adjacent organs. The nodules are composed of connective tissue, which undergoes a metamorphosis into dense cicatricial bands appearing, when they are fully developed, to divide the hepatic mass into lobules. Centrally the nodules undergo softening and necrosis, due to obliteration of the vessels which supply them. Most observers agree with Virchow, that there is also a fibrosis affecting the syphilitic liver, not due to gummatous deposits. In these cases fibrous bands stretch from the capsule in many directions, compressing the hepatic substance between the divisions thus artificially produced, which are further intersected by lesser striations of fibres passing from the larger bands. The effect is very like the shrunken condition of the gland occurring in cirrhosis. As a sequence of this and also of the other changes noted above, amyloid degeneration both of the walls of the hepatic vessels and of the liver-cells themselves may occur. Calcareous metamorphosis is rarely seen, and ulceration is of rare occurrence. We have noted a single case only in which an adult within the first year of infection died apparently as the sole consequence of syphilis of the liver. This organ was stuffed with gummata to an extent interfering seriously with the performance of its function.

During life it is rare that any symptoms are displayed sufficiently distinct to point unmistakably to hepatic involvement. Icterus is by no means rare in syphilis, especially in its early months; there can be little question, however, but that the symptoms may be wholly due to functional derangement of the liver. Pain and tenderness in the hepatic region, and ascites, may or may not be present. There are no signs absolutely diagnostic of hepatic disease in syphilis.

Syphilis of the spleen and of the pancreas is exceedingly rare. When unmistakably involved, the spleen may be large and soft, as in non-syphilitic affections, or enlarged and indurated from fibrosis, or affected with diffuse, yet more rarely circumscribed, gummatous deposit. As usual in splenic enlargements, when voluminous as a consequence of syphilis, the organ is usually many times its normal size.

When the pancreas is attacked, the lesions of syphilis are usually found in and about the head of the gland, which, like the spleen, may be either enlarged or dense and contracted. In the latter event the acini are firmly compressed, as in the case of the hepatic cells of the liver, by an interstitial overgrowth, corresponding with the condition of fibrosis found in the spleen. Circumscribed gummata of this gland are rare, but they have been noted in both large and miliary-sized nodules.

Gummatous changes of the suprarenal glands have been reported in a few instances. The affection may be said, however, in consequence of its great rarity, to be a pathological curiosity.

Syphilis of the Rectum and the Anus.

Chancres of the anal region are apt to be ignored in consequence of the fact that physician and patient do not usually suspect the nature of the trouble. In our experience these lesions, as distinguished from the soft chancres of the anal region occurring in women, are more common in men, and result usually from practices against nature. These initial scleroses are often supposed to be "piles," of which complaint is usually made. Split-pea-sized and firm papules are then visible, usually one only, just beyond the anal verge, and the

bubo of the vicinity is distinguishable in the inguinal region or elsewhere. Other scleroses of this part are erosions and ulcers. The star-shaped ulcer of the soft chancre of the anus is never imitated by the syphilitic sclerosis, by reason of the failure of auto-inoculability. Chancres within the verge of the anus are rarely seen.

The early perianal lesions of systemic syphilis are usually, and especially in the case of young adults, flat papules, springing or not from macular lesions. These may be discrete or confluent, in the latter event producing a perianal zone of infiltration with a dull redness that might lead the inexpert to suppose the case to be one of eczema, especially when, as is often the case, the lesions of this region are the seat of a considerable pruritus.

In consequence of heat, moisture, and friction, these papules have a uniform tendency to flatten and to furnish a secretion. In this way miliary and (more often) lenticular papules, condylomata, elevated mucous patches and mucous plaques, verrucous growths, and other hypertrophic lesions develop about the anal orifice. As a consequence of their softness they readily break down into fissures radiating from the anus, and even into formidable ulcers. The secretion they furnish is commonly exceedingly foul. Many of the widely variant hypertrophies once known under the misleading title of "lupus of the vulva" (*esthiomène*) are papillomatous growths about the anus as large as an egg and larger, beginning in an overgrowth of flat moist papules of this region. As these lesions are rapidly developed, so in favorable cases and with the best of treatment they can be made to disappear speedily.

