time in a state of insensibility. At first it was thought that his skull was fractured, or his neck dislocated. He, however, regained his intelligence and was conveyed to his residence. Various symptoms connected with the nervous system supervened, and between the fourth and fifth weeks after the accident he made the discovery that he had lost the desire for sexual intercourse and the power of erection. The ordinary excitations failed altogether to cause any amorous feeling, and this condition, he was of opinion, had existed since the accident. The generative function continued dormant for two years, and six months later was only partially active.

The following case is particularly interesting owing to the fact that strong venereal desires existed, but in consequence of deficient power they could not be indulged. It is related by Dr. Whittemore, but is reported by Dr. Fisher:

An old man, aged seventy-three, had been married forty years, and had had eleven children. Soon after marriage he began to complain of dizziness and noises in the head, to which he was subject more or less till his death. In addition, he had intense vertigo and severe pain, together with partial deafness in the left ear. Then he had several attacks of hemiplegia, and after their occurrence was affected with morbid salacity, which continued with little intermission till about three months before his death, when it began to subside so that the desire became imperious but once or

twice during the night. There was, however, no ability to gratify it, owing to imperfect erection, and for a year there had been no seminal emission.

On the day after his death his brain was examined. The dura mater was adherent to the skull, the arachnoid was thickened, there was a large quantity of serous fluid in the pia mater, and the arteries were undergoing ossification. Otherwise the brain was healthy, except as regarded the cerebellum. The right lobe of this organ was normal; the left lobe was one-fifth smaller, and was found to have lost the greater part of its substance, owing to the formation of a cavity in its tissue. The sides of the cavity were in contact, but it had probably contained serum, which had escaped when it was laid open.

Budge* found that by irritating the cerebellum movements of the testicles were produced. Thus he says:

"By a lucky coincidence I made the gratifying observation that in an old cat, whose testicles lay in the abdominal cavity, these organs, immediately after death, moved whenever the cerebellum was irritated by the scalpel or with caustic potash. The effect was such that whenever the right half of the cerebellum and the right half of the vermiform process were irritated, movements of the left testis ensued, and the reverse. Mere superficial irritation sufficed to produce this result. The movements of the testicles soon be-

* "Untersuchungen über das Nervensystem." Heft, ii, p. 82.

came so palpable in this animal that there could be no doubt as to its reality. I hastened to open the entire skull and the abdominal cavity and found the testicles lying perfectly still and without any trace of movement. On irritating one side of the cerebellum the testicle of the opposite side swelled, quitted its position, and rose up so as to form a right angle with the spermatic cord, one side of the angle being directed forward. If I desisted from the irritation, the testicle returned to its position, and the movement was renewed on renewing the irritation. The experiment was repeated during half an hour with unvarying results. After the first irritation not three seconds elapsed before the movement followed. Subsequently the interval between the irritation and the effect was prolonged. The movement only lasted a short time and was diminished more and more. Alternately with the cerebellum I irritated the cerebrum, the corpora quadrigemina, the thalami optici, the corpora striata, but I have never seen the slightest movement result from the irritation of those parts."

Valentine confirms Budge's observations, but Volkmann has never been able to do so, and Müller discredits them altogether.

I have endeavored to satisfy myself in regard to these points by repeating Budge's experiments. In one instance, in which a cat was used, decided movements of the testicles were induced by irritating the cerebellum with a scalpel or with the continuous galvanic current

applied through two needles. The irritation of the left lobe produced movements in the right testicle, and *vice versa*. When the current was passed through both lobes, both testicles were moved and the penis was also brought into a state of erection. I was at first disposed to attach considerable importance to these facts, as indicating a very close relationship existing between the cerebellum and the generative organs; but by further observation I found that irritationof the medulla oblongata and of the cerebrum produced like movements in both testicles and in the penis. I also found that irritation of the cerebellum in either way I have mentioned caused movements of the intestines, of the abdominal muscles, and of the muscles of the thigh and back. My experiments were performed upon three cats just killed. I am hence disposed to attach less importance to Budge's observations than does Romberg,* who quotes them with evident approbation. They are nevertheless interesting as showing that though the connection between the cerebellum and the sexual organs is not exclusive, there is a relation in which, however, other parts of the body participate and which likewise exists with other parts of the brain.†

There are various affections of the *spinal cord* which

* "A Manual of the Nervous Diseases of Man." Sydenham Society's Translation. Vol. ii. p. 33.

