

ure of the affected region relieves tension and pain and provides a sort of safety vent, tending to prevent the further deep extension of suppuration. All fragments of necrotic bone should be removed, and curetting may be necessary. Poulitices are useful both before and after the incision is made, to promote pus formation, relieve pain, and stimulate granulation. Drainage should be provided for, and the incision not allowed to close prematurely. Packing with iodoform gauze affords drainage and stimulates healing. Anodynes to relieve pain will often be required, and in debilitated patients general tonic treatment is indicated. Healing must be expected to be very slow, and some permanent deformity or impairment of the motor powers often follows.

Palmar Abscess.—Abscesses in the palm of the hand often involve the sheath of the flexor tendons in this situation, either primarily, or by extension from the digital tendon sheaths or from the subcutaneous tissues and fascias of the palm. The anatomical arrangement of the sheaths of the flexor tendons in the digits and palm is an important factor in palmar abscess. In the palm is a large synovial sheath common to the flexor tendons; this is continuous with the sheath of the tendons belonging to the thumb and little finger; but the flexor tendon sheaths of the index, middle, and ring fingers are closed at their proximal ends, and are not connected with the large common sheath in the palm. Consequently inflammation of the tendinous structures of the thumb and little finger can easily extend into the large palmar tendon sheath, and vice versa, while in the other three digits inflammatory processes do not extend from digits to palm. In whitlows of the thumb and little finger special care should therefore be taken to prevent extension into the palm. The inflammatory process may extend widely, especially if not adequately treated, involving more or less of the tissues of the entire hand, even to necrosis of the metacarpal or carpal bones. Palmar abscess is manifested by swelling, severe pain, heat, constitutional disturbance, fever, etc. It is quite a serious condition, and may result in more or less stiffening of the fingers, permanent injury of the tendons, and impairment of the motor functions of the hand; even death may occur from exhaustion, general sepsis, or hemorrhages.

The main feature of treatment of palmar abscess consists in early and free incision, so as widely to expose the inflamed parts. Care should be taken to open the main suppurating foci, and not to stop with opening into small secondary sinuses or superficial oedematous areas. Radical incision relieves tension and pain and localizes the process so as to prevent further extension. Longitudinal incisions in the palm, along the middle line of the metacarpal bones, can be freely made beyond the level of the web of the thumb without interference with the digital vessels or palmar arches. Aside from the special points mentioned and the greater area involved, the clinical features and treatment of palmar abscess and of whitlow are much the same.

TUBERCULOSIS.—The hand and fingers are subject to tuberculosis like other parts of the body. Infection may arise not only in the usual way, by internal conveyance of the bacilli, but also by direct inoculation through slight wounds from contact with external infectious material, as in the case of persons whose occupation necessitates the handling of diseased and dead tissues, like physicians, nurses, butchers, cooks, cattlemen, tanners. Notwithstanding this exposure to external infection, tuberculous lesions of the hand and fingers are not common. The bones, joints, tendon sheaths, and skin are the structures chiefly affected.

Tuberculous osteomyelitis or osteitis, with enlargement, chronic suppuration, sinus formation, caries, necrosis, loss of considerable osseous substance, and the usual phenomena of this condition, may involve any of the bones of the hand, sometimes primarily (so far as the hand is concerned), sometimes secondarily by extension from a lupus vulgaris, occasionally by extension from a tuberculous joint. Tuberculous arthritis affects by preference the larger joints of the body, though the wrist

joint is sometimes affected; tuberculosis of the wrist and joints of the fingers more often arises by extension from foci in the neighboring bones or skin than primarily. Chronic tuberculous inflammation of the tendon sheaths (see below, p. 516) in the forearm and hand may arise, either primarily or by extension. In all these cases the course of the disease is protracted and chronic, though recovery may ensue. Sometimes the tuberculous involvement of the hand occurs in association with tuberculosis elsewhere, as in the vertebræ or lungs; in other cases the infection may make its first appearance in the hand. From the hand the disease may extend to the lymphatic glands of the arm, or general infection of the body may occur; in some cases the system may escape. Great deformity of the hand may follow after healing of the lesions, from cicatricial contractions and loss of tissue.

