Branchial cysts may contain serous, mucous, or sero-sanguineous fluid, or hair and sebaceous material, according as their lining wall is derived from ectoderm or entoderm. Diagnosis depends on the position and consistency of the growth and on the results of aspiration.

Branchial fistulæ (congenital) may open externally in the neck, and occasionally are complete from neck to pharynx. They may become occluded and suppuration result.

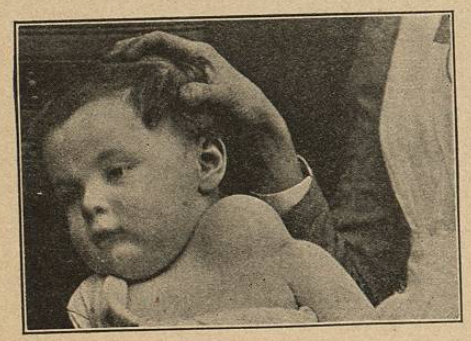

FIG. 21.—Branchial Cyst.

VII. Actinomycosis.

Actinomycosis, though it usually arises in the lower jaw bone, may appear externally in the neck. A dense infiltration with bluish-colored, semifluctuating areas in it, but without any distinct lumps or sharp outlines, is strongly suggestive of actinomycosis, and should always lead to a microscopic examination of excised portions or of the discharge.

Fistulæ may form, but are less common than in tuberculosis.

VIII. A Cervical Rib,

springing from the seventh cervical vertebra and ending free or attached to the first thoracic rib, appears in the neck as an *angular fulness which pulsates*, owing to the presence of the subclavian artery on top of it. It rarely produces any symptoms and is generally encountered when percussing the apex of the lung. The bone can be felt behind the artery by careful palpation and demonstrated by radiography.

CHAPTER III.

THE ARMS AND HANDS; THE BACK.

THE ARMS.

Most of the lesions of these parts are *joint lesions* and are dealt with in the section on *joints*. Others fall under the province of the neurologist or the dermatologist, but must be briefly mentioned here.

I. Paralysis of One Arm.

Paralysis of most or all the muscles *of one arm* occurs oftenest in: (*a*) *Hemiplegia*—with paralysis of the leg and often of the face on the same side. (*b*) *Pressure neuritis*—traumatic or from new growths. (*c*) *Obstetrical paralysis*—neuritis from injury during parturition. (*d*) *Lead or alcoholic neuritis*—extensors of wrist especially, and often in both arms. (*e*) *Anterior poliomyelitis*—infantile paralysis. (*f*) *Hysteria and traumatic neuroses.*[1]

Pressure Neuritis.—The history of the case is of the greatest importance. During surgical anæsthesia the brachial plexus or the musculo-spiral nerve may be compressed, and paralysis is noted as soon as the patient comes out of anæsthesia. In a similar way in deep sleep, especially *drunken* sleep with the arm hanging over a bench or doubled under the body, the nerves may be injured. Pressure from a *crutch* or from the head of the humerus in *fractures* or *dislocations*, or even a *violent fall on the shoulder* without injury of bones, may result in a paralyzed arm.

[1] Less common are paralyses due to lesions of the arm centre in the cerebral cortex (tumor, softening, cyst, abscess, hemorrhage, thromboses, or embolism).

Diagnosis rests on the history, and on the fact that not only the muscles of the shoulder group and the extensors of the wrist are affected, but also the *supinator longus*, while in the toxic paralyses, especially lead, the supinator longus is spared. To test the function of this muscle, grasp the patient's wrist with the thumb side uppermost, and resist while he attempts to flex the arm at the elbow. If the supinator is intact it will spring into relief on the thumb side of the forearm.

Obstetrical Neuritis.—In instrumental deliveries or when forcible traction on the child's arm has been necessary, with or without fractures, a paralysis of the arm often results, and, what is important, is often not noticed till some years later, and then thought to have just arisen; thus it may be mistaken for anterior poliomyelitis or other lesions.

Toxic Neuritis.—Lead or alcohol produces usually a weakness of *both* forearms, especially the extensors of the wrist ("wrist-drop"), but one side may be predominantly affected and other muscles are involved in most severe cases. The history, the other signs of lead poisoning, and the soundness of the supinator longus distinguish it from other paralyses.

