in the statistical returns. Most of the published tables, unfortunately, include figures obtained from army and navy hospitals, where men only are sheltered.

The great safeguard against syphilis is sexual morality, without which no safeguards are worthy of the name. It is held by writers that for young men this is too lofty an ideal; but such objectors have no practical knowledge of the moral standard upheld by many of the wisest thinkers and realized by thousands of self-denying youths in every community. The physician who does not exert his influence in the interest of this standard, by which men and women alike not merely protect themselves from these maladies, but ensure also the safety of the community in which they live, has yet to learn the alphabet of sound health.

CHANCROID.

Synonyms.—Soft chancre; Simple chancre; Non-infecting chancre; *Fr.* Chancre mou; Chancrelle (Diday); *Ger.* Einfacher Schanker; Weicher Schanker.

Chancroid is a contagious venereal disease characterized by the occurrence, chiefly in the genital region, of one or more, often several, suppurating and ulcerative lesions, due to the presence of micro-organisms, and not ultimately productive of specific constitutional symptoms. The secretions of a chancroid lesion, when unmingled with those of syphilis, are never succeeded by the symptoms of the last-named disease. It is, however, to be noted that both the virus of syphilis and that of chancroid may be implanted at one moment upon the same susceptible point, and from such a point the phenomena of the two diseases may afterward be evolved.

The establishment of an absolute distinction between chancroid and syphilis has been reserved for the latter half of the present century. For a long time after the distinctive differences between the two affections were recognized and classified, the scientific world discussed with energy the questions respecting "the unicity or duality of the chancrous virus." No one, however, at present holds that there is a duality of the syphilitic virus or of chancre. The unicity of each, to employ an outworn phrase, is unquestioned. But it is certain that

there is a contagious venereal disease, local in its effects, communicable at the same time with syphilis, the features of which may be confused with those of the initial sclerosis of that disease.

To demonstrate without possibility of error that an individual may be the subject of even a grave ulcerative lesion which is never followed by syphilis, incurred in sexual exposure of the genital region, may be named as one of the achievements of modern science; but a grievous price has been paid for this knowledge in the errors which have resulted on the part of both physician and patient. Thousands of initial scleroses of syphilis are annually mistaken for chancroids; and even the onset of unmistakable signs of systemic syphilis, after such blunders have been committed, has been for a time ignored or misconstrued. The false security engendered by over-confidence, ignorance, and folly furnishes the background for a historical warning which no man can afford to ignore. It is well, at the very outset of a study of soft, non-infecting chancres, or chancroids, to realize the great danger of confusing them with the initial scleroses of a disease whose impress may last for a half-century, and whose symptoms may actually be intermingled with the most classically developed of chancroid ulcers.

Etiology.—There is little doubt in the mind of any modern observer as to the existence of a specific micro-organism which is the effective agent in the production of the chancroidal ulcer. At the present writing the identification and the recognition of the etiological value of such a micro-organism are not established. The proof of existence of such a germ rests practically upon the same basis as that generally assumed for the agent effective in the production of syphilis. That the discovery of the one will throw a flood of light upon the etiological importance of the other cannot be doubted.