† My experiments were performed in 1856, and are detailed in a monograph on "The Physiology and Pathology of the Cerebellum," read before the New York County Medical Society, January 4th, 1869, and published in the *Journal of Psychological Medicine*, April, 1869, p. 209.

cause sexual impotence. During the actively inflammatory stage of these diseases there is often intense and long-continued priapism, but as the morbid process advances, loss of power is the result. Thus, taking *locomotor ataxia* as an example, we find that very generally during the first period of the disease there is an exaltation of sexual desire and power, and that nocturnal emissions are frequent, but that in the latter stages loss of virility, with or without atrophy of the testicles and penis, is apt to occur.

Diseases or *injuries* of the nerves supplying the generative organs may lead to impotence by causing atrophy of the parts concerned. Among these may be mentioned severe and long-continued *neuralgia* of the testis or of the cord, degenerative changes in the spermatic nerves, or tumors or other growths compressing them. The experiments of Obolensky on rabbits go to show that if the spermatic nerve be divided the corresponding testicle progressively wastes away and in a case of fatty degeneration of the nerve occurring in a man, the testicle of the same side was atrophied. In two cases of neuralgia of the testis in which, for their cure, I compressed the spermatic cord strongly, there was no permanent loss of power. Neither did the pressure cause atrophy of the testicle corresponding to the side on which the operation was performed.*

* "Neuralgia of the Testis." Read before the New York Neurological Society, May 4th, 1880. *Neurological Contributions*, No. 3, 1881, p. 25.

The effects of excessive *horseback riding* in causing atrophy of the testicles, and consequent impotence, are well known to writers on the subject, but do not appear to have attracted the attention of the profession at large. In a recently published monograph* I had occasion to inquire into this subject and will bring forward some of the results of my investigations.

From a very early period the idea has existed that the male inhabitants of the Caucasus are subject to a peculiár disease, the chief characteristics of which are the loss of the physiological and moral attributes of man, the supervention of impotence, the disappearance of the beard, the atrophy of the penis and testicles, and eventually the implication of the mind to such an extent that the subjects, believing themselves to be women, clothe themselves like women and adopt the manners, customs, and occupations of the female sex.

The first mention of the condition in question is that by Herodotus,† who states that when the Scythians were about leaving Syria and Palestine, which they had invaded, their rear guard pillaged the temple of Venus at Ascalon. The goddess was so enraged at the act of desecration that she caused the perpetrators to become like women, and further decreed that their posterity should be similarly affected. Herodotus accepts this story without question.

* "The Disease of the Scythians (Morbus Fœminarum) and other Analogous Conditions." *American Journal of Neurology and Psychiatry*, August, 1882, p. 339.

† "History of Herodotus" (Rawlinson's Translation), vol. i. p. 190.

Hippocrates* is the next to refer to the matter, and as showing to what causes the "Father of Medicine" attributed the remarkable disease I quote his observations at length: "I have to make another allusion," he says, "and that is to the fact that among the Scythians many impotent persons are encountered, who occupy themselves with the work of women and who have a like pitch or tone of voice. They are called *anandrii*. The natives allege that the phenomena are caused by a god, and they venerate and worship those who are thus affected, fearing each one that he may himself become the subject of a like visitation. As for me, I regard this disease as being no more of divine origin than any other, for no disease has any pre-eminence in this respect. Each one has a natural cause, and no one can arise without the intervention of nature. Let me state what appears to me to be the cause of the affection.

