slipped up into the inguinal canal, but

immediately descends again without any effort on the part of the patient, is an encysted *hydrocele of the cord.* It occurs in children, and is sometimes mistaken for hernia, but the groin is quite free, and with care the tumour can be proved to be translucent.

288. *Diagnosis of Reducible Scrotal Tumours.*

Hernia.	Congenital Hydrocele.	Varicocele.	Hydrocele of cord.
Impulse on coughing.	No impulse, unless combined with hernia.	Impulse on coughing, when large.	No impulse, unless actually in abdominal ring.
Percussion clear if intestinal, dull if omental.	Percussion dull.	Percussion dull.	Percussion dull.
Ring and inguinal canal occupied, spermatic cord obscured.	Ring and canal clear.	Ring occupied by enlarged spermatic cord.	Ring and canal usually clear.
Intestine to be felt, and returned with slip and gurgle, and remains up till effort is made, when it returns from above.	Fluid to be felt, and readily returned when patient lies down, and reappears slowly when he stands up, filling from below.	Feels like a bag of worms when small, but like intestine when large; can be reduced by pressure, and fills again while pressure is made on ring.	Small, ovoid, elastic tumour, connected with but movable upon spermatic cord.

Hernia.	Congenital Hydrocele.	Varicocele.	Hydrocele of Cord.
Opaque.	Translucent.	Opaque.	Translucent.
Testicle below tumour.	Testicle behind tumour.	Testicle soft or atrophied.	Testicle below tumour.
Any age.	Childhood.	Young adult, and on left side mostly.	Childhood.

Irreducible tumours.

289. An irreducible tumour of the scrotum may be confined entirely to the neighbourhood of the testis, or may also extend along the groin. In the latter case only can it be a hernia, and attention should therefore be given to the groin to decide whether a *hernia* is protruding from above, or a *hydrocele* encroaching from below. Both disorders may be so exaggerated in size as completely to bury the penis, but in these large tumours the gurgling of the bowel in a hernia or the translucency of the fluid of a hydrocele is very obvious.

Hernia.

Hydrocele.

For Hernia, *v.* 282.

Hydrocele.

290. A slowly forming, elastic, more or less pyriform tumour obscuring the testicle, which can be felt usually behind, but occasionally in front of the swelling, the scrotum being normal, is probably a vaginal *hydrocele.*

If the tumour is attached to, but does not

obscure the testicle it is probably an encysted *hydrocele.*

The careful application of a light will show every hydrocele to be translucent, but owing to thickening of the sac or the presence of blood in the fluid this may be difficult to demonstrate. It is only when the hydrocele is very large that fluctuation is to be expected. Translucent.

291. The withdrawal of straw-coloured clear fluid, closely resembling fresh urine in appearance and containing a large quantity of albumen, is characteristic of an ordinary hydrocele. A darker fluid, having flakes of cholesterine floating upon its surface, is commonly found in old standing hydroceles and in elderly people. The withdrawal of an opalescent fluid closely resembling milk and water, shows the hydrocele to be of the "encysted" variety, and the fluid will be found microscopically to contain spermatozoa. Fluid of hydrocele. Encysted hydrocele.

292. A hydrocele may be only an accompaniment of more serious disease of the testicle, careful examination of which should be made as soon as the fluid is withdrawn (355). Hydrosarcocele.

293. A more or less globular tumour obscuring the testicle, which is behind, following immediately upon an injury to the scrotum, Hæmatocele.

which is discoloured, is a *hæmatocele.* The swelling if recent is tense, and contains fluid blood, but if some time has elapsed the swelling will be soft and doughy from the presence of clot, the skin having become normal.

Sarcocele. 294. An enlargement of the testicle may be acute or chronic. If the scrotum is healthy and the tumour of slow growth it is some form of sarcocele (355).

Orchitis. 295. If the scrotum is red and hot and the enlargement recent and painful it is a case of acute orchitis (354). But the scrotum may become reddened and thinned by the pressure of an abscess or tumour beneath (356).

296. *Diagnosis of Irreducible Scrotal Tumours.*

Hernia.	Hydrocele.	Hæmatocele.	Sarcocele.
Sausage-shape.	Pyriform.	Globular.	Irregular.
Intestine clear, omentum dull on percussion.	Dull on percussion.	Dull on percussion.	Dull on percussion.
Intestinal or knotty in feel according to contents.	Elastic or fluctuating.	Tense or doughy.	Elastic, with more or less induration.
Testicle below tumour.	Testicle behind tumour.	Testicle behind tumour.	Testicle not to be defined.
Opaque.	Translucent.	Opaque.	Opaque.
Sudden.	Chronic.	Sudden.	Chronic.

Hernia.

Reducible hernia.

297. A tumour occurring in one of the common situations for hernial protrusion, having an impulse on coughing, and returning under manipulation with a characteristic slip and gurgle when the patient lies down, is a *reducible hernia*, producing no general symptoms, except perhaps a dragging sensation. If dull on percussion, with a knotty or doughy feeling, and returning without a gurgle, the contents of the sac are in great part omental.

Irreducible hernia.

298. A hernial tumour of large size, tense and tympanitic, or dull on percussion and knotty, which resists moderate attempts at reduction, but still has an impulse on coughing; which is not painful, and does not produce marked constipation or vomiting, or retention of flatus, is an *irreducible hernia*, which may or may not yield to treatment.

Incarcerated hernia.

299. A similar tumour of long standing, combined with obstinate constipation, retention of flatus and hiccup, and often, but not always, some impulse on coughing, but without vomiting or rise of temperature, is probably an *incarcerated hernia*, in which the bowel is obstructed by retained matters. This, if in-

flammation supervenes, closely resembles a strangulated hernia.

Strangulated hernia.

300. A small recent hernial protrusion, or a larger old hernia recently increased in size by some exertion, which is tense and painful, the pain radiating over the abdomen, accompanied by some rise of temperature, is probably a *strangulated hernia*. The diagnosis will be confirmed if all impulse in the tumour is wanting, if persistent sickness is present, the vomit being offensive and eventually stercoraceous, and the tongue dry and brown; if there is no passage of fæces or even flatus through the bowels, which are becoming distended; and if the patient have the drawn features constituting the *facies Hippocratica*.

301. In the case of a man who has a few hours before received an injury of the scrotum, leaving a painful condition of the parts, it is possible that a strangulated hernia may be confounded with hæmatocele or orchitis, the diagnosis of which is given on the following page.

Strangulated Hernia.	Hæmatocele.	Orchitis.
Suddenly produced, or, if present before, strangulated thus.	Suddenly produced by some external violence.	Developed a few hours after a blow, or following gonorrhœa.
Pain in groin and about abdomen, with considerable constitutional depression and anxiety of face.	Pain in scrotum and constitutional disturbance slight after the first few minutes.	Pain in scrotum and along the cord to the loins. Feverish disturbance of system.
Tumour tense, and giving the sensation of intestine when manipulated. Skin normal.	Tumour tense and heavy, globular in shape, and not translucent. Skin often bruised	Tumour excessively tender to the touch, cord thickened. Skin reddened, veins enlarged.
Impulse on coughing to be felt along the groin, in which there is more fulness than usual, but ceases abruptly at the point of strangulation.	No impulse in groin, which is perfectly normal.	No impulse on coughing.
Percussion over tumour gives a clear sound unless the protrusion is omental.	Percussion gives a dull note.	Percussion gives a dull note.
Vomiting probably present, continuous, and eventually stercoraceous.	Vomiting immediately following the accident, but not continued.	Nausea and faintness, but seldom vomiting.

CHAPTER XV.

THE URINARY FUNCTION.

Retention in child.

302. Retention of urine in a child is due either to a tight orifice of the prepuce, in which case the foreskin becomes distended like a bladder; or to the impaction of a calculus in the urethra, usually just within the meatus; or to a thread having been tied round the penis.

Spasmodic retention.

303. Inability to pass water, occurring in a healthy young man, is probably due to some *spasmodic* or *inflammatory* condition of the urethra. Inquiry will elicit the existence of a recent gonorrhœa, followed by some excess in liquor or exposure to damp cold. The distress is not usually great, and can be readily relieved with a catheter.

Organic retention.

304. Retention, with a full bladder to be felt above the pubes, the patient (usually a middle-aged man) being bowed forward to relieve the pressure, and yet unable to control

the violent straining efforts of the abdominal muscles, is the result of very complete obstruction from *organic stricture.* Considerable induration will probably be found in the perinæum, and the skin will be hot and perspiring.

Prostatic retention.

305. Retention, occurring in elderly men who have for long been aware of some difficulty in emptying the bladder, is generally due to *congestion of the prostate*, brought on by slight excess in liquor, by venereal excitement, or by the injudicious use of catheters. The finger passed into the rectum will feel the prostate to be swollen, hot, and tender, and the patient will complain of weight in the perinæum, and of the passage of blood when straining.

Abscess of prostate.

306. Retention may be due to acute inflammation of the prostate, ending in *abscess* which may be felt *per rectum*, or ruptured into the urethera on the passage of a catheter. This most commonly occurs in young men as a sequel of gonorrhœa, but may come on very insidiously in older patients with few if any acute symptoms.

Atony of bladder.

307. Retention, occurring in a perfectly healthy man of middle age, who has from some cause been unable to take an opportunity of emptying his bladder for some hours, is due

simply to temporary loss of power or *atony* of the muscular walls of the bladder.

Paralysis.

308. Complete retention, following a paralytic seizure or an injury to the spine, is due to paralysis of the nerves supplying the bladder, and will be followed, sooner or later, by overflow.

Impacted calculus.

309. Sudden retention, occurring in a previously healthy man, may be due to the impaction of a small renal calculus in the urethra, probably close to the meatus. In a child, retention may occur from the same cause, or more rarely from stone in the bladder.

Incontinence.

310. Incontinence of urine in the adult male usually means overflow from a full bladder, which will probably be found dull and resistent over a considerable area in the hypogastrium. The nocturnal incontinence of children depends usually upon constitutional causes, but may result from phimosis, stone in the bladder, or ascarides in the rectum.

Enuresis.

Retention in female.

311. Retention of urine in the unimpregnated *female* is probably hysterical. In pregnant women the pressure of the uterus or its displacement may obstruct the urethra, and during labour the child's head may cause the same result. Retention from bruising of the parts may follow delivery.

Stricture. 312. Frequency of micturition, especially at night, with slowness in emptying the bladder, and a constant reduction in the calibre of the stream of water passed, which may be twisted, or even forked, points to *organic stricture* of the urethra, which may be felt indurated in the perinæum.

Stone. 313. Frequency of micturition, worse in the daytime after exertion, with pain referred to the end of the penis and aggravated by emptying the bladder, points to *stone* in the bladder. The diagnosis will be confirmed if the urine is thick and occasionally contains blood after carriage exercise, but can only be definitely settled by the use of the sound.