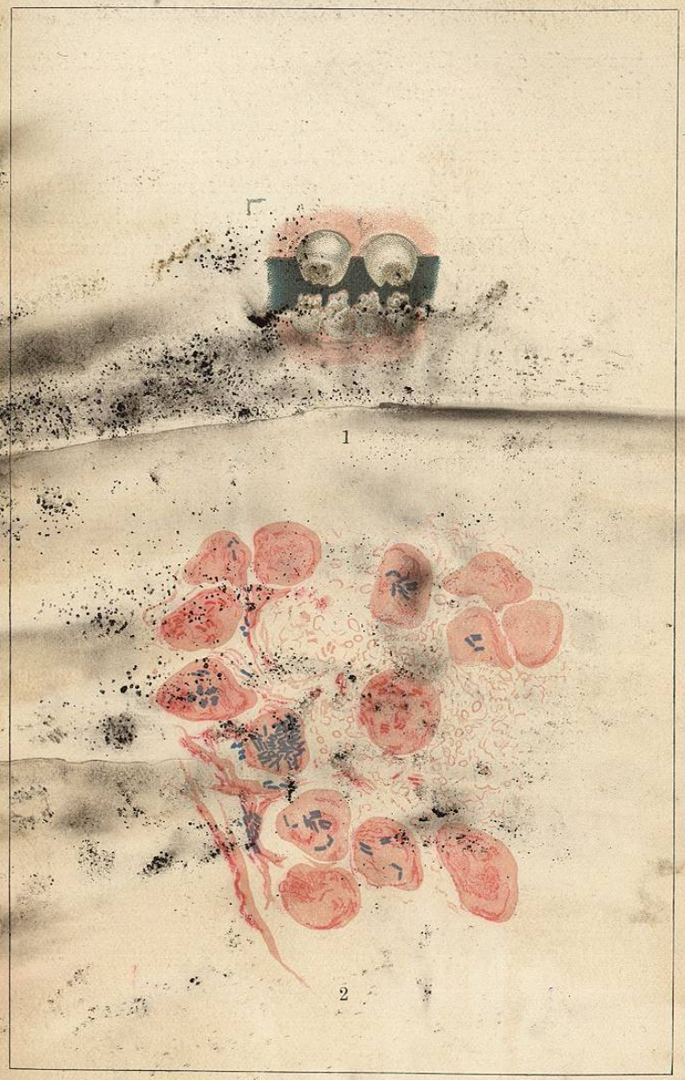
At the present time, however, there are not wanting those who assert that the effective micro-organisms of chancroid are simply the staphylococci and the streptococci which are concerned in the production of pus in general. In support of this view it is claimed that the peculiarities of the chancroid are due chiefly to the anatomico-physiological characters of the soil in which it chiefly thrives—namely, that of the ano-genital region of the cachectic and the filthy; that the recognized pus-organisms are found in all cases of chancroid; that, in spite of exhaustive bacteriological research, no other organisms have yet been demonstrated as capable of producing the disease; that the results of inoculation of the skin of the ano-genital region with simple pus are not distinguishable from chancroid; and that the secretion of such artificial lesions is capable, like that from the chancroid, of repeated auto-inoculation.

But, *per contra*, it is to be noted that chancroids at times occur in those who are neither filthy nor cachectic, and that the worst results may be exhibited in individuals of a healthy class; further, that while inoculations of simple pus (for example, that from an acne pustule) have produced lesions scarcely distinguishable from those of chancroid, yet that pus even from these sources is by no means always of the "simple" character claimed, since tubercle bacilli and other micro-organisms little suspected as present have been distinguished in pus taken from supposedly innocuous sources.

The clinical argument against the position described above is very strong. A periurethral phlegmon may

burst through the integument of the penis; an abscess of the vulvo-vaginal gland complicating a gonorrhœa in women may open through the vaginal wall near the vulvar orifice; a large pustule of the skin of the penis may be produced by the presence of the acarus scabiei; a suppurating balanitis in phimosis complicated by a tight stenosis of the preputial orifice may result in the practical imprisonment of an exceedingly foul purulent product; and in uncomplicated cases, neither in any of these nor in similar accidents of the same region that might be cited will there be the slightest approach to the formation of a chancroid. Such an occurrence, if well authenticated, would at once revolutionize all the accepted doctrines in this field; and, to push the possibilities no further, were simple pus sufficient to induce a chancroid in a filthy and cachectic subject, the surgeons of ships' crews, at a distance both in time and space from port, their sick afflicted with scurvy and attacked with vermin, might expect an outbreak of lesions which, as a matter of fact, are never seen except when sailors have been recently in contact with public women in some haven of entry.