The chief clinical forms in which tuberculosis of the skin appears in the hand are lupus vulgaris and tuberculosis verrucosa.

Lupus vulgaris affects the face most frequently, but in a considerable proportion of cases attacks the extremities, including the hand and fingers. The dorsum of the hand is the locality chiefly affected, the disease only very rarely beginning in the palm. The disease occurs or begins chiefly in childhood. It runs a very slow and chronic course, though at times it makes rapid progress. Lupus vulgaris sometimes originates directly from external inoculation, but the infecting bacilli are usually derived from sources within the body, and the condition is often secondary to other tuberculous lesions. Clinically the affection arises from soft, brownish-red, painless nodules which develop in the corium singly or in coalescent aggregations and cause a slight projection above the cutaneous surface. The nodules may run their course as such, and undergo involution and absorption, leaving a superficial desquamating area and a sunken cicatrix; or they are very apt to break down and form shallow ulcers; or the affected tissues may proliferate in exuberant fungoid granulations. After pursuing an exceedingly protracted course for months or years, the ulcers may heal, and great cicatricial contraction or elephantiasiform enlargement may result. In the hand the tuberculous process may extend from the skin downward to the subcutaneous tissue, tendons, and bones, causing widespread involvement of the parts (as in tuberculous dactylitis), with suppuration, abscesses, sinuses, caries, and necrosis of bone. After healing from such a condition great deformity is apt to result, the fingers being distorted, mutilated, twisted, thickened, ankylosed, etc., from cicatricial contractions and loss of tissue.

Tuberculosis verrucosa is a form of cutaneous tuberculosis differing in some of its clinical features from lupus vulgaris. It arises chiefly from direct external inoculation of the skin with the tubercle bacilli, and hence occurs mostly in adults whose occupation exposes them to the handling of infected tissues or other material. The hands and fingers, especially their dorsal surfaces, are therefore the commonest seats of tuberculosis verrucosa, though other parts of the body, as the elbows and knees, are also subject to it. The essential lesion of tuberculosis verrucosa begins as a papule in the corium, which becomes pustular, then breaks down and forms a small ulcer, upon which papillary growths develop, and after some time become covered with a horny mass. The characteristic feature of fully developed verrucose tuberculosis is the tendency to horny or warty papillary proliferation. The disease extends slowly from a centre.

The simplest form of the trouble is the *verruca necrogenica*, also called "post-mortem wart" and "anatomical tubercle," which is a small nodule found on the fingers or hand of persons exposed to local inoculation, as physicians or nurses engaged in clinical or autopsy work.

Fully developed tuberculosis verrucosa is similar in nature, but of greater extent. In this condition there are slightly elevated horny, warty patches on the skin, varying in size from small areas to large plaques covering the entire dorsum of the hand and even extending over on the palm. The patches are aggregations of

warty nodules and slowly extend at the periphery. They have an erythematous border, inside which is a zone of pustules; the centre of the patch is occupied by an aggregation of warty tubercles covered with crusts and horny material. There may be erosions and fissures, but there is little tendency to ulceration. The centre may undergo resolution, leaving a central cicatrix surrounded by a disease ring. The course of the disease is very slow and chronic, sometimes continuing for years. Usually the general condition is not impaired, and the lesion is not ordinarily followed by serious results; general tuberculosis may, however, originate from the cutaneous infection.

In both lupus vulgaris and verrucose tuberculosis the essential lesion is tubercle formation in the corium, and in both tubercle bacilli have been demonstrated.

In addition to these two types of cutaneous tuberculosis other clinical forms of tuberculous dermatitis and cellulitis may occur. Chronic paronychia of tuberculous origin has been observed; and some cases of "malignant paronychia," in which there is extensive ulceration and a protracted and severe local condition, are supposed to be of tuberculous nature. An inflammatory tuberculous tumor, not of warty nature, has been known to follow a slight wound on the hand caused by the thumb nail, in the case of a physician who at the time was treating two cases of tuberculous laryngitis (Schamberg).