Enlarged prostate. 314. Frequency of micturition, worse at night, with gradually increasing difficulty in passing water, occurring in elderly men, is usually due to *enlargement of the prostate*, which should be examined *per rectum*. In these patients the bladder is seldom completely emptied by voluntary effort, as will be proved by passing a catheter immediately after micturition. If in such a case there is irritability of the bladder, with purulent urine, the presence of a stone in the bladder should be suspected.

Acute cystitis. 315. The frequent voidance of small quantities of scalding urine, high coloured, and

perhaps containing a little blood, coupled with great pain above the pubes, in the groins, and in the rectum, and considerable constitutional disturbance, points to *acute inflammation* of the bladder, the cause of which must be investigated.

316. The voidance of thick, purulent urine, which when poured from one vessel to another hangs in strings, is symptomatic of *chronic inflammation* of the bladder. Chronic cystitis.

317. The voidance of a small quantity of pus in the first portion of urine passed, coupled with frequent micturition and pain about the neck of the bladder, is probably due to a *prostatic abscess* which may perhaps be felt *per rectum*. Prostatic abscess

CHAPTER XVI.

MORBID CONDITIONS OF THE URINE.

Stone in kidney.

318. *Blood in the urine*, rendering it smoky or brown, coupled with pain in the loins following active exertion, is a symptom of stone in the kidney.

Stone in ureter.

319. A microscopic trace of *blood*, sufficient to answer the tests for albumen, coupled with excruciating pain in the loin and running down into the thigh and scrotum; with retraction of the testis, faintness and vomiting, coming on suddenly and ceasing abruptly, are the symptoms of a passage of a calculus down the ureter into the bladder. The transient presence of albumen serves to distinguish a case of right renal colic from one of hepatic colic due to the passage of gall stones, in which latter case also there is usually some jaundice.

Renal and hepatic colic.

Stone in bladder.

320. *Blood in the urine*, especially after exertion, coupled with frequency of micturition, pain above the pubes and at the end of the penis which is aggravated by emptying

the bladder, are symptoms of stone in the bladder, or of ulceration of the vesical mucous membrane.

321. *Blood* voided in large quantities with the urine is a symptom of a morbid growth in the bladder, probably villous in early adult life, malignant in late adult life. In the *female* the blood mixed with urine may be due to menstruation or disease of the uterus. Growth in bladder. Menses.

322. *Bloody urine* retained in the bladder of elderly men, associated with pain at the end of the penis, is usually a symptom of congestion of the prostate, requiring the use of the catheter for some time after the hæmorrhage has ceased. Congested prostate.

323. *Albumen* in the urine may result from slight hæmorrhage, from chronic disease of the kidneys, or from the presence of pus. Albuminuria.

The presence of blood corpuscles must be ascertained with the microscope, and if unaccompanied by tube-casts will probably be due to one of the causes given above. If the blood-corpuscles are entangled in tube-casts they are due to acute nephritis. Acute nephritis.

Albuminous urine of low specific gravity, with numerous casts either transparent and waxy or granular and oily, indicates advanced Bright's disease of the kidney. Bright's disease.

Pyelitis. 324. *Acid urine*, containing *pus* in large quantity without any tube-casts, coupled with pain about the kidney, which may be dilated, is due to *pyelitis.* This may be caused by obstruction to the flow of urine from any cause, to stone in the kidney, or to tubercle, and is commonly accompanied by a good deal of irritation of the bladder. Pus in small quantity in acid urine is due to gonorrhœa or abscess of the prostate, or in the female to leucorrhœa.

Cystitis. 325. *Alkaline urine* containing *pus* is due to disease of the bladder, chronic cystitis resulting from retention from any cause, or to the irritation of stone. Combined with chronic cystitis there may be chronic disease of the kidney, with urine of low specific gravity and tube-casts.

Diabetes. 326. Urine of the specific gravity of 1030 and upwards should be tested for sugar, which, if present, is an evidence of *diabetes.*

Deposits. 327. *Urinary deposits.* The urine is acid and clear when passed, but becomes cloudy on cooling, and deposits a pink sediment which is readily dissolved by heat. The deposit is urate or lithate of soda, and the condition is compatible with perfect health.

Urate of soda.

The urine is neutral or alkaline, and possibly

not quite clear when passed, and deposits a white sediment, not dissolved by heat but by nitric acid. The deposit consists of the triple phosphates, and the condition is probably one of debility and exhaustion from brain-work. Phosphates.

The urine is acid, high-coloured and clear, and deposits red sand which is gritty and crystalline. The deposit is uric or lithic acid, and the diathesis is either gouty or rheumatic. Uric acid.

A slight flocculent deposit from acid urine is probably healthy mucus; a thick yellow sticky deposit from acid or alkaline urine is pus. Mucus. Pus.

The microscopic examination of the urine, and the application of various reagents, will be found described at length in medical treatises.

CHAPTER XVII.

THE MALE GENITALS.

Hypospadias.

328. The orifice of the urethra may be congenitally placed lower than natural, constituting *hypospadias*. The malformation if confined to the glans penis is unimportant, but if the orifice is below this, the glans is sometimes imperforate. In extreme examples of hypospadias doubt as to the sex of an infant may arise.

Epispadias.

329. The opening of the urethra on the upper aspect of the penis constitutes the affection called *epispadias*. This is rarely seen alone, but generally in combination with a protrusion immediately above the pubes of a red mass of mucous membrane, from which the urine constantly flows. This is extroversion of the bladder or *ectopia vesicæ*.

Ectopia vesicæ.

Phimosis.

330. An orifice of the foreskin so contracted that retraction is difficult or impossible, constitutes *phimosis*. This may be congenital, inflammatory, or cicatricial.

Balanitis.

331. A reddened, hot, and swollen state of the foreskin, with a thick, curdy, or purulent discharge from beneath it, constitutes *balanitis.* The foreskin can probably be retracted sufficiently to show the orifice of the urethra to be healthy.

Gonorrhœa.

332. A similar condition, with a purulent discharge from the urethra, occurs in *gonorrhœa*, when it is accompanied by great pain on micturition.

Sore beneath foreskin.

333. A reddened, hot, and swollen condition of the prepuce, extremely painful when touched, particularly at one spot; with a sanious offensive discharge from beneath the foreskin, but not from the urethra, is symptomatic of a *sloughing sore* on the glans penis. In a later stage, if unrelieved by a timely incision, the upper surface of the foreskin may become dark and sloughy, and the glans protrude through it.

Chancre beneath foreskin.

334. An œdematous foreskin, with a dense hard mass to be felt in it or through it at one point, implies an indurated *chancre*, and the diagnosis will be confirmed by enlargement of the lymphatic glands of the groin.

Warts, or epithelioma.

335. An œdematous condition of the foreskin of some weeks' duration, with a scanty semi-purulent discharge from beneath it, is due

probably in a young man to *venereal warts;* in an older man, to *epithelioma.* The diagnosis can only be made certain by laying open the prepuce, when the warts will be known by their shape and projection from a non-ulcerated surface; while epithelioma will present a ragged ulcer, with more or less surrounding induration. If neglected, epithelioma will eventually fungate through the skin of the penis.

Herpes preputialis.

336. A series of small vesicles with inflamed bases, on the foreskin or glans penis, or both, constitutes *herpes preputialis*, and must not be confounded with venereal sores.

Paraphimosis.

337. An œdematous ring of tissue behind the glans penis, thereby fully exposed, is due to retraction of a tight foreskin, which, not having been brought forward, has become swollen, and will, if not relieved, ulcerate in the line of greatest tension. This is a *paraphimosis;* but a very similar condition may be produced by a child having tied a thread round the penis.

Urethral Discharges.

Viscid.

338. A viscid gummy discharge, found between the swollen lips of the urethra a day or two after connexion, is the early symptom of gonorrhœa.

339. A thick, yellow or greenish discharge, with scalding in passing water, is characteristic of gonorrhœa or urethritis. Purulent.

340. A thin, white or watery discharge is a gleet, and may be the remnant of a gonorrhœa, or may be kept up by the presence of a stricture. It may be a symptom of urethral chancre, for which search should be made by pinching the urethra between the finger and thumb. Watery.

341. A perfectly clear mucous discharge, during erection and sexual excitement, is perfectly compatible with health, and is not to be confounded with involuntary emissions. Mucous.

342. An involuntary emission, or "wet-dream," occurring occasionally during continency, consists of greyish-white fluid, which, under the microscope, should contain large numbers of living spermatozoa. Spermatic

343. Small white threads found in the urine when recently passed, are due to slight prostatic irritation, and are unimportant. Prostatic.

Venereal Sores.

344. *Recent Venereal sores* on the penis may be infecting, or non-infecting, *i.e.* true chancres leading to constitutional symptoms of syphilis

(hard sores), or simple local contagious ulcers (soft sores).

Syphilitic.	*Non-Syphilitic.*
Single sore.	Multiple sores.
More or less circular.	Irregular in shape.
Ulceration indolent.	Ulceration active.
Grey surface.	Yellow secreting surface.
Base indurated, if of long standing.	Base not indurated.
Does not innoculate readily.	Readily innoculates surrounding skin of thigh or abdomen.
Glands in groin enlarged and indolent.	Glands in groin inflamed and apt to suppurate.
Originated in a crack or pimple.	Originated in a pustule or ulcer.
Nothing seen for some days after connexion.	Irritation and redness noticed at once.
Improves under mercury.	Gets worse under mercury.

345. Destructive ulceration of the prepuce and glans penis may be due to *sloughing* or to syphilitic *phagedæna*.

SLOUGHING.	PHAGEDÆNA.
Copious black slough.	Scanty grey slough.
Great pain.	Pain severe at night.
Rapidly extends by formation of fresh slough.	Rapidly extends without distinct slough.
Offensive odour.	Not offensive.
Is arrested by thorough application of strong caustics.	Is not arrested by caustics or actual cautery.
Gets worse under mercury.	Improves under mercury.
Non-infectious.	Highly infectious.

Scrotum and Perinæum.

Pediculi pubis.

346. Irritation of the skin of the scrotum and pubes may depend on the presence of *pediculi pubis* (crabs), which with a lens can be seen attached to the hairs. The skin will probably present bloody points at intervals, due to involuntary scratching by the nails of the patient.

Inflamed.

347. A reddened condition of the scrotum may be due to inflammation of the testicle, or of the skin of the scrotum itself. A common cause of a reddened, œdematous condition of the scrotum is extravasation of urine from ruptured urethra, and attention should at once be directed to the condition of the urinary organs. Apart from any history, the fact that the redness and œdema have travelled forward from the perinæum to the scrotum, and then upwards towards the groins, the urinous smell, and the formation of black sloughs at various points, will sufficiently mark the case as one of extravasation of urine.

From extravasation.

Acute œdema.

348. An acute inflammatory *œdema* of the scrotum is occasionally met with, having the above symptoms, except that the urinous smell is wanting. Œdema is also a symptom of perinæal abscess.

Elephantiasis.

349. Great hypertrophy of the scrotum of a chronic character is met with occasionally in Europeans, but more frequently in Asiatics, and constitutes one form of *elephantiasis.*

Epithelioma.