All these forms of neuritis are apt to be accompanied by pain, anæsthesia, or paræsthesia, which helps to distinguish them from the cerebral and spinal paralyses next described.

Acute Anterior Poliomyelitis.—Paralysis attacks a child suddenly and without apparent cause, perhaps after "a feverish turn." Either the upper arm group (deltoid, biceps, brachialis anticus, and supinator longus) or the lower arm group (flexors and extensors of wrist and fingers) may be affected. The arm is flabby and painless, the muscles waste rapidly, and the electrical reactions show degeneration, often within a week.

Hysterical and Traumatic Neuroses.—The history and mode of onset, the frequent association of sensory symptoms which do not fit the distribution of any peripheral nerve, spinal segment, or cortical area, the normal reflexes and electrical reactions distinguish most cases of this type, but diagnosis is sometimes impossible.

Paralysis of both arms is much less common than paralysis of one arm, and occurs chiefly in poisoning by lead and in multiple neuritis. Rarely it is seen in the late stages of chronic diseases of the spinal cord.

II. Wasting of One Arm.

(*a*) *Rapid atrophy* occurs in all the types of neuritis mentioned above, as well as in poliomyelitis and progressive muscular atrophy. In the latter it occurs without complete paralysis, though the wasted muscles are, of course, weak. Progressive muscular atrophy usually begins in the muscles at the base of the thumb and between it and the index finger. Less often the disease begins in the deltoid. In either case the rest of the arm muscles are later involved.

In all the atrophies just mentioned a lack of the trophic or nourishing functions which should flow down the nerve is assumed to explain the wasting ("*trophic atrophy*"). From this we distinguish the atrophy due simply to disuse of the muscles without nerve lesions.

(*b*) *Slow atrophy of disuse* occurs in the arm in *hemiplegia*, infantile or adult, and in other cerebral lesions involving the arm centre or the fibres leading down from it.

(*c*) The atrophy often seen in *hysterical* cases is probably due to disuse and is similar to that occurring in an arm that has been splinted after fracture or dislocation.

III. Contractures of the Arm.

After cerebral lesions involving the arm centre, and in almost any spinal or peripheral nerve lesion which involves one set of muscles and spares another, the sound muscles contract (or overact) and permanent deformities result. In hysteria similar contractures occur. Contractures have in themselves little or no diagnostic value, but indicate a *late and stubborn stage* of whatever lesion is present.

IV. Œdema of the Arm.[1]

Causes.—1. Thrombosis of axillary or brachial vein, usually the result of heart disease. 2. Pressure of tumors—aneurism, cancer of axillary glands, Hodgkin's disease, sarcoma of lung or mediastinum. 3. Nephritis, when the patient has lain long on one side. 4. Inflammation, usually with evidence of lymphangitis spreading up the arm from a septic wound on the hand.

The diagnosis of the *cause of œdema* is usually easy in the light of the facts brought out by the general physical examination (heart, urine, local lesions, etc.).

[The *arteries of the arm* (brachial and radial) are to be investigated for changes in the vessels (see page 90) and for the evidence given by their pulsations as to the work of the heart (see page 103).]

V. Tumors of the Upper Arm.

In the upper arm we have: 1. Fatty tumors. 2. Sarcoma of the humerus. 3. Ruptured biceps. 4. Syphilitic nodes on the humerus. 5. Tuberculosis of the humerus. 6. Gouty deposits in the triceps tendon.

Fatty tumors are recognized by the history of long duration and very slow growth, by their superficial position, usually external to the muscles, and soft, lobulated feel.

Sarcoma forms the only large tumor springing from the humerus. It is usually hard and obviously deep seated (see Fig. 22).

Ruptured biceps. The lower half of the biceps projects sharply when the muscle is contracted, looking as if the biceps had slid down from its normal site. This appearance suddenly following a wrench or strain of the biceps is diagnostic.