Tuberculous dactylitis, or tuberculous inflammation of various tissues of the digits, though an uncommon condition, presents some distinctive features. It may arise as a secondary extension from lupus vulgaris in the vicinity as already stated, but the more typical cases originate in tuberculous osteomyelitis of the phalanges. Tubercle formation begins in the marrow of the phalangeal bones, especially near the articular ends; the cortical bone becomes gradually involved, while new bone is simultaneously formed by the periosteum. In this manner the phalanx assumes a characteristic fusiform shape, enlarged at its middle. Later, the process may extend to neighboring tissues, joints, and fibrous structures, and there is usually a tendency to suppuration and sinus formation. Caries and necrosis of the bone is apt to follow, and from the destruction of a part of or even an entire phalanx, deformity results after healing, especially shortening of the finger. The skin is thickened, tense, and may be pale, red, or purple. Pain is slight; the affected part may be hard or soft. The disease occurs especially in childhood, and often in association with tuberculosis elsewhere, as in the vertebræ, or there may be a family history of tuberculosis. The disease is very slow and chronic in its course. Recovery from the local trouble may follow, often with deformity; or general tuberculosis may ensue. One digit alone may be affected, or a number (not necessarily adjacent) may be successively involved. The proximal phalanges are apt to be the ones affected.

Tuberculous dactylitis is quite similar in its clinical manifestations to syphilitic dactylitis, and has often been mistaken for the latter. The history (personal and family), the effects of specific treatment, etc., must be taken into account in making the diagnosis. The enlargement of the phalanges is more spindle-shaped in the tuberculous form, more spherical in the syphilitic form. The condition may also resemble whitlow, chondromata, exostoses, sarcoma, and hypertrophic conditions; but the history, the course of the case, the tendency to suppuration, and other clinical features usually permit ready differentiation from these conditions. As to prognosis, a protracted course of the disease is to be expected, but recovery often results and may be usually expected if general tuberculosis does not occur.

The treatment of tuberculous lesions in the deeper tissues of the hand is the same as that of such conditions in general—constitutional treatment (cod-liver oil, arsenic, etc.), opening of suppurating foci, curetting, injections of iodoform emulsions, etc. In the cutaneous forms of the disease vigorous local treatment often effects a cure. Curetting is very useful for ulcerating and granulating

surfaces, in conjunction with caustics like silver nitrate, arsenic, and salicylic-acid preparations. Nodular and warty lesions are well treated with thermo- or galvanocautery or puncture. Small areas may be excised, but cicatricial contraction or recurrence of the disease in the scar may follow; skin grafting may be useful treatment for ulcers following excision. Scarification, in crossing series of close parallel lines, has been highly recommended, but requires repeated sances and a long time.

SYPHILIS.—Like other parts of the body, the hand and fingers are subject to various manifestations of syphilis, both inherited and acquired forms of the disease; a few special features are exhibited in this region. The chief syphilitic lesions encountered on the hand are the chancre, various syphilides, syphilitic paronychia, syphilitic onychia, gummata and inflammatory processes in the deeper tissues, syphilitic dactylitis.

The fingers and hand are occasionally the seat of the initial chancre, the primary inoculation taking place at this point not infrequently in physicians from exposure to the infection in the course of clinical work, or in others, not innocently, from libidinally handling the genitals. The inoculation is apt to take place about the nails, though the chancre may be situated on other parts of the hand, and may resemble paronychia or whitlow. The chancre is usually red, thickened, elevated, indurated, and circumscribed, but ordinarily does not show much tendency to ulceration. Its course is slow. It is followed by enlargement of the epitrochlear gland, and often of the axillary glands.