More minute ulcerations occur at the verge of the anus, usually multiple, reddish or grayish in hue, oval and elongated, rarely circular, not very painful, and discovered perhaps by the physician engaged in making a careful search for lesions. With reference to some of these, a doubt exists as to their exclusive origin from the infectious disease present. They are seen in persons who have never been infected, and they are discovered with surprising frequency, by practitioners who habitually make examinations of the anal region, in all classes of all subjects after middle life. A line of demarcation is drawn between these and the other ulcers of syphilis, in the fact that with exceedingly few exceptions simple ulcers never produce the formidable ravages to which almost every syphilitic loss of tissue at times succumbs. The really serious destructions of tissue about the anus are produced chiefly by the chancroid.

Tuberculous ulcers of the anal region, to which for a long period the title "tuberculosis of the skin" was practically limited, are wholly different from the minute lesions described above. The tuberculous losses resemble rents or tears of the tissue; they have sharply cut walls, deep floors looking like clefts, and are as irregularly outlined as if cut at random. Syphilitic ulcers of this region are circular in outline and have undermined walls and pultaceous floors. Multiple tuberculous ulceration of the rectum always occurs in connection with other symptoms of tuberculous disease.

Gummata of the Rectum. ("Ano-rectal syphiloma;" Syphilitic stricture of the rectum).—Several processes have been described in connection with gummatous changes in the rectum, and there have been given to the resulting deformities of this organ names which distin-

guish merely different phases of one disorder. The simplest consideration of the subject is that which traces the career of a single process in these several manifestations.

Gummata develop in the rectum as smooth, circumscribed bodies set in the mucous or submucous tissue. They may be single, multiple or exceedingly numerous, or diffuse in two significant directions. In the one the area of development occupies a district more or less parallel with the long axis of the gut. In this event contracture of the infiltrated tissue does not involve coarctation of the rectal walls. In the other case the gummatous involvement occurs in an annular form, encircling the rectal pouch usually between two and three inches from the anus. In the latter event contracture of the gummatous mass acts in the same manner and direction as a sphincter muscle, and induces coarctation of the walls of the rectum. All the phenomena of stricture of the rectum may result from this annular gummatous change in the intestine, and the "ano-rectal syphiloma" of certain French authors is thus produced.

The questions arise whether every stricture of the rectum is consequent upon gummatous changes, and also whether every stricture of the rectum, as has been believed, is due to syphilis.

With respect to the first question, it is clear that while every syphilitic stricture of the rectum is practically due to gummatous infiltration of the rectal walls, it by no means follows that the beginning of the mischief lay in gummatous change. Early in the history of most cases there is a record of uneasiness at stool and perhaps of blood-smeared fæces, indicating that some local lesions, possibly erosions or superficial ulcers, had ex-

isted before the more serious change occurred. The unfortunate part of such histories is the rarity with which the expert explores the rectal pouch before gummatous infiltration can be demonstrated. The second question can be dismissed with some certainty, even in the face of dogmatic assertions to the contrary. Syphilis is the cause of the majority of all cases of stricture of the rectum. But this serious disorder may also result from the contraction induced by chancroids of the same part, and it is probable that it may also result from tuberculosis and other changes in the same organ. A few traumatic cases are on record.

When an annular gummatous band constricts the rectum, it produces a fibrinous change in the wall of the gut, the contracture of which, whether there be or not antecedent changes in the mucous membrane, sets up a proctitis liable to result in such changes. It has been seen that in certain organs, notably the liver, an unquestioned gummatous deposit may result in a very firm and contractile fibrosis. This is what happens in the rectum. In some of these gummatous involvements the fibrous metamorphosis of the walls of the rectum is so completely annular in its direction that a steadily increasing contraction occurs in the grasp of the ring, encroaching more and more upon the calibre of the gut. By interference with the excretion of the intestinal contents, and by inducing a catarrhal condition of the bowel above the coarctation set up by such interference, one of the gravest and most menacing of the complications of syphilis in the human body is eventually established.