Syphilitic nodes are flattened elevations on the bone, usually about the size of a half-dollar, and feel like the callus after a fracture, but project only from one side of the bone. There are pain,

[1] Distinguished, like all œdema, by the fact that a dent made by pressing with the finger does not at once disappear when the pressure is removed.

especially at night, and moderate tenderness. A history or other and more characteristic lesion of syphilis is necessary for diagnosis.

Tuberculous lesions[1] are much more common on the forearm

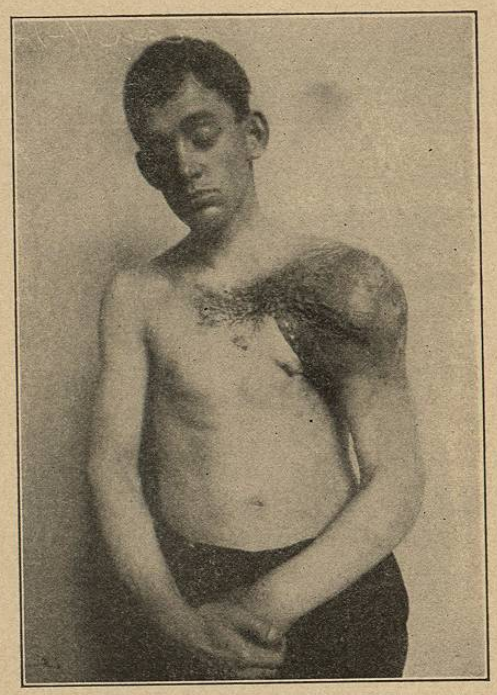

FIG. 22.—Sarcoma of Humerus.

bones, but are occasionally seen on the humerus near the epiphyseal ends. They usually involve and perforate the skin, leaving an indolent, suppurating sinus leading to necrosed bone. The evidence

[1] A rare disease clinically identical with tuberculosis, but due to a wholly different organism, an animal parasite resembling a coccidium, has been described by Rixford, Gilchrist, Montgomery, and other Californian physicians.

of tuberculosis in other organs and the slow, "cold" progress of the lesion assist the diagnosis.

Gouty tophi are sometimes seen along the fasciæ covering the triceps tendon. They are hard and painless. The diagnosis depends upon the peculiar situation of the lesions and their association with other evidences of gout.

VI. Miscellaneous Lesions of the Forearm.

Bowing of the forearm bones occurs in rickets and in Paget's disease (see Fig. 204). The lesions in the other parts of the body make the diagnosis clear.

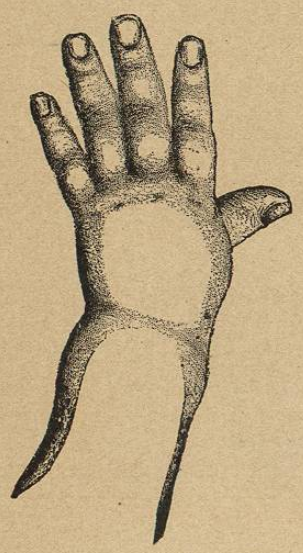

FIG. 23.—Rachitic Epiphysitis.

Local lesions of the bones of the forearm are chiefly tuberculosis and syphilis, both of which have been sufficiently described in the last section.

In the wrist bones we find:

1. *Rachitic enlargement of the epiphyses.* In rickets the terminal epiphyses at the wrists take part in the general epiphyseal enlargement so common in the disease. The diagnosis is easy, for there is no other disease of infancy producing general enlargement of the epiphyses (see Fig. 23).

2. *Hypertrophic pulmonary osteo-arthropathy* (Figs. 24, 25, and 26). An enlargement of the lower ends of the radius and ulna, with clubbing of the fingers (see below, page 47), is recognized by its association with pulmonary or pleural diseases of many years' duration (chronic bronchitis, empyema).

3. *Acromegalia* (see page 9) affects chiefly the bones and soft tissues of the hand.

4. *Hypertrophic, atrophic, or tuberculous disease* of the wrist-joint will be described below (see Examination of the joints, page 486).

5. "*Weeping sinew*" or "ganglion" (tenosynovitis) forms a fluctuating, spindle-shaped swelling along one of the tendons of the wrist, slow and almost painless in its course. It may be tuberculous, in which case the sac is generally divided into several parts ("compound ganglion"); bacilli may occasionally be demonstrated in the exudate.