Most of the varieties of syphilides—macular, papular, vesicular, pustular, tubercular—may affect the skin of the hands. The palms are quite favorite seats for the development of many syphilides, especially the papular and squamous forms, and exhibit a special tendency to desquamation of the lesions. The dorsum of the hands, on the contrary, is comparatively quite exempt from most forms of cutaneous syphilis; the ulcerating tubercular syphilide, however, frequently involves the back of the hand. The moist syphilitic papule may affect the interdigital angles.

Partly owing to its thick epidermis and marked desquamating tendency, the palm (with the sole) exhibits a special form of syphilide, the palmar (and plantar) syphilide. The lesions of this condition consist of irregular patches, only slightly elevated, covered with scales, beneath which is the dull red infiltrated corium. The margins of the patches are especially scaly. The patches may coalesce, forming serpiginous areas, and deep fissures into the corium may develop. Sometimes instead of desquamating the epidermis becomes hard and horny. Subjective symptoms are ordinarily absent. The lesions may occupy only a small area, or may extend over the entire palm, only rarely proceeding to the dorsal surface or beyond the wrist. They may develop early or late in the course of syphilis, are very chronic in their course, exceedingly obstinate and resistant to treatment, and show marked tendency to recurrence.

Syphilitic Paronychia, or involvement of the tissues about the nails (of fingers or toes), exhibits three chief types, a dry or corneous, an inflammatory, and an ulcerative form.

Dry or Corneous Syphilitic Paronychia, the commonest form, is characterized by a horny thickening or proliferation of the circumungual epidermis, with repeated exfoliation. It begins as a small, hard, horny mass at the side of the nail, which increases in size, and may extend entirely around the nail or even invade the entire dorsum of the last phalanx. This thickened epidermis cracks and exfoliates, leaving the surface ragged and scaly. There is slight tenderness, and a yellowish-white color. The corium is more or less infiltrated, and in bad cases may be thickened, fissured, excoriated, and painful. The nails are only slightly affected. The process is very indolent and recurrent, and occurs in the secondary stage of the disease. Several fingers are usually affected successively.

Inflammatory Syphilitic Paronychia begins as a papule

or nodule, usually at the side of the nail, sometimes over the matrix, which pursues a very slow course without active inflammation or tendency to suppuration or ulceration, and disappears by absorption. The affected area is hard, dusky red, slightly tender. Onychia only exceptionally coexists. It is often confined to a single digit. It occurs in the secondary stage, especially in those of poor health and often in children with congenital syphilis.

Ulcerative Syphilitic Paronychia is a severe condition caused by a gummatous process, with necrosis, in the corium and subcutaneous tissues. It is a secondary or perhaps rather a tertiary phenomenon, and develops especially in severe neglected or debilitated cases of syphilis. It is often confined to a single finger, and is very chronic in its course. The lesion consists of an indolent ulcer with undermined edges, and surrounded by a raised dusky or red border. An abundant thin sero-purulent discharge is given off. From extension of ulceration to the matrix and nail bed, the nail becomes discolored, undermined, and loosened, and may be cast off. In severe cases the granulations become exuberant and fungous; the cast-off nail is perhaps embedded in their midst as an irritating foreign body; the tissues about the ulcer swell and become indurated; the entire dorsal surface of the phalanx may be invaded; and the digit may become clubbed. If the nail bed and matrix are destroyed no new nail will be formed when the ulcer cicatrizes.

In the treatment of syphilitic paronychia, mercury alone or with the iodides is indicated. The iodides should be given especially freely in the ulcerative form. Local treatment should be followed according to the indications. The affected finger tips should be protected from irritation by finger-stalls, etc. In the ulcerative paronychia removal of the nail will often be desirable to prevent its acting as an irritant foreign body.

Syphilitic Onychia is an altered condition of the nails (of both fingers and toes) caused by defective nutrition and not of inflammatory nature. It occurs in the secondary stage of syphilis, both in the acquired and in the congenital forms, and sometimes appears in very young infants. Several nails are usually involved, either simultaneously or successively. It is only exceptionally associated with paronychia. All the forms pursue a very chronic painless course; ultimately recovery is perfect, and normal nails are reproduced.