350. A warty ulcer of the scrotum, especially common in chimney-sweeps and millers, is an example of *epithelioma.*

Perinæal abscess.

351. A swollen, tense and painful condition of the perinæum is probably due to urethral or prostatic abscess, which may be too deep at first to cause fluctuation, unless the finger is passed into the rectum to detect it. If neglected the matter will eventually be present under the skin of the perinæum, which will be red and hot.

Urinary fistulæ.

352. Openings in the scrotum or perinæum, which discharge thin pus and present unhealthy granulations at their orifices, are *fistulæ* depending generally upon stricture of the urethra. Frequently urine flows from these openings in variable quantity during micturition.

Testicle.

Retained testes.

353. Absence of one testicle may be due to permanent retention in the abdomen (250) or inguinal canal (273), the individual being termed a "monorchid" or, if both tests are retained, a "cryptorchid." In children the

testicle may be so drawn up temporarily by the cremaster as to be overlooked, or may be so minute from atrophy following mumps (34) as to escape notice. In adults, the testicles are not always of the same size, and a plump, well-developed organ is not to be considered enlarged because its fellow happens to be slightly smaller. The occasional occurrence of *inversion* of the testis, the epididymis being in front, is to be borne in mind. Atrophy. Inversion.

354. A swollen, painful condition of the testicle, with redness of the scrotum and slight effusion into the tunica vaginalis, is symptomatic of inflammation or *acute orchitis*. If due to a blow or to mumps, the body of the testis will be enlarged and the epididymis and cord healthy; but in the great majority of cases the vas deferens will be found thickened and the epididymis swollen and tender, as well as the body of the testis, the inflammation being propagated from the urethra. The disease may originate in any urethral irritation, but is commonly due to gonorrhœa, the discharge of which diminishes as the testis enlarges. Acute orchitis.

355. A chronically enlarged testis must be carefully examined to ascertain which part is most affected, and, if possible, where the affection began. (1) If the body alone is Sarcocele.

Syphilitic. enlarged, the epididymis and cord being healthy, the disease is probably *syphilitic*, and attention should be directed to other symptoms

Tubercular. of constitutional syphilis. (2) If the body of the testis is fairly healthy, but the epididym is enlarged and nodulated with some thickening of the adjacent vas deferens, the disease is pro-

Chronic inflammation. bably *tubercular*. (3) If the vas deferens is thickened throughout its length, the epididymis enlarged and hard, and the body of the testis thickened, the case is probably one of *chronic inflammation* following acute orchitis, or dependent upon urethral irritation.

Abscess. 356. The formation of an abscess in connection with the testis is generally due to *tubercle*, and under these circumstances the disease is usually extensive and is apt to invade the vesiculæ seminales, which can be felt enlarged *per rectum*.

Hernia testis. 357. A ragged opening in the skin of the scrotum, through which protrudes an irregular soft mass covered with unhealthy granulations and giving rise to a constant thin purulent discharge, is an example of *hernia* or *fungus testis*, the result of tubercle or of chronic inflammation.

Hydro-sarcocele. 358. A slowly growing tumour of the testicle, which may be solid or cystic, and

stretching, without involving the skin, is a *non-malignant* new-growth, often masked by the presence of fluid in the tunica vaginalis, which requires to be drawn off before a diagnosis can be made.

359. A rapidly growing tumour of the testicle, solid, but soft and elastic, and early becoming adherent to the scrotum, is probably *malignant*. Examination of the spermatic cord will show it to be thickened, and probably there will be pain in the loins, and possibly a tumour to be felt there. Malignant tumour.

360. A large *bleeding fungus* protruding through the scrotum is a later stage of malignant disease of the testicle. Fungus hæmatodes.

CHAPTER XVIII.

FEMALE GENITAL ORGANS.

Adherent nymphæ.

361. The commonest affection of the genital organs in female infants is adhesion of the *nymphæ*, often confounded with imperforate vagina, which is a much more serious affection. When the nymphæ are separated, the vagina with the hymen will be readily seen.

Noma.

362. A rapid, gangrenous ulceration of the labium in an ill-nourished child is analogous to *cancrum oris*, and constitutes *noma*. It is apt to be mistaken for venereal disease, or the effects of violence.

Vascular urethra.

363. A small red growth, looking like a minute strawberry, projecting from the meatus urinarius, is a vascular *papilloma*, which gives rise to painful micturition. In infants a prolapse of the vesical mucous membrane is occasionally met with, and must not be confounded with this.

364. A swollen discoloured condition of one

of the labia is probably due to *hæmorrhage* into it, either from a kick, or from giving way of a varicose vein; but the possible occurrence of a strangulated labial hernia must not be overlooked. Labial hæmatocele.

365. The labium may be distended on its vaginal surface by a thin-walled *cyst*, which is often, though not always, connected with the gland of Bartholine. Labial cyst.

366. A swollen, hot, and tender condition of the labium is caused by an *abscess*, which may have orignated spontaneously, or may be due to suppuration of a cyst. The careful introduction of the finger will detect fluctuation on the vaginal surface, at which point a natural opening may have already formed in neglected cases. Labial abscess.

367. Sores on the labia or nymphæ of *venereal* origin may be infecting or non-infecting (*vide* 344). The induration of the true chancre is seldom so well seen in the female as in the male, and the presence of a chancre in the vagina or on the cervix uteri will be overlooked unless a careful examination is made with a speculum. Venereal sores.

368. Flattened, slightly raised, circular patches about the labia, perinæum, and anus, are mucous tubercles, which readily infect Mucous tubercles.

neighbouring parts by their discharge, and are of *syphilitic* origin.

Warts. Large warts, due to the irritation of vaginal discharges, may be found massed about the perinæum and labia, and infecting neighbouring parts by direct contact, but are *non-syphilitic.*

Epithelioma. 369. Ulceration of the nymphæ and clitoris, of an intractable character, occurring in middle-aged women, is usually *epitheliomatous*, and the glands of the groin will be found enlarged or ulcerated in the later stages of the disorder.

Elephantiasis. 370. A solid enlargement of the labium, in which the part is converted into a fibro-cellular mass, may be considered a variety of *elephantiasis.*

Vaginal Discharges.

Leucorrhœa. 371. A thick white discharge, often profuse, may be found in female children and adults of all ages, constituting *leucorrhœa*, and depending upon slight local irritation, ascarides, etc. A chronic discharge is often due to uterine disease, and examination of the cervix uteri with the finger and speculum will be necessary for the determination of its source of origin.

Gonorrhœa. 372. A thick, yellow or greenish discharge, accompanied by an inflamed condition of the

nymphæ and labia, and pain in micturition, is *gonorrhœal.*

373. The discharge of urine by the vagina is caused by a vesico-vaginal, or utero-vesical fistula, the position of which should be determined with a speculum. Vesico-vaginal fistula.

374. A discharge of fæces or flatus, *per vaginam*, may be due to a recto-vaginal fistula, or to carcinomatous perforation of the recto-vaginal wall. The introduction of the finger into the vagina often gives useful information in cases of obstructed rectum. Recto-vaginal fistula.

375. A vascular body of large size, projecting from the vulva of the unimpregnated female, is either a prolapsed uterus, or an example of great hypertrophy of the cervix. The inverted vagina will be healthy if the prolapse is recent, but may be ulcerated or almost cuticular if it is of long standing. The os uteri will be found at the most dependent point, and the introduction of a uterine sound will determine whether the case is one of displacement of a normal uterus, two inches and a half in length, or one of hypertrophied cervix. A catheter passed into the bladder will also determine whether the bladder is drawn down, as it usually is in a case of procidentia uteri. Prolapsus uteri. Hypertrophied cervix.

deeply congested smooth mass will be seen, with one or more patches of bright red granular surface from which the hæmorrhage proceeds.

Vascular surface.

381. When considerable loss of blood occurs without any protrusion, the hæmorrhage may come from a vascular surface, which can be detected and treated through a rectal speculum.

Prolapsus recti.

382. A uniformly smooth, vascular, mucous protrusion from the anus is a *prolapse*, which may involve only the mucous membrane, or the entire thickness of the bowel in severe cases. It is met with in children, as the result of debility, but may be due to the straining from a stone in the bladder, or a phimosis.

Polypus.

383. A small vascular *polypus* of the rectum, which is not uncommon in children, may be mistaken for a prolapse, if care is not taken to search for the pedicle.

Ischio-rectal abscess.

384. A hot swollen and painful condition of the skin by the side of the anus, the natural hollow of the ischio-rectal fossa being obliterated by the swelling, is symptomatic of an ischio-rectal abscess. One finger passed into the rectum will easily detect fluctuation between it and another on the surface; and the matter will burst into the rectum, if not promptly relieved.

385. One or more fistulous openings near the

anus, constantly discharging thin pus, are the common results of neglected ischio-rectal abscess. A probe carefully introduced along the fistula, will, in the great majority of cases, pass for a variable distance by the side of the rectum, and can then be easily made to touch the point of the finger introduced into the bowel, showing the fistula to be "complete." Fistula in ano. Complete fistula.

Occasionally, however, the fistula takes a tortuous or horse-shoe course, and the internal opening cannot be found until some part of the track has been laid open, constituting a "blind external fistula." Blind external.

A soft, semi-fluctuating or boggy spot near the anus, with the occasional discharge of pus with the motions, is due to an internal fistula having no external aperture, or "blind internal fistula." With care it may be possible to pass a bent probe up the rectum, and to hook it into the fistula, so as to make the point prominent beneath the skin. In all cases of fistula in ano, the result of ischio-rectal abscess, the condition of the lungs should be investigated, the affection being common in phthisis. Blind internal.

386. Fistulæ in ano may be found in combination with other diseases of the rectum, such as extensive tertiary ulceration with stricture, or with malignant disease, especially Fistula a symptom.

epithelioma, and a careful examination with the finger should therefore be made in all cases of fistula.

Fissure.

387. Pain in defæcation is a symptom of ulceration of the rectum rather than of piles. Extremely severe pain, lasting an hour or more after defæcation, coupled with an occasional streak of blood in the fæces, is the common symptom of *fissure* of the anus. On dilating the bowel slightly, the ulcer may be seen running up one side of the anus, or may be detected for a varying distance above it with the finger.

Rhagades.

388. Ulceration in the folds of skin at the verge of the anus are usually syphilitic, constituting *rhagades*, or are combined with mucous tubercles.

Tertiary ulceration.

389. Painful defæcation, with a constant, profuse, thin discharge from the anus, is probably due to tertiary ulceration of the rectum, which can be detected with the finger, and commonly leads to stricture when it heals.

Ulcerated cancer.

390. Painful and frequent defæcation of lumpy motions, combined with difficulty and the occasional passage of blood and bloody pus, may be due to ulcerated *cancer*, which can be detected as a hard mass infiltrating the coats of the bowel.

391. *Difficult defæcation* may be due solely to the impaction of hardened fæces, particularly in females, or to the pressure of a retroflexed or retroverted uterus. A very much hypertrophied prostate may similarly obstruct the rectum in old men. Difficult defæcation.

