Passing from these general evidences of nervous disturbances due to syphilis, it becomes necessary to review the different special diseases. This may be more systematically done by considering them under three heads: syphilis of the brain, syphilis of the cord, and syphilis of special nerves.

Syphilis of the Brain.—Besides the aches and pains of early syphilis, and the general evidences of brain-disturbance affecting the intellect or the emotions, as noticed above, we have to consider hemiplegia, epilepsy, chorea, general paralysis, aphasia, and insanity, all liable to occur as consequences of syphilis affecting the brain.

Syphilitic hemiplegia rarely appears until several years after chancre. It has been occasionally observed within six months. The attack may, but rarely does, come on slowly; it is usually sudden, and there have been as yet few, if any, well-authenticated reports of cases of syphilitic hemiplegia where there was *total loss of consciousness with the attack.* Hence this sign is of the first importance. The patient may be getting out of bed, sitting a moment on its edge, doubting nothing, yet when he attempts to get up he pitches forward into the corner of the room and finds himself paralyzed,[1] or lying by a fence to shoot blackbirds, evidently perfectly well, when, endeavoring to raise himself to take aim, he may discover that his arm and leg are powerless.[2] More often the patient is found lying where he has fallen, unable to give an account of himself, more or less completely hemiplegic, but yet not unconscious. The attack usually occurs before forty, and not late in life, as in hemiplegia from ordinary causes. Fixed headache, usually worse at night, generally precedes the attack for several weeks, getting gradually worse. Pressure often increases this pain, although there may be no external evidences of disease upon the skull. The sensibility of the paralyzed side is usually preserved, or is less affected than the motility, although loss of sensibility, motion being preserved, occasionally occurs. Paralysis of the face sometimes comes on and lasts a few days before the rest of the side suffers; the leg or the arm may be first affected, with or without previous numbness or tingling of the extremities before the attack. Vertigo or convulsions confined to one side not uncommonly precede the seizure. Sometimes it takes a day for loss of motion to become complete. The intelligence is usually, indeed always, impaired, the emotions active, brain-power low. Mydriasis, so common with many forms of nervous syphilis, due to brain-lesion (being, indeed, a feature of diagnostic value, especially if the patient be unconscious of its existence, as is often the case), often accompanies the attack and long outlasts it. There may be intense hebetude, stupidity, almost idiocy.

Hemiplegia in a mild form, due to syphilis, may come on and disappear rapidly several times without appreciable exciting cause. If treated early, such cases are usually entirely curable.

[1] Case I., Van Buren and Keyes, *op. cit.*

[2] Case III., ibid.

Syphilitic epilepsy occurs several years after chancre, but, like all other rules in syphilis, this also has its exceptions.[1] Ordinary epilepsy occurs before puberty, the syphilitic epileptiform convulsion rarely before thirty; the reason being the same for bringing the date of epilepsy late in life as for bringing that of syphilitic hemiplegia early; namely, most patients get syphilis at about the age of twenty. The aura is not necessarily present in syphilitic epilepsy. Nocturnal attacks are not characteristic of it, as was once thought; nor is the occurrence of many attacks in quick succession, with a long interval of calm, necessarily conclusive. The main symptoms for diagnosis are three:

1. Persistent headache before the attack.
2. The age of the patient when the attacks commenced.
3. Aggravation of stupidity, intellectual distress, and general *malaise*, after the attacks.

The intellectual phenomena are the same as already detailed.

Treatment often effects perfect cures.

Chorea, catalepsy, and general paralysis have been noted but very rarely among the nervous diseases due to syphilis. They have none of them any special distinguishing marks, except their coincidence with other syphilitic symptoms, and the fact that they are curable by appropriate treatment.

To *syphilitic aphasia* the same remarks apply. Tarnowsky,[2] in his excellent monograph founded on the collection of fifty-two cases of syphilitic aphasia, has failed to point out any distinguishing mark for it, except the concomitant of the syphilitic diathesis and the possibility of speedy cure by appropriate medication. It is by no means an uncommon form of nervous syphilis.

Syphilitic Insanity.—Many different forms of mental alienation have been observed upon syphilitic patients often,[3] coincidently or alternating with other positive evidences of nervous syphilis. Neither syphilitic mania nor insanity has yet developed by its history any specially trustworthy diagnostic features. Coincidence of other troubles, nervous or physical, due to syphilis, should have weight in deciding the treatment, which latter not uncommonly produces wonderful results. In our rapidly-advancing knowledge of the power of syphilis in producing various forms of mental derangement it becomes obviously the duty of those intrusted with the care of the insane to examine them physically with care in search of evidences of constitutional taint. Perhaps, the two most valuable symptoms to be elicited on examination are, morbid tendencies of the subcutaneous surfaces of the tibiæ and irregularly dilated pupils.

Syphilis of the Cord.—The cord is less commonly the seat of syphilis than the brain. The lesions affecting the cord, as already de-

[1] We have observed a case one year after chancre; and Bumstead, p. 627, one after a few months.