Syphilitic onychia exhibits a number of different clinical varieties, as follows:

1. In the commonest form, "onyxis craquelé," in mild cases the nail becomes dull and lustreless, yellowish, brittle, and breaks easily on its edge; a similar condition may also occur in other chronic or debilitated conditions. In severe cases the nail in addition becomes marked by parallel ridges, and the free edge thickens and cracks and breaks easily, leaving an irregular broken margin.

This condition is sometimes associated with dry paronychia.

2. In a second variety, the nail gradually and insidiously separates from the nail bed, beginning distally and extending toward the root of the nail. The separated portion is discolored. Usually the nail is only partially detached, but occasionally it is entirely cast off.

3. In another form the growth of the nail or formation of the nail substance is entirely or partially arrested. The boundary between the old nail and the new portion is formed by an irregular transverse line, which advances toward the end of the nail. The old nail becomes discolored, ridged, loosened, and finally drops off, and its place is taken by epidermis or by a thin and imperfect nail structure.

4. There is also a hypertrophic form, in which the nail becomes greatly thickened, with its surface dry, uneven, cracked and split, yellowish, dirty, unsightly.

Besides these varieties other forms of syphilitic onychia sometimes occur, similar in their general nature, all being conditions of lowered nutrition. The treatment consists in the administration of mercury

(rather than iodide), with tonics, etc., in debilitated conditions. The finger tips should be protected by stalls, etc. The prognosis is good, and well-formed nails are almost always ultimately produced.

Gummatous and Inflammatory Processes may involve the deeper tissues of the hand and fingers in much the same way as in other parts of the body. The subcutaneous tissues may be the seat of gummata, which may break down and ulcerate; the palm, however, is almost exempt from this lesion. The tendon sheaths about the fingers are subject to gummata and to chronic and acute syphilitic inflammation. The bones and periosteum may be affected in various ways, in the form of gummata, periostitis, osteomyelitis, osteitis, caries, necrosis.

Syphilitic Dactylitis is a specific involvement of the tissues of the digits presenting distinctive clinical features, first definitely recognized by R. W. Taylor in 1871. It is one of the tertiary or late manifestations of syphilis, and occurs both in acquired and in inherited forms of the disease, and hence both in children and in adults. The fingers are oftener attacked than the toes. Any of the fingers may be affected, but the middle and ring fingers are said to be oftenest involved. One finger may be affected, or several, simultaneously or successively. The lesion consists essentially in a gummatous infiltration of the soft or hard tissues, which is apt to undergo necrosis and ulceration, together in some cases with chronic inflammation and secondary pyogenic infection. Two varieties of the disease are distinguished: (1) that in which the subcutaneous and ligamentous structures are primarily and chiefly affected, and (2) that in which the bone or periosteum bears the brunt of the disease.

1. In the first variety, or "syphilitic panaris," the subcutaneous fibrous tissues and the ligaments about the joints undergo gummatous infiltration. The dorsal sur-

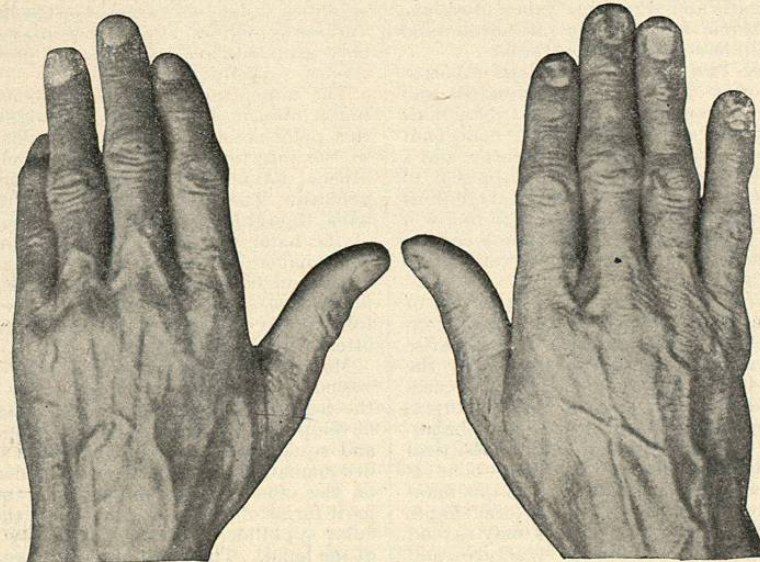


Fig. 2485.—Syphilitic Onychia. (Original.)