392. Difficulty in defæcation, when the fæces are altered in shape or diminished in size, should lead to a rectal examination, when the finger may detect a distinct ring or fibrous *stricture*, or a hard mass of *cancer*. This may be on one side of the rectum, so as to be easily examined, or may surround the bowel, giving it very much the form and consistence of the os and cervix uteri. Stricture.

393. A hard mass, more or less completely encircling the anus, and spreading for an inch or more up the bowel, with or without ulceration at some point, is probably *epithelioma*. Epithelioma.

CHAPTER XX.

THE LOWER LIMBS.

Lameness of children

394. In all cases of *lameness occurring in a child*, it is advisable to strip the patient and let him walk without assistance, if possible, so as to notice the position of the body and limbs, and the mode of using them.

Wasting of limb.

395. A child may have one lower limb obviously smaller than the other, owing to *wasting of the muscles*, and this may be due either to want of use from joint-disease, or to paralysis. In disease it will be noticed that the joint is unconsciously fixed by the muscles, and is never moved; whereas, in paralysis, the joint is free, but the muscles are too weak to effect the proper movements.

Dragging of leg.

396. Slight *dragging of the leg*, which is itself healthy, is a common early symptom of diseased spine; but complete wasting of the muscles, especially of the extensors, is evidence of old spinal mischief, and is commonly seen

in "infantile paralysis." In these cases the child, when walking, throws its thigh outwards by means of the psoas and iliacus muscles in a very characteristic way, and the foot will often be found to be the subject of acquired talipes varus or club-foot.

Early hip-disease.

397. A child walking with a slight limp, and standing with one foot a little in advance of the other, may complain of pain in the knee only, and yet will move the knee when walking, and keep the hip motionless. Pain in the hip will be produced on striking the heel or pressing upon the trochanter, and any attempt to flex the hip-joint will be resisted by the muscles. In cases in which flexion has already occurred, in order to demonstrate that the mischief is in the hip-joint, the patient should be laid upon a flat table, so that his spine is in contact with it. The healthy limb will also be in contact with the table, but the diseased limb will be found to be flexed at a variable angle. On attempting to bring the diseased limb down parallel to its fellow, pain will be produced, and it will be found that the loins are raised from the table, so that a hollow is formed beneath them; but the administration of an anæsthetic will at once allow the limb to be brought down by relaxing the muscles.

Obliteration of gluteal fold.

398. Wasting of the buttock from disease of the muscles, and consequent obliteration of the gluteal fold, is a symptom common to hip-disease and to any affection in which the hip-joint is kept at rest. It is very noticeable in a patient who has worn a long thigh-splint for some weeks, either for early hip-disease or for fracture of the thigh-bone.

Lordosis in hip-disease.

399. Deformity of the spine, consisting in *lordosis* or exaggeration of the normal lumbar curve, is a common result of old hip-disease, but is sometimes mistaken for the original malady. A spine thus affected can always be brought straight temporarily by laying the patient down and bringing the pelvis sufficiently forward, with corresponding malposition of the limb affected.

Acute hip-disease.

400. An acutely painful condition of the hip-joint, which is slightly flexed, and cannot be moved without causing a cry from the patient, who persistently grasps the thigh with one or both hands so as to prevent the slightest movement, is symptomatic of *acute inflammation* of the hip-joint. Under these circumstances there is considerable constitutional disturbance, the temperature being raised three or four degrees, the skin of the hip being reddened, and the patient

having a flushed cheek, bright eye, and rapid pulse.

Abscess of hip.

401. A swollen buttock, of which the skin is tense and glazed, the bony prominences being masked by the general swelling, is characteristic of *acute abscess* from hip-disease. The limb will be found to be strongly flexed and adducted, and the patient emaciated and much reduced by previous pain, but now comparatively easy, owing to the matter having perforated the capsule of the joint. On palpation the fluctuation of matter will be readily detected beneath the thinned gluteal muscles.

Chronic hip-disease.

402. Sinuses, discharging thin pus, are common accompaniments of old-standing hip-disease, and are generally situated along the lower border of the glutæus maximus, near the great trochanter, in the groin, or down the thigh. The position of the limb is such as often to lead to the erroneous idea that the head of the femur is dislocated, the limb being flexed and adducted, with the trochanter major carried forward and unnaturally prominent, the buttock being much wasted and flattened. The pelvis is also considerably raised in the affected side, causing a corresponding lateral curvature of the spine and shortening of the limb, which is, however, more apparent than

real, as proved by careful measurement of the two sides. Real shortening may result from destruction of the head of the femur without dislocation, but will be most marked when dislocation has occurred.

Articular caries.

403. Under an anæsthetic, with complete muscular relaxation, it may be possible to demonstrate the grating of *articular caries* in the hip-joint; but, even in very complete disorganisation of the joint, this may not always be present. By the same method it

Ankylosis.

will be possible to distinguish between true and false ankylosis after hip-disease, the former being almost always present when healing has taken place after the disease has run to the extent of articular abscess and resulting sinuses, the scars of which are visible.

Lameness of adults.

404. *Lameness in elderly people* may follow slowly upon a fall which produced no deformity at the time, and, on examination, the hip may present many of the symptoms of fracture of the neck of the femur (408). The symptoms are due to absorption of the neck of the femur.

Rheumatoid arthritis.

405. Lameness in elderly people, combined with considerable enlargement of the hip-joint and crackling when the limb is moved, is due to *chronic rheumatic arthritis*, which will pro-

bably be found to affect the knee and other joints. The buttock will be found to be wasted from want of use, and the limb apparently shortened by tilting of the pelvis, or really shortened by destruction of the upper part of the acetabulum.

406. A remarkable condition of disorganisation of the hip-joint, with great effusion and crackling, is occasionally met with in patients suffering from *locomotor ataxy*, and depends apparently upon the affection of the nervous system. In locomotor ataxy.

407. A *deformity* of the hip, following directly upon an injury, must be due either to a fracture or a dislocation. A knowledge of the nature of the accident and age of the patient may assist in the diagnosis, which, however, can be safely made solely from the resulting deformity. Fracture or dislocation.

408. A fall upon the trochanter, at any age, is more likely to produce a fracture than a dislocation. A bruised hip, with loss of power, shortening of the thigh bone, and eversion of the foot, are conclusive signs of fracture of the neck of the thigh-bone. Whether the fracture is impacted or not is the point of greatest practical importance to be ascertained, and this is to be done by careful measurements and Fracture of neck of femur.

gentle manipulations, lest the impaction should be loosened and the cure delayed or prevented.

Measurements.

409. Measurements made from the anterior superior iliac spine to the malleolus will show shortening on the affected side in almost all cases of fracture of the neck of the femur, but the amount will vary under different circumstances. A doubtful half-inch may be suddenly increased to an inch and a half by giving way of the periosteum which held the fragments of an intra-capsular fracture together. A shortening of an inch may be increased to two inches by injudicious handling and separation of an impaction.

Relation of trochanter.

In all cases of fracture of the neck of the femur the trochanter is nearer the crest of the ilium than natural. The distance between these two points should therefore be carefully measured, or the same result may be more accurately gauged as follows: The patient, being recumbent, a tape is laid across the body at the level of the anterior superior spines of the ilium, when a measurement made at right angles to this line from the tops of the great trochanters will determine whether one trochanter is higher than the other, the measurement corresponding to Bryant's "test-line." The distance from the anterior su-

Bryant's test-line.

perior iliac spine to the point where the two lines meet, if compared on the two sides, will also demonstrate whether any displacement of the trochanter exists.

410. *Fractured Neck of Thigh-bone.*

Non-impacted Fracture.	Impacted Fracture.
1. In old persons, mostly women.	1. In adult males.
2. From slight indirect violence.	2. From violence applied to the trochanter.
3. Bruising and shortening slight.	3. Bruising and shortening considerable.
4. Foot everted.	4. Foot fixed, more often everted than inverted.
5. Trochanter rotates imperfectly, with obscure crepitus.	5. Trochanter rotates on a shortened arc, and is therefore less prominent than on opposite side. Crepitus absent unless impaction is loose.

Whether the fracture is within or without the line of insertion of the capsular ligament, can only be surmised in the great majority of cases, and is comparatively unimportant.

411. A well-marked deformity of the hip, in which the bony prominences are distinctly visible and are unobscured by bruising, is due to a dislocation of the head of the femur. Dislocation of head of femur.

If the thigh is flexed, *inverted*, and fixed; the trochanter abnormally prominent so that the hips are widened; the limb shortened so that the knee is well above the opposite knee, Dorsal dislocation.

and the great toe rests against the instep of the sound side; the head of the femur will be found dislocated upwards and backwards on the dorsum ilii, and moving with the femur when rotated.

Sciatic dislocation.

412. If the thigh is *inverted*, and fixed, but the trochanter not abnormally prominent; if the limb is shortened so that the knee rests against the opposite knee, and the ball of the great toe touches its fellow, the head of the femur will be found dislocated backwards into the sciatic notch (below the tendon, Bigelow), where it may produce pain and numbness down the thigh by pressure on the sciatic nerve. It is possible to feel the head of the femur in the sciatic notch with the finger introduced into the rectum or vagina.

Obturator dislocation.

413. If the thigh is *lengthened*, there must be a dislocation downwards into the obturator foramen. The limb will be advanced and abducted, with the toes pointed and the body thrown forward. On examining the hip the trochanter will be found less prominent than normal, and the head of the bone may be felt on the inner side of the groin.

Pubic dislocation.

414. If the foot of an adult is *everted*, the case is probably one of impacted fracture of the neck of the femur; but if the head of the femur

is to be felt below Poupart's ligament, it is an example of dislocation on the pubes.

Test-line for dislocation.

415. Nélaton's test-line for a dislocation upwards or backwards is drawn from the anterior superior iliac spine to the tuber ischii. In the normal condition this line touches the top of the trochanter major, which is quite below it. In a dislocation upwards or backwards the top of the trochanter will be considerably above this line.

Congenital dislocation of hip.

416. Undue prominence of one or both buttocks, with very marked increase in the lumbar curve of the spine, first noticed when a child begins to walk, is probably due to *congenital dislocation* of the head of the femur on to the dorsum ilii on one or both sides. The patient shambles along with a characteristic rolling gait, and the heads of the bones may be felt through the atrophied muscles. These cases are apt to be mistaken for examples of spinal curvature; but it will be found that any attempt to straighten the spine by apparatus renders the patient unable to keep his equilibrium, from a shifting of the centre of gravity.

CHAPTER XXI.

THE THIGH.

Femoral abscess.

417. The femoral *lymphatic glands*, which lie in a vertical row to the inner side of the femoral vessels, may be acutely inflamed, in which case red lines may be traced up the thigh from some source of irritation below, and the glands themselves will be swollen and tender; or there may be fluctuation in or around them from the presence of matter, which will be quite superficial.

Psoas abscess.

