ances of the initial lesion are so similar that they can hardly be distinguished, and moreover the rapid and enormous growth of a papule on the lid sometimes causes it to resemble a gumma.

Sometimes infiltrations into the substance of the lid between the cartilage and the external surface do not ulcerate, but remain for a long time as nodules, varying in size from a shot to a large-sized filbert. Under these circumstances the skin over these nodules is but slightly if at all reddened, and in this case these protuberances bear a close resemblance to tarsal tumors or chalaza, for which they have been mistaken. These masses usually resolve themselves under the free use of antisyphilitic remedies, especially the mercurials.

Syphilitic inflammation of the tarsal cartilage has been reported latterly by various observers under the name of *tarsitis syphilitica* (Magawby, Fuchs, Vogel, Bull, and others). It is characterized by a thickening from inflammatory infiltration of the cartilage, which usually maintains its shape, and swelling of the lid, in which the skin may or may not be involved. As a rule it is found that after the acute stage has passed and the tumor has disappeared, the cartilage has lost its normal elasticity and resistance. The affection is very obstinate, lasting over several weeks if not months, and it is apt to be followed by a more or less complete loss of the ciliæ.

Finally, inflammation due to constitutional syphilis may attack the tendons and fasciæ of the muscles of the globe, and especially the capsule of Tenon. This is always a grave lesion, as deepseated abscesses are liable to form, hemmed in by the fasciæ and thecæ. Besides constitutional treatment, these affections often require surgical interference in the way of deep and broad incisions into the orbit, especially in the line of the muscles and close to the globe. They are apt to end, in spite of all care and skill, in total destruction of the globe through panophthalmitis.

Affections of the Conjunctiva.

If we except the ulcerations of the lids, already described as sometimes encroaching from the mucous membrane of the internal surface upon the cul-de-sac, the conjunctiva, that is, the ocular conjunctiva, is very rarely the seat of syphilitic manifestations.

Savy,[1] however, reports a case (Fig. 129) of a syphilitic papule developed upon the ocular conjunctiva, three millimetres above the cornea.

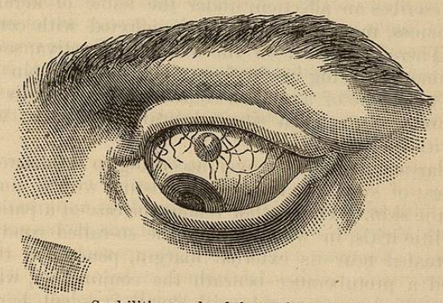
The patient contracted syphilis six months before, and had over the whole body an obstinate lenticular eruption; the eyelids were red, the lashes had fallen off, and the papular eruption had extended to the under surface of the lids. A cure was obtained after three weeks' specific treatment. Savy quotes two similar cases from P. Horteloup and from Lailler.

[1] Claude Savy, Contribution à l'étude des eruptions de la conjunctive, Thèse de Paris, 1876.

Infants tainted with hereditary syphilis are, indeed, more frequently than others the subjects of ophthalmia neonatorum, to which they are peculiarly exposed from their general cachectic condition and the frequency of vaginal discharges in their syphilitic mothers; but there is no direct connection between their hereditary taint and the purulent inflammation of the conjunctiva, which usually makes its appearance before the development of other symptoms.

Mr. Smee[1] and Mr. France[2] have met with "blotches" upon the conjunctiva, coinciding with syphilitic eruptions upon the integument and disappearing under mercurial treatment. The appear-

Fig. 129.



Syphilitic papule of the conjunctiva.

ances, as described by Mr. France, are as follows: "This form of disease presents itself as a limited and well-defined discoloration of the mucous membrane of the globe, which, within the affected area, is slightly thickened and raised, but not conspicuously, if at all, more vascular than the neighboring surface. There does not seem to be any disposition to ulceration, as when the margin of the lid is attacked with syphilis; there is no pain and no morbid discharge." Mr. France met with two cases, of which he gives a plate, Mr. Smee with only one.

There would appear to be no reason why the ocular conjunctiva should not be affected both by true chancre and chancroid. I have never seen the occurrence of either, but, as this work is passing through the press, Boucheron reports a well-authenticated case of a true chancre of the semilunar fold conveyed in a kiss from mucous patches in the mouth, and refers to another in the same situation in a physician who rubbed his eye to relieve itching with his fingers soiled in examining a case of syphilis (Gaz. d. hôp., 14 juin, 1879).