EXPLANATION OF
PLATE XXXI.

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FIG. 1.—Raynaud's Disease, Showing Gangrene of the Finger. (Personal observation.)

FIG. 2.—Paronychia Caused by Infection with *Bacillus Pyocyaneus*. (Personal observation.)

FIG. 3.—Digital Chancre.

FIG. 4.—*Tinea Circinata* on the Hand.

(Illustrations drawn, from cases observed by Dr. J. B. Nichols, by H. C. Macatee, M.D., of Washington, D.C.)



DISEASES OF THE HAND

(Illustrations Drawn by H. C. Macatee, M. D., from Cases Observed by Dr. J. B. Nichols.)

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DISEASES OF THE HAND

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faces are rather more liable to this form than the palmar surfaces, and the proximal phalanges are especially affected. The parts affected increase in size and are tense and hard, or soft and semifluctuating. The overlying skin is purplish or violet in color. The gummata may break down, but do not tend to suppurate. The disease process in the ligaments sometimes extends to the articular structures beneath the synovial membranes, the articular cartilages, or bone; but the joint usually escapes serious involvement. The course of the affection is very chronic and nearly painless, and it is sometimes very resistant to treatment and tends to recur. This condition may be distinguished from gout, acute rheumatic arthritis, or whitlow by its chronic painless course; from rheumatoid arthritis by the location of the initial lesions in the joints, the early deflection of the phalanges, and the non-discoloration of the skin, in the latter, as well as by the concomitant symptoms and history. The prognosis is good, and recovery with a useful finger may be ultimately expected, unless the joints are seriously damaged.

2. In the second and more typical form of syphilitic dactylitis the osseous tissues and periosteum are primarily and especially affected. In a syphilitic child or adult, with or without other syphilitic manifestations, a phalanx in one or more fingers begins to enlarge. The process begins as a gummatous growth, causing marked enlargement, and may be associated with inflammatory conditions (osteitis, osteomyelitis, periostitis). If the marrow cavity is first involved, the symptoms are more acute, pain is more severe, the increase in size more rapid. In connection with gummatous infiltration of the hard bony substance, osteitis occurs, either rarefying osteitis, with destruction of the bone, or, later, formative osteitis causing new formation of bone. Gummatous deposits in the periosteum may produce multiple small tumors.

In typical cases there is marked spherical or fusiform enlargement of the affected phalanx. The soft parts are stretched; the skin is purple, violet, livid or red, shiny or dull. When the gummatous enlargement is advanced the new tissue breaks down into a fluid discharge or cheesy mass; ulceration takes place; secondary infection with the ordinary pyogenic germs may occur, and suppurating sinuses are formed. Extension to the joints may follow, producing synovitis, arthritis, or general gummatous involvement and disorganization of the articular structures. Pain varies, frequently not being marked, but sometimes severe, often worse at night. Usually only one phalanx in a digit is affected, sometimes more. The proximal phalanx is the one most often invaded; not infrequently the metacarpal bone suffers. The course of the disease is chronic, or often subacute.

After recovery the new tissue may entirely disappear, or permanent changes remain. Decrease in size, with alteration in length or thickness, may follow necrosis and destruction of bony substance; increased size may result from formative osteitis. Cicatricial contractions may supervene. Joints may be destroyed, or false joints may be produced (from non-union after necrosis of bone), constituting a very disabling flail joint. Rarely ankylosis results. The prognosis on the whole is favorable; involvement of a single phalanx without extension to the joint is apt to recover without bad consequences. Loss of substance, the formation of flail joints, ankylosis, or cicatricial contractions may impair appearance and usefulness, and often to a great degree.