[2] "Aphasie Syphilitique," Paris, 1870.

[3] Cases XXXI. and XXXIII., Van Buren and Keyes.

tailed, are disease of the bones inclosing it, meningeal thickening, diffuse connective-tissue proliferation of the parenchyma of the cord, with hardening or spots of softening, and gummy tumor. It has not yet been distinctly made out whether or not locomotor ataxia may be directly due to syphilis. In three cases observed by the authors the connection seemed evident and other symptoms came in to confirm the diagnosis, but in only one did treatment prove of the least benefit, and in that case not very marked. In one case there was evident well-marked syphilitic paraplegia, at one time with loss of power and wasting of the legs. This improved under the treatment, and the patient dispensed with crutches. His legs grew large and strong, and subsequently well-marked locomotor ataxia came on, his bladder continuing paralyzed. Treatment of the ataxia was ineffective, and the patient died. No *post mortem* could be obtained.

Syphilitic paraplegia is very rarely complete. The impairment of motion usually comes on gradually many years after chancre. The extremes of time, as observed by the authors, are eight months and twenty-one years.[1] The bladder always suffers, sometimes before the general attack, always during its continuance, and general treatment has but little effect over this symptom. The sphincters are rarely, if ever, relaxed. The expulsive power of the rectum is usually greatly diminished. Sensation is not affected as a rule. In a few cases (Petrequin, Zambaco) there has been loss of sensation in the legs without loss of motion.

One case of syphilitic paraplegia has been observed by the authors in inherited syphilis, the child being five years old.[2] There is rarely any complaint of pain in the back while the disease is coming on, but it may occur, together with numbness of the extremities. Convulsive motions are rarely present. The feeling as of a girdle around the body is quite common, but not pathognomonic. The affection rarely comes on until long after all symptoms, secondary and tertiary, have disappeared. Zambaco[3] believes that the only peculiar sign by which syphilis may be distinguished as a cause of paraplegia is rapid amelioration under treatment commenced promptly. Lancereaux states that incomplete paraplegia, with pain along the nerves and contraction of muscles, indicates meningeal lesion; while complete paraplegia, no pain, and preserved reflex motion, indicate medullary lesion.

Syphilis of the cord *sine materiâ* occurs.

The intellect is usually sound with paraplegia, but emotional irregularities can usually be detected on study. Paraplegia does not necessarily imply that the preceding syphilis has been severe, and, although one of the latest affections of syphilis, still the eight months' case[4] shows the possibility of exception.

Treatment is less effective in paraplegia than in any other nervous

[1] *Loc. cit.*
[2] Case XXVII., Van Buren and Keyes.
[3] *Op. cit.*, p. 927.
[4] Case VI., Van Buren and Keyes.

affection. Still something can always be gained, and a cure may be hoped for, if too much time has not elapsed before treatment is commenced; often, where the effects of disease cannot be removed, its course may be stayed permanently by an intelligent course of management. The bladder requires separate care (catheter, injections, etc.).

Syphilis of Special Nerves.—Among the symptoms to be ascribed to affections of special nerves must be mentioned, the facts made out by the patient investigation of Fournier, of the occasional existence (especially in women) of localized areas of analgesia, which, while they may take place on nearly all the cutaneous surfaces, have, as a point of special election, the backs of the hands, where pinching and pricking of pins are often unobserved by patients so affected. This perverted sensibility comes on early in the secondary period of syphilis, and, if not removed by treatment, gets well spontaneously.

But there are more positive symptoms, due to lesions of special nerves, requiring attention. The lesions occasioning them are numerous —syphilitic disease of the long, bony canals through which they pass, pressure from neighboring gummy tumor, disease at the origin of the nerve, thickening of the nerve-sheath, interstitial neuritis, and interstitial gummata. From some of the above causes single muscles or groups of muscles anywhere in the body may become paralyzed, but it is impossible to systematize such lesions in a text-book. Suffice it to say, irregularly-distributed paralysis without a valid explanation for its irregularity should always excite the suspicion of syphilis. The nerves most commonly affected are the seventh pair, the fifth pair, the motors of the eye, and the spinal nerves. Lancereaux believes that the sympathetic may be specially involved, and, although there is no reason to the contrary, still nothing is absolutely proved in this direction. The nerves of special sense do not always escape. The sense of taste is rarely injured, except by such ravages as destroy the palates (when smell and taste are both defective), and occasionally where the tongue is the seat of syphilitic tumor (Zambaco). The sense of smell suffers in all the syphilitic necroses of the bones of the nose, especially where the ethmoid is involved. With pachymeningitis about the base of the anterior cerebral lobes the olfactory bulbs may be involved. In such cases sight is pretty sure to suffer as well as the sense of smell. Sight may be impaired by gummy exudation in various situations, neuritis, etc. Galezowski[1] believes that, where the optic nerve is involved previously to its entry into the globe, sight is defective in both eyes. Most of the troubles of vision due to syphilis depend upon syphilitic changes in the media themselves of the eyes (*see* Chapter VIII.). Deafness may also be found to depend upon syphilis. Sometimes it is transitory, occurring during the early eruptive stages, or it comes on late in the disease, due to syphilitic affection of the bones of or around the ear, or destructive

[1] *Gazette des Hôpitaux*, p. 106, 1866.

ulceration of the pharynx implicating the Eustachian tube (*see* Chapter IX.), or to disease implicating the portio mollis.