I have seen several times what I have taken to be ulcerations of a

[1] London Medical Gaz., 1844, pp. 347–8.
[2] Guy's Hosp. Repts., third series, vol. vii.

secondary nature, such as have been described by Magni, Noyes,[1] and others. The latter says the common site for these ulcerations is near the margin of the cornea, where a reddened and elevated spot appears, resembling a severe phlyctenule. It rises higher and is more extensive than such eruptions usually are, and it soon begins to ulcerate. The surface not only becomes excavated, but shows a jelly-like, semi-transparent tissue about the eroded part, and this may spread to the cornea, which then often has a hazy appearance in the neighborhood of the ulceration, giving, especially just before the surface of the protuberance begins to ulcerate, the picture of episcleritis. The search for corroborative symptoms of syphilis in other parts of the body will usually be rewarded by success.

Magni describes an affection, under the name of kerato-conjunctivitis gummosa, in a woman who was affected with constitutional syphilis. There appeared, on the *ocular* conjunctiva, several semi-globular tumors, varying in size from the head of a pin to that of a bean. These were of a whitish color at their summits and red at the base, and, except when situated near the cornea, were freely movable with the conjunctiva.

The ocular membrane, moreover, according to Desmarres,[2] is sometimes the seat of syphilitic tubercles coexisting with a similar eruption upon the skin. This author relates the case of a patient affected with syphilitic iritis, in whom one of the so-called condylomata of the iris, situated near its external margin, penetrated the sclerotic and formed a protuberance beneath the conjunctiva, which, moreover, was studded on every side with small, indolent, hard, and oblong tumors, exactly similar to an eruption of syphilitic tubercles upon various portions of the integument. The disease disappeared under mercurial treatment.

The mass which penetrated the sclera was probably a gummy tumor of the ciliary body, about which more will be said a little later.

Wecker, Estlander, Bull, and others have reported cases of gummy infiltration of the ocular conjunctiva. In most of these the product in the conjunctiva has appeared to be simply the extension of that in the sclera from continuity of tissue. Dr. Bull's[3] case is worthy of note as possessing what would appear to be an independent focus of infiltration in the conjunctiva proper, or, at least, in the limbus. This was in the case of a man, the victim of a combination of constitutional syphilitic manifestations, among which "there was a peculiar eruption upon the hands and face, composed of elevated spots, with flat tops, some round, others oval, yellowish-red in color, with a narrow dark-red areola, neither painful nor tender to the touch, and presenting a mid-state between vesiculation and pustulation.

[1] Syphilis of the Eye, 1874, p. 4.
[2] Traité des maladies des yeux, t. ii., p. 216.
[3] American Journal of the Medical Sciences, October, 1878.

"The eyes were almost identical in appearance. Surrounding the corneæ there was a growth, most marked on the outer and lower sides, varying in height from one and a half to two lines, seated in and beneath the ocular conjunctiva. This growth extended away from the cornea on all sides about one-third of an inch, was pale yellow in color, moderately hard to the touch, with an irregular, knobby surface, and apparently destitute of vessels. The conjunctiva was firmly adherent to this growth, and the cornea was imbedded in this wall like a watch-crystal in its frame. On being incised, it cut like brawn and the hæmorrhage was very slight. Upon the sclera of each eye, between the tendons of the superior rectus and external rectus muscles, and partially covering the latter, was an extensive and extremely well-marked gummy infiltration of the sclera, very vascular, very tender to the touch, and especially painful when the eyes were turned outwards. This infiltration extended backwards symmetrically in the two eyes, but was somewhat more extensive in the right eye. The media was clear, and an ophthalmoscopic examination revealed nothing abnormal in the deeper tunics of the eyes."

Syphilitic Affections of the Cornea.

While ulceration of the cornea with loss of tissue is in non-specific cases the commonest form of disease to which this membrane is liable, in syphilis, ulceration rarely, according to some never, occurs as the direct result of the constitutional taint. When, therefore, an inflammation of this membrane does occur, it is usually in the substance of the cornea, and in the form usually known as parenchymatous keratitis. And this interstitial affection again may show itself as diffuse or punctate. In these forms, moreover, it is usually the result of hereditary syphilis.

Diffuse keratitis is usually ushered in by a slight pericorneal injection and with a slight grayish opacity near the centre of and in the substance of the cornea. The haziness gradually increases until the greater part of the cornea is involved, giving to this membrane the appearance of ground glass, especially when the epithelial layer is implicated. It is usually in the beginning not accompanied by much pain or photophobia, though both may be present, together with abundant lachrymation, especially as the disease progresses to the deeper parts of the cornea. There is little vascularity as a rule, though, especially at the periphery, minute vessels may be descried, which, increasing in number and extent, may give, especially at a little distance, a rosy hue to the cornea. I have seen cases in which there has appeared to be an interstitial hæmorrhage, so deep and close was the injection. In one case, indeed, the entire cornea was a blood-red mass, as if the bleeding had occurred into the very substance of the membrane, the epithelial layer retaining its polish. Diffuse keratitis is the form which the disease usually takes in young children, while the punctate variety appears later in life, or, at least, such has been

my observation. Mr. Jonathan Hutchinson[1] has expressed the opinion, founded upon a lengthy and ably conducted series of observations, that the peculiar inflammation of the cornea met with for the most part between the ages of three and twenty, and known by the name of "strumous corneitis,"[2] is always due to hereditary syphilis. In his attempt to establish this point Mr. Hutchinson has attached no little importance to certain peculiarities in the form, size, and color of the permanent incisor teeth, which he regards as diagnostic of inherited syphilitic taint, and which he states are all but invariably coexistent with strumous keratitis.