The number of observers claiming to have identified the micro-organism of soft chancre is large. At the beginning of the list are the names of Salisbury and Didier, and these names are followed by those of Luca, Ducrey, Welander, Krefting, Strauss, Julien, and Unna. Most of the later authors have busied themselves with the micro-organism of Ducrey, a short and thick bacillus with rounded extremities, occurring in groups and chains between and in the bodies of the cells themselves. It is readily stained with alcoholic solutions of fuchsine, methyl-violet, and gentian-violet. Krefting used as a



1. Hutchinson's teeth. 2. Bacillus of Ducrey (Petrini de Galatz).

staining solution 16 grams of a 5 per cent. borax solution, 20 grams of a saturated aqueous solution of methyl-violet, and 24 grams of distilled water. Streptococci and staphylococci were found in the first generation only of cultures, rarely in the fifth or the sixth. In all cases the streptobacillus of Ducrey was recognized by these observers, with the exception of Jullien and Strauss, who were unable to discover it in their examinations. The determination of the problem is for the time being relegated to further investigation.

The Lesions of Chancroid.—The clinical symptoms of chancroid depend largely upon accidental circumstances, the important factors being, first, contact with neighboring parts (friction, maceration, etc.), and second, the site of infection. The typical chancroid develops where the site is such that the lesion can progress symmetrically and at the same time be uninjured by traumatism. With these conditions fulfilled (as after intentional inoculation) the earliest symptom is the production of—

The Pustular Lesion.—This lesion develops at the site of infection, first as a minute hyperæmic macule which is evolved in twenty-four hours after inoculation, a pin-point-sized vesico-pustule appearing within forty-eight hours after and being surrounded by a reddish halo. Day after day, progressively, this lesion, when protected, enlarges and changes to a pustule of the type once described as "ecthymatous," attaining the size of a small coin.

When the roof-wall of this pustule is broken and its purulent contents are carefully removed by wiping, the floor of the original chamber may be recognized as an ulcer, corresponding in circular outline and dimensions

with the original pustule. The floor of this ulcer is covered at first with a pultaceous and sloughy deposit; later, as repair ensues, it assumes at first a violaceous and velvety aspect, and still later presents the features of a healthy granulating surface. The circular walls are steep and abrupt, as if produced by a sharp punch. The base in uncomplicated cases is invariably soft and supple, never in the least suggesting the stony hardness of a typical sclerosis of syphilis. There is usually a more or less angry-looking areola spreading to a variable distance away from the centre. The suppuration, at first abundant, becomes decidedly more scanty as the stage of repair approaches. In general, the condition is one of inflammation accompanied by more or less soreness and pain of the part. In this respect also the lesion differs from the commonly painless induration of certain scleroses of syphilis.

The Erosive Lesion.—Here the modification results from the early removal of the roof-wall of the pustule by an accident (softening by maceration with mucus, friction of contiguous parts, etc.), or from infection of a site where, for any reason, the pus produced does not become chambered. At such points there is infection of an open surface, such as the mouth of a follicle, the site of a ruptured herpetic vesicle, or the seat of a slight trauma (about the verge of the over-stretched anus, over a torn frænum, etc.). In these cases the lesion is *ab initio* a suppurating ulcer. Its contour is rounded, oval, or conforms to the accidents of site to be named later. The pus is thick, creamy-yellow in hue, and when removed discloses an empurpled floor or one covered with the peculiar wash-leather-like slough, resembling nothing so nearly as the floor of a typical

gumma after bursting. Occasionally these sores, after exhibition of "open" symptoms, cover themselves with an adherent crust which increases in size as the ulcer spreads beneath, so that lesions as large as a silver dollar and even larger may thus be formed. The character of some of these developing and crusted chancroids may be misapprehended by both patient and inexpert physician, who may be applying unguents, powders, or other dressings to the outer surface of a large crust of this character. The removal, however, of such a crust may disclose an abscess as large as the section of a hen's egg, with characteristic chancroidal ulcer for the floor.

Variations of chancroid are from each of the types described above. The shape, for example, may be altered greatly by the infection of a wound or of a point situated between two abruptly elevated mucous sufaces. In the former event the lesion may be linear (chancroid of the anus or frænum) or dumb-bell-shaped (as when the sore begins in the sulcus back of the corona glandis of the penis and spreads in a double circle over the prepuce and glans).

Number.—The chancroid may be single; but it is usually multiple, and this multiplication may be enormous. Usually no more than from four to six lesions are seen at one time upon a single individual; but in exceptional cases hundreds may be counted, as when, in women, the secretion from a few lesions on the upper portion of the vulva flows over not only the lower portion but the entire perineum and anus.