The diagnosis of syphilitic dactylitis from tuberculous dactylitis has already been considered. From ordinary whitlow it may be differentiated by its less painful and more chronic course and development, and the history of the case. From cartilaginous and bony tumors it may be distinguished by its less sharp localization, the tendency to necrosis, ulceration, and suppuration, the history, and the results of specific treatment. From various hypertrophic conditions, the clinical course and features and the inflammatory and ulcerating phenomena of syphilitic dactylitis will enable the diagnosis to be made.

In the treatment of syphilitic dactylitis, the iodides, with or without mercury, should be vigorously administered, with tonics if indicated. Too much should not be done locally. Gummata should not be opened or removed, and amputation is contraindicated; but if suppuration sets in it should be treated on ordinary surgical principles, by opening of abscesses and sinuses, curetting, removal of necrosed bone, etc.

OTHER INFECTIONS AND PARASITES.—Infection of wounds with other than the ordinary pyogenic bacteria is liable, from its exposure, to occur in the hand, as in some post-mortem wounds, laboratory infections, infection with the gas bacillus, anthrax, glanders, rabies, tetanus, etc. Some of these infections are very malignant and grave, though fortunately uncommon. The morbid condition is manifested either locally or systemically, or in both ways. The local condition consists in an inflammatory process in the tissues adjacent to the wound, with clinical features varying according to the infective agent.

The systemic manifestations are of septicæmic, metastatic, or toxæmic character, and constitute the element of danger in these cases. In some conditions, as in rabies and tetanus, substantially the entire clinical picture is made up of the constitutional manifestations, there being practically no morbid condition at the point of original entry of the infection.

The treatment of infected wounds of the hand is the same as that of these wounds generally—efforts at local destruction of the infecting parasites and their toxins, and cure of the local inflammatory lesions, with appropriate measures to combat the general manifestations.

Gonorrhœa may affect the hand in the form of gonorrhœal arthritis of the finger joints, which are a rather favorite site for gonorrhœal rheumatism; also occasionally as a gonorrhœal thecitis or other inflammatory affection.

Leprosy affects the hands severely, especially in the anæsthetic variety. In tubercular leprosy the nodular masses may develop in the fingers and hand, though this member does not usually suffer so severely in this respect as other parts of the body; the nodules about the fingers may break down and ulcerate. In anæsthetic leprosy the hand is apt to become exceedingly deformed and mutilated, from disintegration and necrosis of the joints and bones, ulceration of the skin and soft tissues, atrophy of the tissues, and deflections and contractions of the digits. The fingers and even parts of the hand often drop off spontaneously. The parts are anæsthetic, and the course of the affection is very slow and chronic. Claw-hand sometimes occurs in leprosy neuritis.

Scabies usually makes its first appearance on the hand, whence it is conveyed to other parts of the body. The sides of the fingers and the interdigital angles are the points particularly attacked. The *trichophyton* fungus frequently invades the back of the hand, in the clinical condition known as *tinea circinata*. At least three cases of *hydatid* or *cysticercus* cysts in the hand are on record: one in the subcutaneous tissues of the palmar surface of a proximal phalanx, one beneath the palmar fascia in the palm, one originating within a proximal phalangeal bone and causing distention of the phalanx to the size of an orange. *Elephantiasis* has been already mentioned.

NECROTIC CONDITIONS

arise in the hand as elsewhere. Two factors especially conducive to necrosis which are operative in the hand are the exposure of the member to traumatic accidents, and its distant circulatory position, which makes it not only suffer from relative circulatory weakness but also subjects it to the consequences of any impediment to the blood flow at any point between it and the body centres. In this respect the hand suffers less than the foot. Gangrenous and necrotic conditions in the hand arise from various causes, such as destructive violence or chemical action, burns, frost bite; from interference with the circulation, by occlusion of the blood-vessels, in thrombo-