"Horseback riding produces with the Scythians engorgements of the articulations, because the limbs are always hanging without support. With those who are severely visited the hip is drawn back and they are rendered lame. For the cure of this deformity they open the two veins which are near the ears. When the blood has ceased to flow they are overcome with weakness and fall asleep. On awaking some are found to be cured, but others are not. I presume that it is exactly by this treatment that the seminal fluid is

* *Ηερὶ ἀερων, ὐδάτων, τόπων.*

changed, for near the ears there are veins which render impotent those in whom they are cut. Now, I think that they divide these very veins. When after this operation they attempt to have sexual intercourse and fail, they are at first not disquieted, but if after two or three more trials they do not succeed, they imagine that they are being punished by some god whom they have offended. They then assume the attire of women, declare that they have lost their virility, associate exclusively with women, and follow like occupations.

"This disease attacks the rich and not the lower classes. The noble and the powerful are its chief victims, because they go much on horseback, while the poor do not. . . It is also met with in other people, for when equitation is the chief and habitual mode of exercise many must suffer from swellings of the joints, with sciatica and gout, and be deprived of sexual intercourse. These infirmities are widespread among the Scythians, who are the most impotent of men, in consequence of the cause specified and by reason of the fact that they constantly wear breeches and pass the greater part of the time on horseback. Thus they never touch the genital organs with the hands; and subdued by cold and restrained by the fatigue attendant on sexual pleasures, they do not attempt intercourse till they have in reality lost their virile power."

It will be seen, therefore, that Hippocrates attributes the disease under notice indirectly to horseback riding

in excess, and directly to the division of veins near the ears, which he supposes to be in intimate relation with the generative organs.

Sprengel* speaks of the pretended wise men among the Scythians who, rendered irritable by the abstinence to which they condemned themselves, fell into violent convulsions whenever they wished, or whenever the superstition of their countrymen required. The unintelligible words which they spoke while in this state caused them to be regarded as prophets. The Greeks called them *enares*, *anandries*, either because their prejudices obliged them to avoid intercourse with women, or because their excessive sensibility really changed their constitutions, and rendered them unfit for the generative act. He quotes Reinegg,† who in his description of the Caucasus says:

"The most remarkable of all the nomadic tribes of the Kuban is that called the Nogays or Mongutays. The members of this are distinguished from the others by the Mongolian features, which characterize their entire physical structure. The men are obese, large and swollen, the cheek bones very prominent, the eyes deep-sunken, and the beard sparse. When they are reduced by disease, or when they have attained to an advanced age, the skin of the whole body becomes wrinkled, the beard disappears altogether, and in this

* "Histoire de la Médecine" (French Translation of A. J. L. Jourdan). Paris, 1815, t. 1, p. 207.

† "Beschreibung der Kaukasus," St. Petersburg, 1796, Th. 1, p. 269.

state they present a great resemblance to women. They become incapable of the procreative act, and their feelings as well as their actions cease to be like those of the sex to which they belong. Obliged to fly from the society of men, they seek that of women, whose dress they adopt."

Jules Klaproth,* the son of the eminent chemist, has noticed the like facts in the Nogays of the Caucasus, and recognizes the accuracy of the description given by Hippocrates, and which I have already cited.

Chotomski† is authority for the statement that there are to this day many among the Tartars of the Caucasus who are affected with impotence as a consequence of excessive riding on horseback.

It therefore appears that there is good reason for believing that the male Scythians of an early day and their descendants, the inhabitants of the Caucasus of the present time, are particularly subject to sexual impotence, and that this condition is accompanied with such moral and physical changes in the affected individuals as to cause them to look like women, and to acquire the mental characteristics and instincts of the female sex.

There seems to be little doubt that the male Scythians were, and their Tartar descendents of the present day are, extremely addicted to the vice of masturba-

* "Reise in der Caucasus, und nach Georgien," Berlin, 1812, Th. 1. p. 285.