FIG. 24.—Hypertrophic Pulmonary Osteo-arthropathy. (Thayer.)

THE HANDS.

I. EVIDENCE OF OCCUPATION.—The horny, stiffened hands of the "son of toil," the stains of paint in house painters, the flattened, calloused finger-tips of the violinist, the worn fingers of the

sewing woman, afford us items of information which are sometimes useful and worth a rapid glance in routine examination.

II. Temperature and Moisture.—(*a*) The *cold, moist hand* is most commonly felt in "nervous" people under forty. It is almost never seen in heart disease, which its possessor often fears, and does not mean "poor circulation," but vasomotor disturbances of neurotic origin.

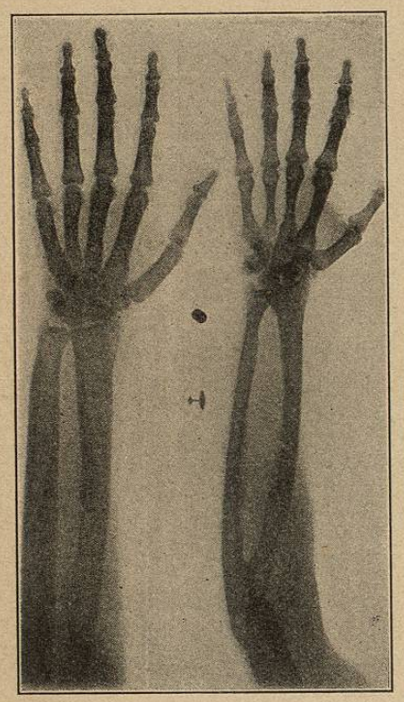

Fig. 25.—Radiographs of the Hand and Arm of a Case of Hypertrophic Pulmonary Osteo-arthropathy (the left figure) compared with the hand and arm of a normal individual of the same height (the right figure). Note especially the thickening of the radius and ulna. (Thayer.)

(*b*) *Cold, dry extremities*—hands, feet, nose, ears—may mean simply fatigue, exposure to low temperature, or insufficient exercise; but in the course of chronic disease they usually mean weakness of the heart, and hence are serious.

(*c*) *Warm, moist hands* are felt in *Graves' disease* (exophthalmic goitre), and if the warmth and moisture are present most of the time and not only as a temporary phase—*e.g.*, after violent exercise—this disease is strongly suggested, and a search for tremor, rapid heart, goitre, and bulging eyes should be made.

III. Movements of the Hands.—(*a*) The *manner of shaking hands* gives us vague but useful impressions of the patient's temperament. The nervous, cramped, half-opened hand, which never really grasps and gets away as soon as possible; the firm, hearty grasp; the limp, "wilted" hand—furnish hints of character that every physician must take account of.

In fevers or toxæmic states (typhoid, alcoholism) there are two sets of movements which recur so often that names have been given them, viz.: 1. *Carphologia*—picking and fumbling at the bed

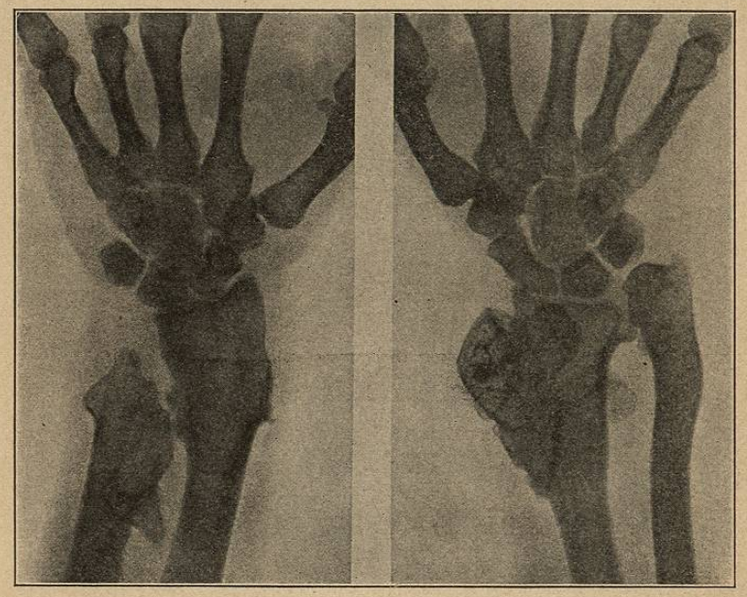

Fig. 26.—Radiograph of the Wrists in Hypertrophic Pulmonary Osteo-arthropathy. (v. Ziemssen's Atlas.)