In describing this condition Mr. Hutchinson says: "As diagnostic of hereditary syphilis, various peculiarities are often presented by the

FIG. 130.

"The teeth converge towards each other, are very short, have a vertical notch or cleft in their free edges, and are also very narrow from side to side at their edges, not being so wide there as their necks."

others especially the canines, but *the upper central incisors are the test teeth.* When first cut these teeth are usually short, narrow from side to side at their edges and very thin. After a while a crescentic portion from their edge breaks away, leaving a broad, shallow, vertical notch, which is permanent for some years, but between twenty

FIG. 131.

and thirty usually becomes obliterated by the premature wearing down of the tooth. The two teeth often converge, and sometimes they stand widely apart. In certain instances in which the notching is either wholly absent or but slightly marked, there is still a peculiar color ('a dirty brownish hue resembling that of bad size'[3]), and a narrow squareness of form, which are easily recognized by the practiced eye."[4] The first set of teeth do not exhibit this malformation.

Since the publication of the former edition of this work, I have carefully examined into the symptoms and histories of the numerous

[1] Ophth. Hosp. Rep., vol. i., p. 229.
[2] The name "Keratitis" is much preferable to "Corneitis."
[3] Hutchinson, on the means of Recognizing the Subjects of Inherited Syphilis in Adult Life, Medical Times and Gaz., Lond., Sept. 11, 1858, p. 265. Syphilitic Keratitis in a Child, aged three years, London Lancet, Dec. 18, 1875.
[4] Ophth. Hosp. Rep., vol. ii., p. 96.

cases of interstitial keratitis coming under my care, and have, in so many instances, been able to confirm Mr. Hutchinson's statements relative to the deformity of the teeth, and a clearly marked syphilitic taint inherited from the parents, that I can testify to the general correctness and great value of his observations, although I am not prepared to say that interstitial keratitis is always due to congenital syphilis. In some instances I have not been able to satisfy myself that the parents had been affected with this disease, but the difficulty of such inquiry is well known, and the truth often escapes detection.

It has been the custom from time to time since Mr. Hutchinson made his observations to question the validity of his views, both as to the fact of interstitial keratitis being due to hereditary syphilis and the diagnostic value of the so-called characteristic teeth. Thus it has been asserted, not only in England, but on the Continent, and especially in Germany, that the disease may be the result of malnutrition in scrofulous and rickety subjects, and it has been maintained that the malformation of the teeth is the simple arrest of development in a perverted constitution from other causes than syphilis. Thus Maunther[1] declares that "the German ophthalmologists have in no way been able to indorse the theory of Hutchinson;" while, on the other hand, Förster,[2] an eminent German authority, states at a still more recent date just the contrary, and maintains that "the view that interstitial and parenchymatous keratitis is frequently due to hereditary syphilis is constantly gaining more adherents."

It would be out of place in a work like the present to go deeply into a discussion in regard to matters about which there is so great a difference of opinion, but I may state briefly that I believe that the hereditary taint, though not the only, is still the predominating cause of interstitial keratitis. And this I consider important in a clinical point of view, for I can fully confirm Mr. Hutchinson's statement, that the most efficacious treatment of this disease in the majority of cases is by means of mild mercurials and iodide of potassium, assisted by a nourishing diet, fresh air, and tonics.

Keratitis punctata differs from the diffuse in that the opacity is arranged in small circumscribed spots or points. These as a rule do not show a tendency to coalesce. Still this may occur so that the masses become large enough to occupy a quadrant or even the half of the corneal tissue. It also differs from the diffuse in being deeper seated and usually of a deeper grayish or yellowish color.

Maunther describes a form of punctate keratitis which is worthy of notice from the fact that it would appear to be even more pathognomonic of syphilis than the ordinary keratitis punctata, and, according to my experience, rather the expression of the acquired than the hereditary.