418. A more deeply seated, elastic and fluctuating tumour, in which a distinct impulse is produced on coughing, may be found to the inner side of the femoral vessels near the apex of Scarpa's triangle. This is a *psoas abscess* dependent upon disease of the dorsal vertebræ, the matter having found its way down the sheath of the psoas muscle. A projection of the dorsal vertebræ should be looked for.

419. A deeply seated elastic tumour, in

which an impulse is produced on coughing, may be found to the outer side of the femoral vessels immediately below Poupart's ligament. This is either a fully descended *iliac abscess* (271), the matter being in the sheath of the iliacus muscle, or a psoas abscess which has not fully descended (277). Iliac abscess.

420. A tense tumour, with a distinct impulse on coughing, appearing beneath Poupart's ligament to the inner side of the femoral vessels, is probably a small *femoral hernia*. It may disappear so soon as the effort of coughing ceases, or may require a little gentle pressure with the finger before it slips up. A larger tumour with a clear percussion note, lying immediately below Poupart's ligament and returnable beneath it with a gurgle, is a reducible femoral hernia (276). Femoral hernia.

421. In thin, old persons the *femoral artery* may often be felt and seen so distinctly immediately below Poupart's ligament as to lead to the suspicion of femoral aneurism, and a *bruit* may be easily produced by the pressure of the edge of a stethoscope. Dilated femoral artery.

422. A pulsating tumour in the position of the femoral artery may be pronounced *aneurismal*, if there is a distinct expansion of the sac at each pulsation, with a thrill which is readily Femoral aneurism.

communicated to the finger, and a distinct aneurismal *bruit* or blowing sound heard at all times and in all positions of the limb. Pressure upon the artery above will cause a diminution in the tension of the tumour, and cessation of the impulse and *bruit*.

Tumour beneath artery.

423. A *rapidly growing tumour*, connected with the upper part of the femur, may so raise the femoral artery as to cause suspicion of aneurism; but here it will be noticed that the bulk of the tumour does not pulsate, and that the pulsation is confined to the normal line of the vessel.

Rigid artery.

424. A *rigid condition of the femoral artery* is often met with in old persons, the vessel feeling like a small gas-pipe. In such cases spontaneous gangrene of the foot and leg is very likely to occur.

Pulseless artery.

425. A *pulseless condition of the femoral artery* may be due to some injury inflicted upon the limb, by which the inner coats of the artery have been lacerated without complete rupture of the vessel. Or, when arising spontaneously, may be due to arteritis, or to the passage of a plug or embolon from above. In any case gangrene below the obstructed point may be anticipated.

Varicose saphena.

426. A tortuous and *dilated condition of the internal saphenous vein* in the thigh is not un-

common, and the vein may be found blocked or inflamed as the consequence of phlebitis set up lower down.

Tumours of the thigh.

427. A *tumour of the thigh*, if subcutaneous, is probably either fatty or sebaceous. A fatty tumour may be lobulated, some of its lobules dipping between the muscles, or may be so uniformly elastic as closely to resemble an abscess, an aspirator puncture being necessary to decide the question. A sebaceous tumour is close beneath the skin, and with care the obstructed duct may probably be discovered.

Deep tumours.

428. A deeper tumour may be connected with the muscles, and if small may be a *gumma*, in which case evidence of constitutional syphilis should be sought for. A larger, slowly growing tumour is probably fibrous, and connected with the fascia; or if more rapid may be a sarcomatous or encephaloid tumour of muscle or bone.

Cystic tumour of thigh.

429. An elastic fluctuating swelling of the thigh may be an abscess, or a cystic sarcoma of the femur. Aspiration will decide the nature of the fluid, the withdrawal of which will enable a correct opinion to be formed as to the amount of solid growth.

Cured aneurism.

430. The possible occurrence of an aneurism of the femoral artery at any part or of the profunda, which may have undergone spon-

taneous cure and be diminishing in size, must not be overlooked.

Bony tumour.

431. Deeply seated tumours of the thigh spring mostly from the femur or its periosteum, and the question of their malignancy or semi-malignancy must be determined mainly by reference to their rapidity of growth and implication of surrounding structures, the more rapid and softer the growth, the more malignant as a rule being its nature.

Acute periostitis.

432. A hot, swollen, and painful condition of the thigh occurring spontaneously, especially after or during the acute fevers, or after some slight blow in a child or young person, is probably due to *acute periostitis* of the femur. On deep pressure through the slightly œdematous soft parts, the bone, probably the lower half, will be found enlarged and painful; and in from twenty-four to forty-eight hours the obscure fluctuation of deeply-seated matter may be detected. The temperature will be raised three or four degrees, the patient's skin will be dry and flushed, the tongue coated and the eyes bright.

Abscess.

433. Deep fluctuation in the lower part of the thigh may be easily detected, if care be taken to apply the fingers in the direction of the muscular fibres, and not across them. In

more advanced cases, where the matter is under the fascia lata or skin, there can be no difficulty in its detection.

Necrosis.

434. A thickened thigh with sinuses discharging at various points, through which a probe can detect bare bone, is an example of *necrosis* of the femur. The amount of thickening of the limb will depend upon the time which has elapsed since the original acute inflammation, and the amount of repair by new bone which has occurred.

The buttock.

435. A deformity of the *buttock* is generally due to old hip-disease, by which the head of the femur is either dislocated, or so completely destroyed without dislocation that the great trochanter is drawn up out of its place, and is mistaken for the head of the bone. In these latter cases the application of Nélaton's test-line for dislocation is deceptive, the trochanter being well above it.

Abscess over trochanter.

436. A swelling over the *great trochanter*, following a blow upon the part, with fluctuation and, later, discharging sinuses pointing some distance down the thigh, is due either to inflammation and suppuration of the *bursa* between the trochanter and the broad tendon of the glutæus maximus, or to caries and necrosis of the trochanter itself. In children

especially there may be flexion and adduction of the limb with wasting of the gluteal muscles, so as closely to resemble hip-disease.

Back of thigh.

437. A *tumour of the back of the thigh* may be fatty, or connected with the ham-string muscles or the femur. An elastic, fluctuating tumour, with an impulse on coughing, is a

Psoas abscess.

psoas or sacro-iliac abscess which has taken the unusual course of passing through the great sacro-sciatic foramen to the back of the thigh, and may reach down to the popliteal space, or even lower. When the fluid part of the abscess has become absorbed and only a semi-solid mass is left, the diagnosis is rendered very difficult, unless attention be given to the presence of angular curvature of the spine.

Ganglion.

438. A small, tense, elastic tumour in connection with the insertions of the inner hamstrings or with the origins of the gastrocnemii, is a *ganglion* or cyst containing synovial fluid, and is an exaggeration of the bursa commonly found in these situations. Communication with the cavity of the joint is not uncommon.

Popliteal aneurism.

439. A tumour in any part of the popliteal space, having an expansile pulsation synchronous with that in the femoral artery and arrested by pressure upon that vessel, is presumably a

popliteal aneurism. A *bruit* will not be audible in all cases or at all times, and if the aneurism is small the pressure effects will be *nil;* but if the aneurism is large or increasing rapidly there will be great pain running down the leg, and the obstruction to the return of blood through the vein will cause congestion or œdema of the limb (*compare* 423 and 430).

Popliteal abscess.

440. A tense, uniform *swelling of the ham* with flexion of the knee, producing considerable constitutional disturbance and occurring in a patient below middle-age, is probably due to abscess beneath the popliteal fascia connected with the lymphatic glands. A similar condition coming on rapidly in an elderly man after some unwonted exertion of the limb, and accompanied by coldness and numbness of the leg and absence of pulsation in the tibial arteries, is due to rupture of the popliteal artery or of a small aneurism arising from it. If some hours have elapsed since the accident, symptoms of gangrene of the foot and leg will probably be already apparent.

Ruptured popliteal artery.

Fractured thigh.

441. *Deformity of the thigh*, following the application of violence, accompanied by loss of power and bruising, is due either to laceration of the muscles with extravasation of blood, or to fracture of the femur. The occurrence of

shortening must be due to fracture, provided the head of the bone is in its socket; and manipulation will detect the *crepitus* of a broken bone. A thin layer of clot, immediately beneath the skin, gives sometimes a species of crepitation to the finger, but more resembling that of air in the cellular tissue than true crepitus.

Bent femur.

In children a femur may be bent by violence, or may have become bent previously owing to rickets, in which case both thigh-bones will probably be deformed.

Rupture of quadriceps.

442. A deformity of the thigh may be produced by the tearing away of the quadriceps extensor from the patella in some violent effort, and the consequent gap left just above the knee-joint. The more common event is for the

Fractured patella.

patella itself to break across, in which case the upper fragment will be found drawn up from the lower one, there being a variable gap between the two, with considerable effusion into the knee-joint. In either case the patient is unable to stand.

Exostosis.

443. Considerable deformity of the *lower end* of the femur may be produced by an exostosis, a favourite situation for which is close above the internal condyle. Occasionally, owing to narrowness of the pedicle it becomes broken by

some slight violence, and the exostosis lies loose for a time beneath the soft tissues.

444. Great deformity of the *lower end of the thigh*, following an injury, may be due to fracture close above the condyles; to separation of the lower epiphysis in children and young persons; or to dislocation of the tibia. In all these cases the rapid supervention of swelling of the knee-joint renders the diagnosis difficult, unless the case is seen immediately after the accident. In the fracture and separation of the epiphysis, the condyles still hold their proper relation to the head of the tibia, which is wanting in the dislocation. In the fracture there is shortening, and crepitus is easily made out, but less so in the separation of the epiphysis. In the dislocation there is no shortening of the femur, which is extremely prominent in front or behind, according as the tibia is dislocated backwards or forwards, the popliteal vessels and nerves being liable to injury in both cases.

Injury of lower end of femur.

Fracture.

Dislocation.

CHAPTER XXII.

THE KNEE.

Pain in knee.

445. Pain in the knee may be only a symptom of hip-disease, and this is especially to be borne in mind in the case of children. Similar pain from pressure on the obturator nerve may be produced in the adult by an obturator hernia, and this symptom may assist in the diagnosis of that obscure affection.

Dislocation of patella.

446. A deformity of the knee, following directly on an injury or over-exertion of the joint, may be due to a *dislocation of the patella*, more frequently outwards than to the inner side. Occasionally the patella is twisted so that its edge is prominent beneath the skin, the knee being extended and fixed.

Displaced semi-lunar cartilage.

447. In a knee-joint semi-extended and fixed by some twist of the joint, it will be found that there is a slight prominence on the head of the tibia to the inner side of the ligamentum patellæ, which is painful on

pressure. This is a *luxated semi-lunar cartilage*, which can only be reduced by forcible flexion and extension of the joint.

Blood in knee.

448. A bruised knee may be distended with blood, as can be proved at once by the aspirator, and even some little time after the accident by the peculiar crepitation of the blood-clot on palpation; and hence the solid feeling of the effusion and the slowness of its absorption.

Fluid in bursa.