clothes. 2. *Subsultus tendinum*—involuntary twitching and jerking of the tendons in the wrist and on the back of the hand, usually associated with tremor and carphologia.

(*b*) *Tremor of the Hands.*—To test for ordinary tremor, we ask the patient to extend and separate his fingers widely. The motions are then apparent.

Causes: 1. Nervousness, cold, or old age. 2. Fever and tox-

æmia. 3. Alcohol (less often lead, tobacco, morphine, or other drugs). 4. Graves' disease. 5. Paralysis agitans. 6. Multiple sclerosis. 7. Hysteria.

Most of these tremors need no comment. The *intention tremor* of multiple sclerosis (sometimes seen also in hysteria) is exaggerated into coarse shaking movements when the patient tries to pick up a pin, drink a glass of water, or do any other act calling for the volitional coordination of the small hand muscles. In the presence of such a tremor we should look for *nystagmus* (see above, page 16), a spastic gait (see page 506), and a slow, staccato speech. This group of symptoms suggests multiple (or insular) sclerosis.

In direct contrast with this is the *pill-rolling tremor* of paralysis agitans, which usually *ceases during voluntary movements*. The thumb and forefinger are near or touch one another, and move as if they were rolling a-bread-pill. This tremor is usually associated with an immovable, expressionless face, a stiffened neck and back, and a peculiar attitude and gait (see below, page 507).

The other varieties of tremor can usually be recognized by the history and associated symptoms.

(*c*) *Spasms or coarse twitchings of the hand* due to:

1. *Jacksonian epilepsy*—convulsive attacks which begin in and may remain confined to one set of muscles, often preceded by prickling or other paræsthesia of the part affected, but *without loss of consciousness*. These muscle spasms are due usually to an irritation of the corresponding motor area in the cortex cerebri (tumor, softening, chronic meningitis, etc.), but may also occur in uræmia and dementia paralytica. Coma and general spasms may follow.

2. *Professional Spasm.*—Writers, violin-players, and others who use one set of muscles continually are often attacked with *painful cramps* in the muscles used ("writer's cramp"). Weakness or semi-paralysis of the muscles may follow.

3. *Chorea and Choreiform Movements.*—True, acute chorea (Sydenham's) occurs in children between five and fifteen, generally in those who have joint troubles or heart disease, and ends in eight or ten weeks. The hands are usually affected first, and their movements are like those of restlessness and are quasi-purposive,

i.e., movements that might have been made intentionally, though they are not. At first sight one would surely think the child was simply fidgety.

Similar movements occur in *pregnant women* or sometimes after parturition, but the type is much severer and is apt to be associated with maniacal symptoms.

Post-hemiplegic chorea refers to similar movements in the paralyzed hands of hemiplegic cases (children or adults).

In *hysteria* or by a sort of *psychic contagion* similar movements are sometimes taken up in schools and institutions, and last till their cause is understood and removed.

Chronic choreiform movements occur also in the rarer congenital forms of paralysis with or without idiocy.