Multiplicity in the number of chancroids depends chiefly upon auto-inoculability of the secretion. The secretion of the initial sclerosis of syphilis is non-auto-

inoculable save in those cases where there is mixed infection (with chancroid), or irritation of the lesion by accidental agencies, causing suppuration. The abundant pus of the chancroid, however, furnishes the amplest material for ensuring multiplicity of lesions, not merely (as constantly happens) at the moment of infection, but also after infection, to the point of production of two or more chancroids which proceed promptly to multiply when contact with adjacent parts is not prevented.

Size.—The majority of chancroids do not exceed in size the section of a large bean; but great variation exists between the extremes of the minute, pin-point-sized lesions, scarcely attaining average dimensions, and the largest ulcers, which may considerably exceed in size a platter, covering, for example, a broad area of the skin of the belly and spreading downward over the inner face of the thigh.

Duration.—The persistency with which a chancroid, even after extensive and thorough cauterization, unfailingly pursues its career of evolution and involution is one of its distinguishing features. It outlives, as a rule, all the tissue-destruction produced by an ordinary abscess of the region where it occurs, and in one form or another it commonly consumes a definite time before its last traces are removed. From three to six weeks may be said to be the average duration of a simple and wholly uncomplicated case. All the complications of the disease, however, may prolong its term.

The chronic ulcers occurring chiefly about the genital region of the lower class of prostitutes, but seen also in men, persisting for many months and even for years, belong to a special category which will be described later. Here the unusual duration of the disease is due,

not to any inherent tendency of the affection to prolong itself indefinitely, but to accidents of the process.

Incubation.—Properly speaking, there is no period of incubation for the chancroid. As a rule, by exceedingly careful observation with a lens the infectious process is made evident within a few hours, twenty-four at most, after the introduction of the virus. In the average of loosely observed clinical cases patients declare that their infection became evident a few days after exposure. It is rare that chancroids appear later than the tenth day after infection.

Cases, however, are not wanting where the first symptoms of the disease become apparent two or three weeks after contact. In this event it is generally believed that the virus was simply deposited on the surface, not encountering a follicle whereby access was obtained to the deeper tissues, and that later by its presence the virulent secretion excited an irritation which eventually opened up a portal to the lymphatic system. The ease, however, with which chancroids reproduce themselves after mere contact should throw discredit upon such an hypothesis.

By far the most acceptable explanation of apparently long "incubative" periods is the ignorance of the patient, for these periods of time, of the existence of the disorder. Incredible though it may appear, there are few experts who, after recognizing threatening inguinal adenopathy, are not guided by this condition to exploration of the genital region, with the result of discovering and first pointing out to the patient a previously unsuspected chancroid. Often a minute, pin-point-sized lesion is thus found lurking in one of the pockets by the side of the frænum, or hidden immediately behind it, or in

another unobtrusive region. It should be remembered in this connection that many, but by no means all, of the patients displaying these symptoms are of the filthy class, with associates of similar social grade. In men of this type it is not rare to discover a remarkable toleration of the uneasiness produced by a long-continued accumulation of the smegma præputii, and the sensations produced by chancroids are mistaken by such patients for the pruritic symptoms induced by the mild balanitis which retention of the smegma often excites.

Subjective Sensations.—From what precedes it will be seen that the chancroid, as distinguished from an infecting sclerosis, may be the source of subjective symptoms. These symptoms may be merely pruritic or may be of the grade of severe pain. Exceptions in this particular are noteworthy. At times the infecting chancre of syphilis is painful and the chancroid is unproductive of sensations of a morbid character; but for the majority of cases the chancroid is distinguished by its inflammatory character and by the tenderness and pain associated with it. These symptoms are more pronounced when the lesion is rapidly progressing as an ulcer, or when—a rare accident in modern practice—there are complicating accidents of the order of gangrene or phagedena.

Absence of Specific Induration.—The base of the typical chancroid, however large-sized and deeply ulcerated, is invariably pliable, softish, and non-indurated. It never exhibits, save in mixed forms, the characteristic ivory-like hardness and density of an equally typical initial sore of syphilis. There may be inflammatory engorgement, and, after extensive cauterization, a marked

thickening of the tissues on which the ulcer rests, but a truly characteristic hardness is never produced by these means.