On digital exploration the milder cases suggest to the touch that the mucous surface is merely thickened; at times both increase in thickness and roughening of the

inelastic surface can be appreciated. Later the finger encounters an annular and sensitive band, dense in structure, unyielding, and varying with respect to the size of the usually central aperture which it surrounds, the latter being at times sufficiently pervious to admit the tip or the entire thickness of the digit; or the gut may be so occluded as to furnish no perceptible opening. The free edge of this strictured portion is usually sharp to the touch. The commonest complications are papillomatous and other growths, with ulceration of the mucous surface of the rectum and dilatation of the pouch above the stricture. Very constant of occurrence are peculiar lobulated or tongue-like growths about the anus (*languettes*), in many cases wholly external to the gut, usually numerous, and due to congestion of the parts below the site of constriction. These growths are almost pathognomonic of the disease. Hemorrhage, prolapse of the fundus of the bladder, and constant dribbling of urine are also symptoms of extreme distress in women, that sex furnishing by far the largest number of all patients. There is usually a steadily increasing sense of weight in the pelvis, and after ulceration painful defecation, with either flattened stools or liquid evacuations, the sole relief of the intestinal obstruction occurring as the result of a diarrhœa.

The diagnosis is to be made between the lesions of the rectum produced by syphilis, chancroid, carcinoma, and tuberculosis. For the most part, the history of the patient and microscopical examination are required in order to ascertain the facts.

"Proliferating syphilitic rectitis" (*rectite proliférante syphilitique* of the French) is a term used to designate the form of rectal disease in syphilis characterized by

unusual hypertrophic growths in the form of vegetations and nodules on the rectal membrane.

Syphilis of the Genito-urinary Organs.

In Men.—The penis is the frequent seat of the initial scleroses of syphilis, of all consecutive lesions of the same disease, and of gummata which ulcerate and at times produce extensive ravages of both cutaneous and subcutaneous tissue. These lesions have heretofore been described in these pages, as have also the chancres of the infected occurring after exposure to fresh sources of disease. When gummata develop in the corpora cavernosa, they are represented by pea- to larger-sized nodules, interfering with perfect erection of the organ. Very rarely annular bands form about the pendulous portion of the penis, distinctly circumscribed, and suggesting by their firmness the presence of a metal ring. The chancre situated at the tip of the urethra, accompanied by a sero-purulent discharge and liable to be mistaken for a blennorrhagia, has also been described. Deeper gummatous deposits in the urethra and at the base of the penis are quite rare. Syphilis of the prostate gland and of the seminal vesicles is said to occur, but in the few rare cases reported no positive knowledge is had respecting the characters of the disorder.

Gummatous deposits in the epididymis and the cord are decidedly more common than is generally supposed. Both early and late in the disease the globus major (much more rarely the globus minor) of the epididymis becomes indurated, inelastic, and at times somewhat tender. When thus affected, the nodule has been compared by an English writer to the condition which might be recognized if an iron nut were screwed fast over the

upper part of the testicle. One or both testicles simultaneously may be involved, the distinctly circumscribed firm mass being readily recognized on palpation. A pachyvaginalitis also occurs with serous effusion in the sac of the tunica, exactly simulating the hydrocele of simple cases. Blood, pus, or serum may be found on exploratory puncture, and the indurated mass of the gummatous area may be discovered behind. Gummatous changes in the cord, circumscribed and diffuse, also occur where the epididymis has been, in whole or in part, the seat of the same trouble.