This form consists in the corneal tissue being studded with a multitude of minute dots not larger than a pin-point. These are not, as

[1] Zeissl's Lehrbuch der Syphilis, 1875, p. 288.
[2] Handbuch der gesam. Augenheilkunde, vol. vii., p. 186, 1876.

one would be inclined at first sight to infer, on the membrane of Descemet, but in the substance of the cornea itself. I have at the present moment a most beautifully marked case of this disease in a young woman of three and twenty, who, when I first saw her some three months ago, had a secondary eruption on the legs, arms, and neck. Externally nothing whatever was visible which would suggest the slightest trouble with either eye, and the only complaint which the patient made was that she had noticed accidentally that she did not see as well as formerly with her left eye. There was no pain and no lachrymation, and not the slightest injection of the conjunctiva. The cornea and anterior chamber, moreover, seemed to have their normal clearness and the iris was normal in every respect. A glance with the ophthalmoscope showed, however, the cornea to be the seat of a multitude of most minute dots, none of which were larger than a pin's point. By means of oblique illumination the most anterior of these could be seen in their real color, which was of a dingy gray or dirty white. The trouble continued without any perceptible change and without any inflammatory symptom whatever for nearly three months, when on catching cold there was some pain in the eye and a slight pericorneal injection, which rapidly subsided. A vigorous antisyphilitic treatment has been pursued from the first, and within the last week or two the dots have begun to disappear, these only remaining now in the central portion of the cornea.

The treatment of these syphilitic affections does not differ from that in the idiopathic form, and consists in the use of atropine with protection from light by means of colored glasses, antisyphilitic remedies, with a judicious administration of tonics, diet, and fresh air.

It is, moreover, sometimes necessary to perform paracentesis or even iridectomy.

Syphilitic Affections of the Sclera.

These, like the non-specific, may be divided into two principal classes: those affecting the superficial tissue, or episcleritis, and those affecting the interstitial layers, or parenchymatous scleritis. To these some syphilographers add a third, or scleritis gummosa, when the sclera is the seat of this specific infiltration or product. Episcleritis begins commonly as a small hyperæmic spot, usually about a line from the margin of the cornea. As the inflammation increases in extent and degree, the spot looks very much like a phlyctenula, though the coloration is more subdued, and, after a while, assumes a violet or purple tinge. On close inspection, the conjunctiva is seen to be but little if at all implicated, and, as a rule, the new formation has the appearance of a bulging of the surface, which merges gradually into the surrounding tissue, rather than a circumscribed growth, though even this may occur, so that it resembles a defined tumor the size of half a pea, or even larger. The favorite spot for the development of this localized inflammation is near the insertion of the external rectus muscle, or between this and the superior rectus. Still, any part of the anterior portion of the sclera may be affected, or more parts than one, either successively or at the same time. In this case the spots may spread and then coalesce, until the greater part of the circumference near the cornea is affected.

When the inflammation is confined to the episcleral tissue, there is, as a usual thing, but little pain, lachrymation, or photophobia, though all three may be present.

The trouble is, however, apt to propagate itself to the neighboring tissues, so that the cornea, iris, and ciliary body, one or all, may become implicated. In the last case, a kerato-irido-cyclitis is produced, than which there is no condition of ocular trouble more to be dreaded, or one which will more tax, even if it does not overcome, the skill and resources of the surgeon. The implication of the cornea is usually shown by a grayish diffuse opacity, corresponding to the seat of the inflammatory spot, and extending usually in a triangular shape into the clear area of the cornea; the participation of the iris manifests itself by adhesions and sometimes by exudation into the papillary space; and that of the ciliary body by the usual signs of cyclitis. When the episcleritis is due to a gummy deposit, it may resolve itself gradually, which is the rule under specific remedies, or it becomes eroded at its apex, forming an excavation, with more or less ragged edges, while the area is occupied by a jelly-like substance, of a grayish or yellowish color; and it is more than probable that some of the infiltrations which present these appearances, and which have been described as belonging to the conjunctiva proper, have had there origin in the episcleral tissue.[1]

Rare as the above affections are, those due to parenchymatous scleritis are rarer still. That such exist, however, I think there can be no doubt. The trouble usually begins by a circumcorneal zone of injection, of a very delicate rose or pink color, which often, after the disease has continued a short time, passes into a violet or purplish tinge, which close inspection shows to be due, not to vascularity of the conjunctiva, but of the sclera itself. The injection gradually extends backwards until the whole anterior zone of the eye presents the delicate rosy hue mentioned above, which differs entirely from the coarser mesh-like injection of an early conjunctivitis on the one hand, or the deep red of iritis on the other. The trouble may continue for a long time in a low chronic type, without much photophobia, pain, or lachrymation, though the latter two may be present in an intense degree, and then the disease forcibly reminds one of the description of what the older writers called rheumatic ophthalmia. Strange to say, through it all the iris may not become implicated, dilating ad maximum under atropine, apparently even to an abnormal degree, as sometimes the merest possible trace of the membrane remains visible. This is due, I think, to the fact that the limbus becomes congested

[1] Sturgis, Scleritis syphilitica, Archives of Dermatology, January, 1875, p. 112.