449. As the result of an injury or of irritation caused by kneeling, the *bursa* in front of the patella or the knee-joint itself may be distended with effusion. If the swelling is in front of the patella, which lies in close relation to the condyles, forming a prominence in front of the knee-joint in which fluid can be detected, or a creaking sound be elicited if the amount is small, the effusion is in the *bursa patellæ*. If the patella is raised from the condyles so that it floats upon the fluid, which distends the synovial pouch on each side of and above the bone, the effusion is within the joint. It must be borne in mind that, with the leg fully extended and the thigh relaxed, it is easy in non-muscular persons to push the patella from side to side without the presence of any fluid; but under such circumstances it will not

Fluid in joint.

"rap" upon the condyles when pressed vertically, as it will when floating on fluid.

Wound of knee.

450. A wound of the knee-joint may be diagnosed by the direction and extent of the incision, and by the rapid escape of glairy synovial fluid. A wound of the bursa patellæ will give exit to a small quantity of fluid somewhat resembling synovia, but the position of the wound immediately in front of the patella, and, if necessary, the introduction of a probe dipped in carbolic-oil into the limited cavity, will settle the diagnosis.

Inflammation about knee.

451. A hot, reddened condition of the skin over the knee may be due to the application of irritants to the skin, *e.g.* iodine; to acute inflammation of the bursa patellæ; or to acute synovitis of the knee-joint. (*a*) In the case

Local irritant.

of *local irritation*, the skin will be found thickened wherever the irritant has been applied, the pain will be of a stinging, burning character, and there will be little constitutional disturbance, the temperature of the body being normal. (*b*) In the case of *bursitis* the

Inflamed bursa.

swelling is confined to the front of the patella, the focus of inflammation being in the position of the bursa, and the redness fading off to the sides. Distinct localised fluctuation may be found if the sac of the bursa is entire, but

frequently it has given way, and the contained matter has become diffused. (*c*) In the case of *acute inflammation* of the knee-joint, there is great effusion into and distension of the joint, which is semi-flexed; with considerable constitutional disturbance, the temperature being raised three or four degrees, the skin dry and tongue coated, and the patient sleepless from pain in the joint. If the mischief has been going on for forty-eight hours, and the pain has become of a throbbing character, the probability is that suppuration in the joint has occurred, but this important question should be settled by the use of the aspirator before a free incision is made.

Synovitis.

Suppuration.

452. Acute inflammation of the knee-joint not resulting from injury, but occurring in the course of a surgical case or one of the acute fevers, is probably a result of *pyæmia*, and will be accompanied by sudden variations of temperature followed by rigors and sweatings, or by a persistently high temperature with rapid pulse and great emaciation.

Pyæmic inflammation of the knee.

453. The presence of *chronic effusion* into the knee will give the same local symptoms as an acute effusion (449), except that there will be no redness or heat of skin. A chronically over-distended joint may be considered to be

Chronic effusion into knee.

the subject of *hydrarthrosis*, or dropsy of the joint.

Loose body.

454. The occurrence of effusion into the knee-joint, following sudden violent pain of a sickening character during exercise, should lead to the suspicion of the existence of a loose *cartilage*, which may not readily be discovered for some time. These loose bodies are usually of small size, and, even when found, readily elude the finger and disappear into the interior of the joint.

Strumous thickening.

455. A uniform *chronic swelling* of the knee, by which the bony outlines are masked and the movements of the joint much restricted, giving to the finger an elastic feeling often closely resembling the fluctuation of fluid, and allowing the patella to be pressed down and rise again as if upon an elastic cushion, is due to a chronic thickening of the synovial tissues, generally connected with struma in children, and constitutional syphilis in adults.

Sinuses.

456. *Sinuses* discharging pus in connection with the knee-joint, are often evidences of disorganisation of the articulation, and probably of articular caries, in which case grating of the bones may be felt on pressing the bones together, or bare bone may be detected with the probe. There are, however, frequently,

long and tortuous sinuses about strumous knees which do not communicate with bone at all, but are due to peri-articular mischief.

457. A *tumour* involving the lower end of the femur may invade the knee joint, and at first sight closely resemble disease of the articulation. The tumour will be found, however, to involve only the upper part of the joint, the tibia and the lower part of the articulation being quite healthy, but the condyles of the femur greatly increased in circumference. In the case of a myeloid tumour the articular cartilage is pushed forward by the tumour, but in medullary disease the joint cavity is invaded by the growth, which is more rapid in its development and more elastic to the touch. Tumour of lower end of femur.

458. A *dislocation* of the tibia from the femur can only arise from extreme violence, which will probably inflict irreparable injury upon the soft parts in the neighbourhood. The question of amputation or excision will be decided mainly by the condition of the popliteal vessels, as shown by the pulsation or otherwise of the tibial vessels. Dislocation.

459. A deformity of one or both knees, in which the two joints are approximated or overlap one another when the patient walks, Knock-knee.

giving him a peculiar shambling gait, constitutes *genu valgum*, or *knock-knee*, which is constantly combined with, if not caused by flat-foot. An opposite condition of things, in which the knees bow outwards, constitutes *genu extrorsum* or *varum*. This last is often combined with a rickety condition of the bones of the leg, leading to "bow-legs."

Bow-legs.

CHAPTER XXIII.

THE LEG.

460. *Ulcers* are commonly found about the legs, the nearer the knee the more probably they are due to tertiary syphilis, the nearer the ankle the more probably they are simple or varicose. Ulcers.

461. Multiple ulcers, with sharp-cut edges of irregular shape, but with a more or less circular tendency; healed in one part, but breaking down in another, and occurring before the age of forty, are undoubtedly *tertiary* in origin. Tertiary.

462. Small ulcers with a grey surface about the inner ankle, very painful, particularly at night, are commonly found in patients with varicose veins. These *irritable* ulcers will be found to have produced no rise of temperature in the surrounding skin if the finger is laid upon it. Irritable.

463. An ulcer with thick edges, and a glazed

Callous. surface, has probably existed for months or years, is a typical *callous* ulcer, and is often connected with varicosities.

Inflamed. 464. Any ulcer may take on *inflammation*, in which case the surface and surrounding skin become injected and hot, the activity of the ulcerative process increased, and the pain in the part aggravated.

Phagedæna. 465. A rapidly spreading ulcer, in which, though the size increases daily, no distinct sloughs can be seen, may be considered an example of *phagedæna* and is due to syphilis.

Sloughing. 466. An inflamed ulcer in which the edges of surrounding skin are seen to die in patches which come away as sloughs, the discharge from the ulcer being profuse and offensive, is an example of *sloughing* ulcer.

Sloughing phagedæna. 467. An ulcer suddenly putting on a peculiar white or greyish appearance, due to the rapid formation of superficial sloughs, which have a sodden macerated appearance, is attacked by "hospital gangrene," or "*sloughing phagedæna.*"

Hospital gangrene. In the later stages an ulcer attacked by this disease rapidly spreads, by ulceration and sloughing combined, until the bones are exposed and the limb destroyed. The early recognition of "hospital gangrene" in a ward is most important, as immediate isolation

is necessary for the preservation of the patients.

Healthy ulcer.

468. An ulcer with a flat bluish edge, and a uniform surface of red, short granulations, which bleed readily; without heat, and without pain, and secreting healthy pus, is a typical healthy or healing ulcer, and is the standard to which all other ulcers must be brought by treatment.

Varicose veins.

469. Enlarged, tortuous, and varicose veins are common in the leg, and interfere much with its nutrition. Hence a varicose limb is apt to be congested and cold, or may present ulcers. Pregnancy or any abdominal tumour is apt to render the internal saphenous vein varicose, and under these circumstances there is often a distinct impulse in the vein upon the patient coughing, and should the vein give way at any time, fatal hæmorrhage may occur from the yielding of the valves.

Gummata.

470. Indurated spots scattered over the legs, some of which are softening and evidently contain matter, while others are open ragged ulcers, with a yellow slough and thin discharge, are *gummata* in various stages, and are due to constitutional syphilis.

Ostitis of tibia.

471. Slight swelling over the head of the tibia, with deep seated pain, aggravated at

night, if in an adult, is symptomatic of ostitis and possibly abscess in the head of the tibia. In a child or youth, the same symptoms are generally premonitory of caries, which as it developes leads to reddening of the skin, and eventually to the discharge of a small quantity of pus. A sinus is apt to form with unhealthy granulations protruding from its orifice, and through this a probe may readily detect gritty bone.

Abscess.

Caries.

Perforation of joint.

472. Occasionally, violent and destructive inflammation of the knee-joint may suddenly supervene upon caries of the head of the tibia, showing that perforation of the articular cartilage has occurred.

Acute periostitis of tibia.

473. A hot, reddened and œdematous condition of the skin over the tibia, occurring in a young person a few hours after the receipt of a blow or exposure to damp and cold, and accompanied by a marked rise in the temperature of the body, a dry tongue and rapid pulse, is symptomatic of *acute periostitis* of the tibia. A few hours later on there will be fluctuation, and unless the matter is evacuated by a timely incision, acute necrosis of the shaft of the tibia, in part or whole, will supervene.

Erythema nodosum.

474. A condition liable to be confounded with the above, but quite distinct, is met with

in young persons, generally females. The skin over the tibia is reddened in patches with healthy skin intervening, each of the patches having the knotty feel which is characteristic of the disease—*erythema nodosum.* On careful examination, the skin alone will be found to be affected, and usually on *both* legs. In the early stage the redness is very faint and, when dying away, the marks somewhat resemble bruises. Throughout there is little if any constitutional disturbance, but the patient is usually feeble and out of health or over-worked.

475. A *localised swelling* over the subcu- Nodes.
taneous surface of the tibia is usually a local periostitis or node. The swelling, at first œdematous, soon gives evidence of fluctuation, owing to the effusion of fluid beneath the periosteum; but this may become entirely absorbed under treatment. The hard node, often very painful, especially at night and in damp weather, is a later stage of the same affection, which is invariably connected with tertiary syphilis.

476. A *general enlargement* of the tibia may Enlarged tibia.
be due to chronic periostitis or ostitis, or follow necrosis, in which last case there will probably be found sinuses, through which a

probe will reach a sequestrum, after passing through a varying quantity of new bone thrown out around it.

Rickets. 477. A deformity of the tibia may be due to *rickets* in early life, in which case the bone will be bent, and probably flattened, and both limbs will be affected; or to old fracture, in which case the deformity will probably affect one limb only, and a sharp ridge or edge of bone will be found prominent beneath the skin.

Fractures. 478. An injured leg, in which there is recent deformity, inability to stand and bear weight upon it, and pain, has probably sustained a *fracture* of one or both bones. A fractured tibia, being subcutaneous, is readily recognised by the displacement of the fragments and crepitus; but a fractured fibula, unless broken in its lower third, is easily overlooked without care.

Tumour. 479. A *tumour of the leg* may originate in bone or muscle, and more frequently in bone. Tumours of the head of the tibia may be myeloid or malignant; if involving the shafts

Of bone. of the tibia or fibula, may be fibrous or enchondromatous when of slow growth, sarcomatous or malignant if rapid in development and leading to spontaneous fracture.