Third Nerve.—The nerves of the eyes are frequently involved in syphilis (*see* Chapter VIII.). Of all nerves, the third suffers most frequently. Its early paralysis may occur in the exanthematic stage of the disease, but this form soon gets well, and is unimportant. Later on it indicates more serious, usually cerebral disease. Its main symptoms are ptosis, divergent strabismus, and mydriasis. Of these, the latter is the slowest to disappear. Where there is disease of the optic nerve, or the retina, mydriasis may be the effect of lack of sensitiveness of the latter to light; but, where the eye is healthy, and mydriasis occurs, syphilis is often to blame. Victor de Méric has given some instructive cases.[1] If there is only mydriasis, without any other evidence of disease in the third nerve, it is believed that only the short ciliary branches, coming from the fore-part of the lenticular ganglion, are the seat of the lesion.

Myosis has been observed (without iritis) in one case of syphilis, by Lawson Tait.[2] It had existed a long time, and disappeared under the iodide of potassium.

These symptoms, ptosis, squint, and mydriasis, especially the latter, are not usually found alone, but accompany some of the other more considerable evidences of syphilitic nerve-trouble. They are all susceptible of cure under treatment.

Fourth Pair.—Graefe, who attributed "nearly half" the cases of paralytic trouble he met with about the eye to syphilis, has reported one case of syphilitic paralysis of the patheticus (*see* Chapter VIII.), the symptoms being double vision, with one image above the other.[3] The authors have seen one similar case.

Fifth Pair.—The syphilitic affections of this nerve, in a mild degree, are sufficiently numerous. Neuralgia of one or all the branches of the nerve is usually the symptom, more rarely hyperæsthesia or anæsthesia. These symptoms may come early, and are then easier of relief; later, with other evidences of severe nervous syphilis, they are not so manageable, but still they yield more or less good results to the intelligent use of the iodide.

Sixth Pair.—Paralysis of this nerve is quite rare. Follin says that sharp pains around the orbit usually precede it. Symptoms are, double vision and converging strabismus. Treatment often will cure such cases, an operation will not.

Seventh Pair.—Paralysis of the facial nerve is not uncommon, and is interesting both on account of its liability to appear early in the disease, within a few weeks after infection, and from the fact that it

[1] *British Medical Journal*, 1870, pp. 29, 52—cases of syphilitic affection of the third nerve producing mydriasis, with and without ptosis.
[2] Ibid., 1870.
[3] "Archiv für Ophthalmologie," Bd. i., 2. Heft, §§ 313–318.

sometimes precedes hemiplegia by several days, announcing it as it were. When facial paralysis due to syphilis occurs alone, not connected with other manifestations of profound nervous disease, it is liable to come early. Bassereau and Vidal de Cassis have each recorded two cases within the first few weeks after infection. Van Buren and Keyes have reported a case[1] during the second month. Alrik Ljunggrén[2] gives several others, occurring alone and quite early in the general malady. Many other cases, coming on during the first few months, might be cited. These early paralyses are mild, there is rarely any pain, and they tend to get well quickly, under the continuance of ordinary anti-syphilitic treatment, appropriate to secondary disease. The variety that occurs late is more apt to be occasioned by some severe lesion of the bone, brain, or nerve, and its removal is generally difficult and slow. When occurring late in syphilis, facial paralysis is but one of a group of phenomena, paralytic, intellectual, and emotional, with a general train of forerunning and accompanying symptoms, such as has been already traced, antecedent pain, amnesia, emotional excitability, etc., etc. The attack may be sudden, or slowly progressive, painful or not, perhaps followed by hemiplegia. It is rare for both facial nerves to suffer at the same time.

Evidence is accumulating concerning the effects of syphilis upon the other pairs of nerves, but as yet there are no positively fixed facts to be guided by, although it is evident that no nerve in the body is certainly free from possible implication, by syphilitic disease.

Spinal Nerves.—Local neuralgias, anæsthesia, analgesia, paralyses, contractions and wasting of groups of muscles, are the symptoms characterizing lesions of special spinal nerves, such lesions being within or without the vertebral canal. Sciatica, pleurodynia, etc., occurring during syphilis, and getting well under anti-syphilitic treatment, are not very uncommon. Atrophy of single muscles or groups of muscles affected with syphilitic paralysis is more rare.[3]

[1] Case V., *loc. cit.*
[2] "Klinische Beobachtungen über Visceral-Syphilis."—*Archiv für Derm. und Syphil.*, No. 2, 1870, p. 141.
[3] Case XIX., Van Buren and Keyes, is an example in point.