Syphilitic orchitis is among the frequent complications of late syphilis, the gummatous change occurring very insidiously, often without any knowledge whatever of the change on the part of the patient. This condition is so frequently discovered for the first time by the physician in his examination of the patient that it is wise in all cases of gummatous changes recognized elsewhere (bones, subcutaneous tissue, nervous system) to examine with a special view to the recognition of disease of the testicle.

When the body of the testis proper is attacked, fibrosis (as of the liver, already explained) or gummatous infiltration may ensue, and the latter in either circumscribed or diffuse form. A part or the whole of one or of both glands may be involved; often the nodular elevations of the surface of the gland may be recognized by palpation. In other cases the dense induration of the testicle may be determined with accuracy by the touch and by its well-defined limitations, but the tissue is quite smooth and has the feeling of marble. The gland may be unaltered in size or more voluminous than normal, attaining in extreme cases the size of the largest orange.

The apparent increase in size may be due to an accompanying hydrocele. When resolution occurs, the gland may slowly diminish in size by the absorption of the sclerotic or gummatous mass, and, as the deposit has usually squeezed the secreting cells of the organ to the point of destruction, the ultimate result is the shrivelling of the testicle to a diminutive miniature of its former self, as after the occurrence of mumps of the same gland. In other cases the gumma degenerates, attachments form between the gland and the scrotal envelopes, softening occurs at a central point, and the gumma bursts with the subsequent production of ulceration and fistulous connection of the testicular mass with the integument of the scrotum. At times, as a consequence of the contractility of the muscular and other parts not affected, the parenchymatous tissue is forced through the scrotal opening until "benign fungus of the testicle" results—a condition until lately not well understood.

In the matter of *diagnosis* gonorrhœal epididymitis so commonly affects the globus minor that a distinction between it and a syphilitic change is usually readily established; but it is not to be forgotten that in both disorders the location of the lesion may be different. Tuberculosis of the testicle commonly begins with involvement of the prostate, and it is a malady wellnigh invariably of those who are not victims of venereal disease. In syphilitic affections of the scrotum the lesions are those of the general surface of the integument, changes in their aspect being due to friction, motility, heat, and other accidents of the location.

In Women.—In the genital region of women, as well as in that of the male sex, the initial scleroses

and consecutive lesions of syphilis are common. Chancres of women are not often recognized, by reason of their hidden position within the vulvar portal. The late gummatous lesions of this part should be distinguished from the condition long termed "lupus of the vulva" (*esthiomène* of Huguier). Under this title have been described gummatous lesions of the vulva, in which category are to be classed both circumscribed and diffuse indurations, hypertrophic growths (as in strictures of the rectum and due to the same cause, tongue-like *languettes*, and otherwise shaped papillomatous masses), and ulcerations with ragged edges destroying in whole or in part the ostium vaginæ and invading the region of the perineum and the anus. The frequent firm œdema of the vulva is supposed to be due to changes apart from the syphilitic process. Cancer of this region, especially of the clitoris, is to be excluded in establishing a diagnosis, as is also Breisky's "kraurosis of the vulva," a rare disease accompanied by contraction of the parts. Tuberculosis of the vulva is exceedingly rare, and it probably occurs with even greater rarity dissociated from vaginal lesions.

Syphilis of the vagina, if not rare of occurrence, is rarely observed. Chancres and consecutive lesions are inapt to form in the vaginal walls, and even when these are implicated in gummatous changes the morbid process usually spreads to this mucous surface from others in the vicinity. The urethra of women may be the site of chancres and early and late lesions of the disease; in very rare cases stricture results from gummatous involvement of the submucous tissue, especially in long-standing cases of syphilitic stricture of the rectum. The mucous surface of the cervix and of the os uteri is the seat of

both chancre and consecutive lesions more often than is generally supposed; the former have previously been described. Mucous patches and other consecutive lesions of syphilis in this region, in their appearance and evolution, scarcely differ from those seen within the oral cavity. Care should be observed, in formulating a diagnosis, not to confound epithelioma of the os, polypus, and chancroid with the lesions of syphilis. The affections of the womb, ligaments, tubes, and ovaries due to syphilis are rare, and careful investigation of the subject is wanting.