Tumours of muscle are not unfrequently gummatous or syphilitic, if of long standing and slow growth, but may be sarcomatous or malignant if of rapid growth. Of muscle.

480. A painful condition of the calf of the leg, coming on suddenly in a middle-aged or elderly patient who is making some active exertion at the moment, is probably due to rupture of some of the muscular fibres of the calf. The same accident may affect the muscles of the front of the leg. Rupture of calf-muscles.

481. Total inability to stand, following a sudden sharp pain near the heel during violent exertion, is due to *rupture of the tendo Achillis;* and, upon examination, the two ends of the ruptured tendon will be found separated by a space of an inch or more. Ruptured tendo Achillis.

482. A deep-seated pain in the leg, following a bruise or coming on spontaneously in gouty subjects, may be due to *phlebitis* of the deep veins of the leg, in which case there will be congestion and œdema of the leg and foot, and a hard knotted condition of the veins behind the inner malleolus. This condition, if overlooked, may lead to serious visceral mischief, by the moving onward of clots into the general circulation. Phlebitis.

483. The occasional formation of an *aneuris-*

Aneurismal varix.

mal varix, by a communication taking place between the tibial arteries and veins, may be diagnosed by the peculiar "rasping" *bruit* to be heard over the part, where a slight swelling may be detected.

CHAPTER XXIV.

THE FOOT.

484. The deformity known as *Club-foot* may be met with as a congenital malformation, or as the result of paralysis. In the congenital cases the deformity is more marked, the parts are rigid, and the muscular development of the rest of the limb is good. In the paralytic cases the deformity is less marked, and can frequently be temporarily reduced by the hand of the surgeon; the parts are limp and relaxed, and the muscles of the whole limb are wasted. Club-foot.

485. When the heel is drawn up by contraction of the muscles of the calf, so that the patient walks on the ball of the great toe, or sometimes, in extreme cases, on the back of the foot, the case is one of congenital *talipes equinus*. When the heel occupies its proper relation to the leg, but the front of the foot drops, so that the toes catch against the ground when the patient attempts to walk, Talipes equinus.

the case is one of paralysis of the extensors, or acquired *talipes equinus.*

Talipes varus.

486. When the foot is folded up, so that the patient brings the outside to the ground, and frequently has induced large flat corns on that part by the pressure of walking, the case is one of *talipes varus.* When the natural arch of the foot is lost, so that the patient brings the inner side of the foot flat on the ground, he is said to suffer from "flat foot" (*talipes planus*). An exaggeration of this condition, in which the bones of the inner side of the foot become unduly prominent and the toes are twisted outwards, constitutes *talipes valgus.*

Flat foot.

Talipes valgus.

Talipes calcaneus.

487. A condition found in infants, in which the foot can be brought up against the front of the leg, is perfectly compatible with healthy locomotion when the child grows up. When, however, there is firm contraction of the extensors of the foot, so that it is constantly held in this position, with the heel unduly prominent, it constitutes *talipes calcaneus.* This condition is frequently met with in infants the subjects of *spina bifida.*

Adventitious bursæ.

488. A distinct bursal cavity, which may be distended with fluid, or a quantity of loose bursal tissue without a cavity, may be developed by continuous pressure over a bony

prominence in the case of any form of club-foot. The same thing is seen over the external malleolus in the case of tailors who sit cross-legged, over the great trochanters of soldiers who lie on a "guard-bed," and over the tuberosities of the ischium in weavers.

Sprained ankle.

489. A painful, swollen condition of the ankle and foot, the skin of which is more or less discoloured by extravasated blood, may be simply a *sprained ankle*, in which more or less laceration of the ligaments of the joint and fibres of the extensor brevis digitorum has occurred, or may be an example of dislocated foot or fracture of the malleoli. In cases rendered doubtful by swelling, a certain diagnosis cannot be made until the effusion has partially subsided.

Dislocation of the foot.

490. A dislocation of the foot is sufficiently obvious from the deformity produced, but is less obvious if fracture of one or both malleoli is combined with the dislocation. In a case of compound dislocation the amount of injury to the soft parts, especially the main vessels, and the age of the patient, will principally determine the question of amputation.

Pott's fracture.

491. The foot, when forcibly twisted outwards, may or may not be completely dislocated, but is apt to cause fracture of the lower third

of the fibula (Pott's fracture), and either laceration of the internal lateral ligament or fracture of the internal malleolus. In this last case the skin is tightly stretched over the broken end of the shaft of the tibia, which is apt to protrude through it.

Extravasated blood.

492. An irregular prominence on the outer side of the foot, following "sprained ankle," may be due solely to *extravasation of blood* from rupture of muscle, in which case the swelling will pit on pressure, and the limb will be of the same length as the opposite one. If the swelling is hard and bony, and the limb shorter than natural, the swelling is due to

Dislocated astragalus.

dislocation of the astragalus, which bone may or may not be broken across in addition.

Ganglion.

493. A circumscribed elastic swelling, found in close relation with one of the tendons surrounding the ankle-joint, is probably a *ganglion*, from which the characteristic jelly-like contents can be readily evacuated with a grooved needle.

Puffy ankles.

494. A puffy and œdematous condition of the ankles, towards night, may be due simply to debility and long standing, but should always excite a suspicion of albuminuria, and should lead to an investigation of the urine before any surgical proceeding is undertaken.

Chronic disease of ankle.

495. A permanently enlarged condition of the ankle, with great restriction of its movements, is due to some affection of the joint, probably to a thickened condition of the synovial membrane of strumous origin. The elastic swelling is to be looked for both in front of and behind the joint, and the elasticity may be so great as to lead to a suspicion of the presence of fluid, which can be cleared up with the aspirator.

Caries of tarsus.

496. *Sinuses* about the foot lead more frequently to carious tarsal bones than to a diseased ankle-joint, but the tarsal joints themselves frequently become involved with the bones.

Corns.

497. Callosities on the sole of the foot, on the little toe, or other points subject to pressure, are *corns* due to hypertrophy of the cuticle, and are only painful when they irritate the papillæ beneath them, which may become inflamed and suppurate. Between the toes flat warty *soft corns* are apt to form, and these, like the warts occurring on the sole of the foot, are papillary growths from the true skin, and bleed freely if cut.

Perforating ulcer.

498. A deep circular ulcer of the sole of the foot, commonly beginning in a suppurating corn or in the positions in which corns are most frequently found, and accompanied by more or

less loss of sensation in the foot, is an example of the *perforating ulcer*, which appears to be generally connected with some affection of the nerves supplying the limb. Necrosed bone is frequently to be felt through such an ulcer, and pieces may come away spontaneously.

Gout and bunion.

499. Inflammation of the ball of the great toe may be due to *gout* or to a *bunion*. The suddenness of the attack, the general disturbance, and the spreading redness of gout will distinguish it from the purely local inflammation of the bursa, formed over a distorted metatarso-phalangeal joint which had previously been swollen and tender.

Chronic bunion.

A chronic enlargement of the head of the metatarsal bone of the great toe may be due simply to injudicious pressure of the boot, or may be evidence of a general tendency to rheumatoid arthritis.

Ingrowing toe-nail.

500. A painful condition of the nail, with unhealthy granulations springing up by the side and exuding a thin discharge, is due to *ingrowing toe-nail*, the ragged edge of which constantly irritates the matrix, and must be removed for a cure to be effected.

Exostosis of phalanx.

501. A solid growth of the ungual phalanx of the great toe, which displaces the nail and causes a painful condition of the matrix resem-

bling ingrowing toe-nail, is due to an *exostosis*, which requires removal with bone-forceps.

Chilblain.

502. A bluish, glazed, and cold condition of the toes is not unfrequent in young persons of feeble circulation, constituting *chilblains*, which itch and tingle severely, and are apt to blister, in which case unhealthy sores result.

Frost-bite.

503. A cold, pale, and insensible condition of the toes and foot follows upon some interference with the circulation, and may be due to *frost-bite*, to cutting off the supply of arterial blood by ligature of the main vessel, or to plugging of the main artery.

Senile gangrene.

504. A dark, shrivelled condition of the toes is a common symptom of commencing *senile gangrene*, or may be a later stage of the early bloodless condition described above.

Moist gangrene.

505. A congested, purple or black condition of the toes, between which blebs of offensive fluid are apt to form, is a condition of *active gangrene*, due to inflammation or venous obstruction. In the part immediately above the line of actual gangrene there will be a bright red blush, fading off gradually into healthy skin.

Blood beneath toe-nail.

506. A dark-coloured spot beneath the nail of the great toe, if occurring after some slight blow, is only extravasated blood, and unim-

portant unless painful from the tension produced. A persistent black spot about the toe should be viewed with suspicion, as it may be the commencement of *melanosis.*

Melanosis.

Ulcerated toes.

507. *Ulceration between the toes*, causing a peculiarly offensive discharge, is always syphilitic; and so, also, a *scaly eruption* on the sole of the foot, which is frequently seen in conjunction with ulceration of the toes or alone.

Lepra plantaris.

Scabies.

The occasional occurrence of *scabies* of the feet, with its characteristic bloody points due to scratching, and possibly pustules between the toes, must not be overlooked.

CHAPTER XXV.

THE BACK.

Spina bifida.

508. A congenital tumour in the middle line of the back is in all probability a *spina bifida*. In the infant the tense elastic semi-translucent swelling, obviously connected with the spinal column, reducible in size by pressure and increasing upon the child crying, will at once distinguish the malformation; but in the adult, the remains only of the cyst, shut off from the spinal canal and more or less dried up, will be found, and may be confounded with simple tumours.

Talipes.

The probable occurrence of club-foot, and particularly of talipes calcaneus, in the subjects of spina bifida of the lumbar region, is not to be overlooked.

Coccygeal tumour.

509. A solid congenital tumour in the region of the coccyx is of rare occurrence, and is not to be confounded with spina bifida. The tumour is often of large size, and more or less

cystic in character, and is closely attached to the coccyx, being said to originate in the coccygeal gland of Luschka.

Tumours.

510. An elastic, slowly growing tumour of the back may be sebaceous, fatty, or an abscess.

Sebaceous.

A *sebaceous* tumour is clearly connected with the skin, which does not glide over it as in the case of a fatty tumour, and frequently presents a black spot, which is the obstructed orifice of the sebaceous duct.

Fatty.

A *fatty* tumour may be lobulated, and thus distinguishable from an

Abscess.

abscess, but often it is not so, and nothing but a puncture with an aspirator will decide the question. A feature common to *both* is the tendency to shift slowly lower down the trunk by gravitation.

Anthrax.

511. A well-developed localised inflammation of the skin and subcutaneous tissue, varying in size from a crown-piece to a cheese-plate, red and œdematous, and probably having small apertures through which pus is discharged, constitutes a *carbuncle*, the favourite position of which is the nape of the neck or between the shoulders.