While this is true, the fact remains that only a skilled touch, and even that in doubtful cases only after repeated examination, can decide accurately upon the nature of the disease. It is not a wholly safe procedure to base a decision as to the character of a venereal sore upon the test of its induration at a given moment under the finger and thumb of an expert. There is a decided difference between a voluminous mass of infiltration at the base of a simple chancre which has been inflamed by any of the accidents to which it has been exposed, and the exceedingly delicate, parchment-like induration of the syphilitic chancre in some of its least pretentious types. In brief, upon the presence or absence at any one moment of induration, or what seems to be induration, an exact diagnosis cannot invariably be based.

Auto-inoculability of the Secretion.—The purulent secretion furnished by a typical chancroid is indefinitely auto-inoculable on the person of the affected individual—a fact repeatedly demonstrated by the occurrence clinically of lesions in regions in close proximity to chancroids. Thus, a sore situated on one labium is tolerably sure to infect a corresponding point on the other side; a chancroid upon the outer face of the scrotum, the portion of the thigh naturally in close contact. In this way it happens that in cases scores and even hundreds of chancroids are found in filthy and neglected subjects where the indefinite auto-inoculability of the sores has been in no way inhibited. That the pus-corpuscles are chiefly responsible for this virulence would be suspected on *a priori* grounds, even had it not

been demonstrated that the secretion, when deprived of its pus-cells by filtration, is either non-inoculable or produces, when any results at all are obtained, an atypical lesion.

In this connection it is needless to do more than set down the fact that in the early part of the last half of the present century the practice of so-called "syphilization," enthusiastically lauded in Sweden, was based on an erroneous interpretation of the auto-inoculability of the chancroid. By practically exhausting the power of the skin to react against a great number of artificial inoculations with chancroidal pus it was thought that syphilis was eradicated. The doctrines then held have long since been abandoned, and the practice has properly been relegated to a place among the curiosities of medicine.

Location.—Chancroids are said to occur, like the initial scleroses of syphilis, upon any portion of the integument and the adjacent mucous surfaces; but such statements cannot be accepted without reserve. Certainly there is no proportion whatever between the frequency of extra-genital infecting scleroses and chancroids, the former being in large centres of population scarcely a curiosity, and the latter being one of the rarest of all experiences. The most frequent site of chancroids is, with overwhelming preponderance, the genital region; and the aphorism still holds, that chancroid is the most truly venereal of all the diseases classed under that title.

In men the most frequent sites of chancroids are the frænum, the prepuce, the glans, the sheath of the penis, and the tip of the urethra. In the last-named region, however, infecting chancres are much more common. In

women the sites of common occurrence of chancroids are the labia majora and minora, the vestibule, and the mucous membrane of the vagina near the ostium. Anal and perianal chancroids are far more common in women than in men, by reason of the readiness with which the auto-inoculable secretion flows over the perineum to the sensitive and readily eroded mucous orifice of the anus.

Extra-genital chancroids are chiefly found upon the mouth, the eyelids, the lips, and other parts of the face. They are among the rarest of all venereal lesions.

Complications.—*Mixed Chancre.*—The subject of chancroid may exhibit, in the course of a few days after exposure, several typical lesions the result of simultaneous infection or consecutive auto-inoculation. All these lesions, in the course of a fortnight, may be progressing toward complete involution, when one of them (rarely more) may begin to assume the characteristics of an initial sclerosis of syphilis, general symptoms of the disease following in due course. These cases are illustrations of coincident infection with the virus of the soft chancre and of syphilis, the resulting sore being of the type commonly termed "mixed." Here two diseases coexist, precisely as when patients of the lower class present themselves at the public charities, suffering at the same moment from local evidences of syphilis, blennorrhagia, and infection of the skin or of the mucous membranes with pyogenic cocci. For details of the mixed chancre the reader is referred to the pages of this work devoted to the subject of syphilis.

Vegetations and other Lesions of the Skin and the Mucous Membranes.—Venereal warts, herpetic vesicles or patches of membrane affected with balanitis and pos-