The bladder is rarely the seat of either early or late syphilitic lesions. Proksch is almost alone in his researches on the subject of gummatous changes in the vesical walls, with ulceration and the formation of a sinus connecting the gummatous nodule with the vesical cavity. Two cases have been observed by us; in one case a papillomatous growth occurred as a result of syphilitic changes in the wall of the bladder (revealed by suprapubic cystotomy); in the other, a man sixty-two years of age, there had been hypertrophy of the prostate before infection, and a gummatous mass developed within the gland, reaching into the fundus of the bladder.

Syphilis of the Kidney.—The early changes in the kidney due to syphilis may occur within a few months after infection, the symptoms being those of an acute nephritis with slowly or more rapidly developing œdema of the face and the limbs, dysuria, frequency in voiding the urine, headache, backache, and profound asthenia. Albumin, blood, epithelium, blood-corpuscles, and casts may all be present in the urine. Under vigorous treatment these patients almost universally recover, even

when the danger seems extreme. The organ is found enlarged in most cases, the cortical portion is increased in relative size, and the tubules are blocked with epithelial débris and colloid masses. The glomeruli examined with the microscope may exhibit the same catarrhal state or be normal in appearance.

In the late lesions of the kidney there is found, as in the liver, a species of fibrosis ("interstitial inflammation") with resulting contracture and pressure-effects upon the glomeruli, or gummatous deposits, circumscribed or diffuse, the latter rather more rarely. As a consequence of either process amyloid or fatty degeneration may occur, in rare cases, simultaneously in the same organ. The lardaceous kidney of syphilis is large and white and unilateral or bilateral. At times good recovery ensues where but one organ was probably involved. The same is true of gummatous changes. In both conditions the urine may contain albumin, blood, casts, epithelium, and even pus-cells. Usually the cortical and pyramidal portions of the kidney are involved. There is strong reason to believe that gummatous changes in the kidney in syphilis are of greater frequency than is suspected, many patients recovering from even severe renal symptoms without grave results. It is to be remembered also that many of the renal changes minutely described in the treatises on pathology are supposed by modern authors to be indirectly due to syphilis. The prognosis is grave when both organs are involved and amyloid degeneration has taken place; syphilitic changes in one kidney or in a portion only of one are to be regarded with greater hopefulness. We have watched for fifteen years, after grave syphilitic involvement of the kidney, patients who suffered from no

return of renal symptoms. Surgical removal of a single kidney found to be affected with syphilitic changes has been followed by recovery.

Syphilis of the Nervous System.

Syphilis both early and late in its career affects the nervous system, the earlier manifestations being, for the most part, reactive, without appreciable lesion, and due chiefly to the circulation in the system of intoxicated blood. Late lesions of the nervous system may occur from a few months to several years after infection, and may result from syphilis of the osseous system, producing indirectly pressure or other injurious effects upon the nerves or the nervous centres in anatomical relation with the bones; or from syphilis of the meningeal coverings of the nerves, with effects not widely different from those exhibited when the bones are involved; or from syphilis of the nervous cells and fibres, or from syphilis of the larger vessels furnishing nutrient material to the nerves. Gummatous deposits may be responsible for the symptoms present in any of the several complications named, the evolution and subsequent history of the neoplasm having already been described. In one or another of these several forms syphilis of the nervous system occurs more often in male than in female patients, for the reason commonly accepted—that men are, as a rule, more than women subject to mental care and physical fatigue in business and toil. By some authors the nervous system is credited with the larger number of all the so-called "late" or "gummatous" changes noted in syphilis—a proportion, however, that is chiefly conspicuous in the statistics of experts in nervous maladies. Certain it is