Caries of spine.

512. The deformity caused by the projection of the vertebræ in *angular curvature*, due to caries of the spine, can hardly be overlooked in an advanced case, but may be readily missed

when slight. A patient suffering from pain in the back, irritation of the spinal cord, or abscess supposed to be connected with the vertebræ, should be tested by stooping till the fingers touch the toes, so that the slightest irregularity of the spinal processes or unnatural fixation of the vertebræ may be observed. He should also rise on his toes and come sharply on to his heels, to test for pain in the spinal column. Mere pressure upon the spinous processes with the fingers is practically useless as a test, since hysterical hyperæsthesia of the skin may cause the patient to cry out; but a hot sponge may detect tenderness before any actual projection has occurred.

Abscess.

The common occurrence of cervical, dorsal or lumbar abscess, or of psoas and iliac abscesses, in connection with angular curvature must not be overlooked.

Lateral curvature.

513. "Growing out of the shoulder," generally the right, is one of the earliest symptoms of *lateral curvature* of the spine. Careful inspection of the back will show whether the projection of the scapula is due simply to feebleness of muscles, or to displacement backwards of the angles of the ribs consequent upon the rotation of the vertebræ in lateral curvature. A more or less complete double

curve may be detected in all cases of long-standing lateral curvature, the dorsal and lumbar curves being on opposite sides.

In investigating a case of lateral curvature, regard should be had (1) to the condition of the thorax and its contents; (2) to the length of the lower limbs, which may not be equal, and thus cause obliquity of the pelvis; and (3) to any employment or habits which may induce deformity.

Sacro-iliac disease.

514. An elastic circumscribed swelling over the back of the pelvis, if not a fatty tumour, is probably an abscess, connected either with disease of the pelvic bones or of the sacro-iliac joint. The condition of the joint may be tested by pressing the innominate bones together and then drawing them asunder, and by making the patient try to stand on one leg, which will induce pain in the affected joint. There is sometimes pain along the sciatic nerve, even in early and mild cases.

Injury to spine.

515. An irregularity of the spine following upon an injury may be due (1) to fracture of the spinous processes, which may be felt to be movable; (2) to crushing of the bodies of one or more vertebræ, so that the spinous processes project as in angular curvature; or (3) to dislocation of a vertebra.

Spinal cord.

The condition of the spinal cord is of the greatest moment, and this should be carefully investigated, although time alone will show whether any symptoms present are due to extravasated blood, which may become absorbed, or to a crush of the cord itself by the vertebræ, or to simple concussion.

Lumbar lesion.

516. A patient with the legs paralysed, both as regards motion and sensation, in whom no reflex contraction can be excited by tickling the soles of the feet; but who is able to pass his water and retain his motions, has sustained some injury of the lumbar vertebræ affecting the *cauda equina*.

Dorsal lesion.

A patient who is paralysed in the lower limbs, but in whom reflex action can be excited after the first shock has passed off; whose abdominal muscles are paralysed, and who has retention of urine and involuntary escape of fæces, has sustained some injury of the *lower dorsal* region.

Upper dorsal.

A patient who, in addition to the foregoing, has complete paralysis of the intercostal muscles, so that the thorax is immovable and the abdominal muscles flap to and fro with each action of the diaphragm, has sustained some injury of the *upper dorsal* region.

A patient who, in addition to the foregoing,

Lower cervical.

has paralysis of the arms, has sustained an injury of the *lower cervical* region.

Upper cervical.

In an immediately fatal case of injury of the spine, injury of the cord above the origin of the phrenic nerve (third cervical) may be looked for, or crush of the medulla oblongata by the odontoid process.

Fracture or dislocation of the coccyx.

517. A painful condition of the lower part of the back, following a kick or a fall in the sitting posture, may be due solely to bruising of the sacrum; but if pain is felt in the rectum, particularly during defæcation, the finger should be introduced into the anus to detect a fracture or dislocation of the coccyx.

CHAPTER XXVI.

AFTER AMPUTATION.

Tension.

518. The amount of action in a stump will depend very much upon the method of dressing. A continuous elevation of temperature, with pain in the stump, coming on twenty-four hours after an amputation, depends in most cases upon tension of the flaps from the presence of blood or serum for which no proper exit has been provided. The occurrence of a well-marked rigor, under such conditions, would probably be coincident with the commencement of suppuration.

Rigor.

519. The occurrence of a rigor, with sudden rise of temperature, from forty-eight hours onwards after an amputation, is symptomatic either of the outbreak of erysipelas, or of the commencement of pyæmia.

Erysipelas.

The discovery of a red blush, which disappears on pressure, around the wound and for some distance above it, will confirm the

Pyæmia. diagnosis of erysipelas; the repetition of the rigors, with pain in one or more of the large joints, and a tendency to jaundice will confirm that of pyæmia (532).

Osteo-myelitis. 520. A swollen, tense condition of a stump, in which there is no "pocketing" of matter, accompanied by great rise of temperature and a rapid feeble pulse, is apt to be followed by profuse discharge of offensive pus from the medullary canal and around the bone, which will be bare, the case being one of *osteo-myelitis* or inflammation of the medullary membrane. Symptoms of pyæmia may at any moment arise in such a case.

Necrosis. 521. The failure of a stump or compound fracture to heal, depends probably upon *necrosis* of the bone. A probe introduced into the unhealed sinus will touch bare bone, which may be simply a ring, the vitality of which has been destroyed by the saw, or a large sequestrum extending some inches up the limb. After six weeks or more, the necrosis will generally be thrown off, and may be removed.

Phlebitis. 522. A hard, swollen, and tender condition of the main veins of a stump, imply that they have been the subjects of *phlebitis*. Secondary abscesses may be looked for in the course of

the veins, and the occurrence of pyæmia is not improbable.

Tetanus.

523. A feeling of *malaise* coming on at any period after an operation or injury, and accompanied by stiffness about the jaws and throat, may be the early symptoms of *trismus* or lock-jaw, and will soon be followed by the characteristic grin, or *risus sardonicus*, due to contraction of the facial muscles. In a later stage the general spasms of tetanus may be looked for, leading to well-marked *opisthotonos*, and almost invariably, when acute, ending fatally. In tetanus the spasms never completely remit, and the mental condition is unaffected, whereas in hydrophobia there are very distinct remissions, and the patient becomes delirious.

Healed stump.

524. A healed stump may be (1) conical, so that the bone is the most prominent point; or (2) have the cicatrix adherent to the end of the bone; or (3) be liable to jerking from spasm of the muscles; or (4) be painful from the entanglement of one of the nerves in the cicatrix, or from pressure upon the neuromatous end of a divided nerve.

CHAPTER XXVII.

CONSTITUTIONAL CONDITIONS.

General conditions.

525. The general condition and health of a surgical patient is of the greatest moment, and may be most conveniently considered apart from local disease or injury.

Good health.

526. A patient in *good health* may be expected to look his age but not much more, for although a young man may lose his hair early he ought not to be grey, or to have "crows-feet" at the corners of his eyes. A patient who looks younger than his age is apt to be fatter than is compatible with perfect health, and may have a weak heart. Women after forty are proverbially fatter than before, but this applies to married women rather than the single, who often enjoy perfect health although thin and angular.

Complexion.

527. The *complexion* will vary according to breed, and a sallow skin is compatible with perfect health, provided the eye is clear and

the tongue clean. The marble-white skin of anæmia, the transparent skin of phthisis, and the tallowy-white skin of cancer are especially undesirable in patients about to be submitted to a surgical proceeding.

Functions.

528. The *functions* of the body are regularly performed in health, without any special thought on the part of the patient. The bowels act regularly once in the twenty-four hours, the motions being of healthy consistence, size, and colour. The urine is passed five or six times daily, does not disturb the patient at night, or, at least, not till early morning; is clear when passed and on cooling not offensive, moderately acid, and of specific gravity 1015–25. The digestion is good, there being no pain after food nor eructations, and no great flatulence. The heart and lungs perform their functions without the knowledge of the patient, who is able to make any ordinary exertion without distress. The temperature is normal, 98·4°, and does not vary at different times of the day.

Female.

529. In healthy *women* the menstrual function is regular as to time and quantity, which, though varying in different individuals, should never be excessive, and is accompanied by slight *malaise* rather than pain.

In pregnancy "morning sickness," if not excessive, is quite compatible with good digestion, and the general health should not suffer, although locomotion may be difficult in the later months.

Inflammatory fever.

530. A patient who, a few hours after an operation or injury, has a hot skin, quick pulse, and rise in temperature of three or four degrees, is suffering from inflammatory or traumatic fever in its early stage, which may be due solely to tension of the wound from pent-up blood or serous effusion, or to irritation from a foreign body, *e.g.* the presence of a catheter in the urethra. If unrelieved, a *rigor* or well-marked shivering fit will probably occur within twenty-four hours, and the occurrence of suppuration may be anticipated. The constitutional symptoms become more marked, the pulse quickened to 120 and much fuller than natural, the temperature standing at 102° or 103°, the tongue being coated and the mouth dry. The symptoms are those of well developed *pyrexia*.

Pyrexia.

Rigors.

531. The occurrence of a *rigor* a few hours after the passage of a catheter may, or may not be a serious symptom. A man with perfectly healthy kidneys may have a rigor after the use of an instrument, followed by a profuse

sweating and no other symptom, or at most only a little blood in the urine first passed. But in a patient with kidneys and bladder previously damaged by long-standing stricture or stone in the bladder, the occurrence of a rigor may mark the onset of an attack of *acute interstitial suppurative nephritis.* The temperature will fall during the sweating stage, but never to the normal standard, and will rise again rapidly upon the occurrence of successive rigors. The patient is apt to pass into a semi-conscious comatose condition, ending in death from uræmia.

532. Rigors recurring at intervals of twenty-four hours or less, with a sudden rise of temperature to 105° to 106°, followed by very profuse and exhaustive sweating, generally mark the onset of *pyæmia.* In such a case the pulse is rapid and feeble, and the patient emaciates rapidly, and complains of general tenderness of the surface, his skin having a yellowish tint, and both it and his breath giving a characteristic sweet odour. The occurrence of secondary abscesses in the large joints and internal organs may be expected, and the patient dies exhausted or occasionally makes a tedious recovery. Pæymia.

533. A patient suffering from exhaustive Hectic.

discharges is apt to emaciate rapidly, and to have nocturnal exacerbations of temperature with flushed cheeks and bright eyes, followed by profuse sweating. The pulse is feeble, the urine high-coloured and scanty, and diarrhœa is apt to carry off the patient, who is said to be in a condition of *hectic*.

Delirium tremens.

534. A patient of intemperate habits, having sustained an injury, is apt to be sleepless and to see "spectres" about the bed. The tongue is moist and thickly coated, and is tremulous when protruded, and there is tremor of the hands. The patient is feeble and exhausted, with quick pulse and clammy skin, but perfectly sensible at first, though, as the disease progresses, he may become temporarily maniacal and require restraint. He is suffering from *delirium tremens*.

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