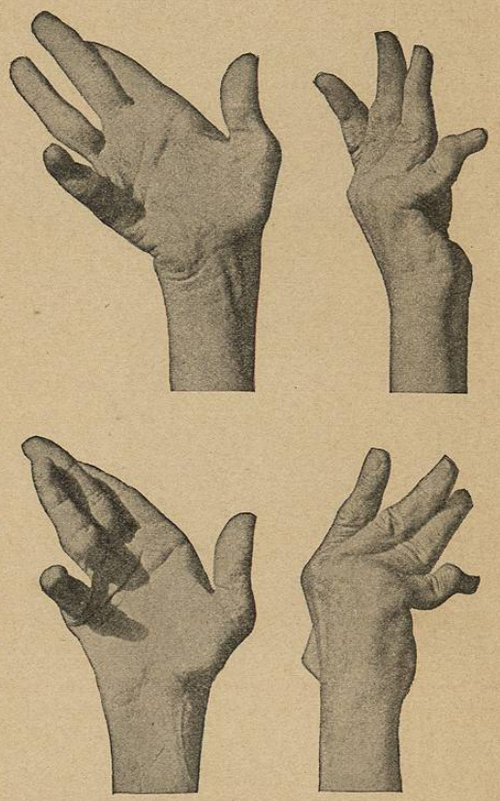

Fig. 27.—Athetosis. Successive positions of the hands. (Curschmann.)

4. *Athetosis* (see Fig. 27) means slow twisting and bending movements of the fingers, quite involuntary and always secondary to organic cerebral lesions (hemiplegia, infantile cerebral paralysis).

5. *Tetany* (see Fig. 28)—a peculiar spasm of the hands (often of the feet as well), occurring in the course of diseases of the stomach and intestine in children, in nursing women, after gastric lavage, and after thyroidectomy, usually lasting minutes or hours—rarely days.

FIG. 28.—Tetany. (Masland.)

IV. DEFORMITIES OF THE HANDS.

1. "*Claw hand*" results from paralysis of the interossei and lumbricales with contractures, and occurs when the median or ulnar nerves are paralyzed and in progressive muscular atrophy, syringomyelia, and chronic poliomyelitis.

2. "*Flipper hand*" (see Fig. 29), a common result of the contractures in late cases of atrophic arthritis. Other deformities of the fingers are common in this disease and in gout (see below, page 503).

3. "*Hemiplegic hand*," a result of the contractures following hemiplegia from any cause.

4. *Myxœdema* results in thickening and coarsening of the tissues of the hand ("spade hand") without bony enlargement; but the spade hand is a fairly common type without myxœdema, and one needs to see it rapidly develop in connection with other myxœdematous lesions before it can have diagnostic significance. (The same is true of the myxœdematous face.) (See Fig. 30.)

5. *Acromegalia* produces general enlargement of the bones and other tissues of the hands and feet.

6. *Pulmonary Osteo-arthropathy.*—Any long-standing disease of the heart, lungs, or pleura may be followed by this peculiar hypertrophic change in all the tissues of the extremities. Mild forms produce "*clubbed fingers*," a bulbous enlargement of the finger-tips with double curvation of the nails, lateral and antero-posterior (see Fig. 31). In severer forms the bones of the hand and wrist are also considerably enlarged (see Figs. 25 and 26).

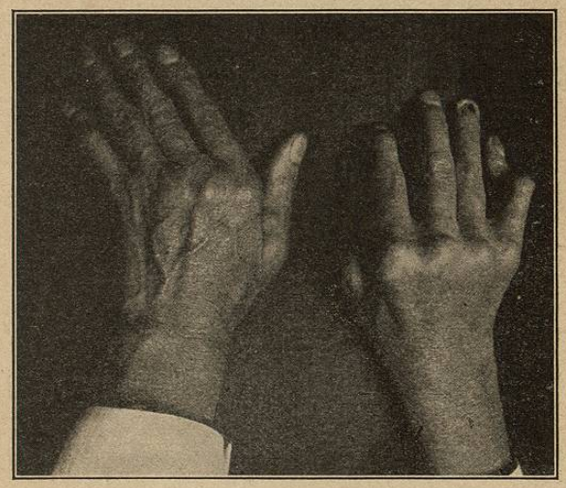

FIG. 29.—Atrophic Arthritis with "Flipper Hand."

7. *Heberden's nodes*, later described under the head of hypertrophic arthritis, are here pictured (Fig. 32). The distinction from *gout* has already been referred to (page 503).

8. *Atrophic arthritis* (Fig. 29) (further described on page 496) presents its most typical lesions in the hands and wrists. The constriction line opposite the articulation is observed in late cases, but ordinarily multiple spindle-joints symmetrically arranged are all