† Cited by Daremberg, in his translation of Hippocrates, Paris, 1843, p. 497.

tion, and that they are also subject to seminal losses not directly the result of voluntary acts. And this, notwithstanding the circumstance alleged by Hippocrates that the constant wearing of breeches prevents them carrying their hands to their genital organs. Sprengel * declares that, as a consequence of the local excitement due to continual horseback riding, they are not only subject to the emissions resulting from the friction, but that they practise onanism to an inordinate extent. This latter habit is also, doubtless, aggravated by the circumstance that their nomadic life deprives them to a great degree of the ordinary facilities for sexual intercourse, women not accompanying them on their forays and other expeditions.

A similar explanation is given by Lallemand,† who reports several cases of impotence due to seminal losses as consequences of excessive equitation. According to him the friction and shocks to the perineum resulting from contact with the saddle cause irritation of the efferent ducts, thence the morbid process passes to the epididymis and the testicles, which are kept in an almost constant state of erethism. Emissions result spontaneously, and the condition in question prompts to the frequent commission of masturbation. Impotence is the ultimate consequence.

Another explanation of the abolition of sexual power from excessive horseback exercise is that of Daremberg,* who ascribes it to the pressure exerted upon the spermatic vessels and the consequent interruption of the due course of their nutrition, and the loss of all procreative desire and ability. He does not appear to have had his attention drawn to the erethism of the sexual organs produced by excessive horseback exercise.

* "Apologie der Hippokrates," Leipzig, 1792, Part ii. p. 610.
† "Des pertes séminales," Paris, 1836, Part i. p. 581.

Under the heads of "Eviration" and "Maladie des Scythes," Nysten† speaks of the impotence resulting from inordinate equitation. It produces, he declares, complete loss of sexual desire, and an impossibility of erection in men who are otherwise vigorous and in good health. Foresters and country physicians, who pass a good deal of their time on horseback, are mentioned by him as among its subjects. The habitual compression of the vesiculæ seminales and of the prostate gland appears to him to interfere with the secreting process of the semen.

The object of the monograph to which reference has been made was to call attention to the fact that about thirty years ago, while stationed in New Mexico as a medical officer of the army, I became acquainted with the fact that the Pueblo Indians are in the habit of selecting some one male from among those living in a village and rendering him sexually impotent, reserving him at the same time for pederastic purposes. This person was called a *mujerado*, a corruption probably of

* Hippocrates (Translation), 1 Paris, 1843, Note 58, p. 497.
† "Dictionnaire de Médecine," etc., onzieme édition, Paris, 1858.

the Spanish word *mujeriego*, which signifies feminine or womanish. There is no such word in Spanish as *mujerado*, but if there were it would, according to the construction of the language, mean "womaned," or, "made like a woman."

Two of these creatures came under my observation. The first was about thirty-five years old, rather tall and slim. There was not a vestige of beard, though I attached little importance to this fact, as the Indians rarely have any marked growth of the kind. His countenance was cheerful and his face was free from wrinkles, full and rounded, like that of most Indian women of his age. He was dressed exactly like a woman. On my expression of a desire to examine him more closely, he was directed to accompany me into an adjoining room, which he at once did, the chief going with us. He then at my request removed all his clothing. The first thing that attracted my notice was the extraordinary development of the mammary glands, which were as large as those of a child-bearing woman. He told me that he had nursed several infants whose mothers had died, and that he had given them plenty of milk from his breasts. I expressed my doubts of the truth of this assertion, but he persisted with vehemence that it was true. The chief would neither affirm nor deny its correctness, repeating, in answer to my inquiries, after the true Mexican fashion, "*Quisas, quien sabe!*"—("Perhaps so, I do not know.")

The abdomen was protuberant and the limbs were round, full, and soft.

Of couse the most importants parts to be inspected were the genital organs. There was no hair on the pubis; the penis was shrunken, but was otherwise normal; the prepuce could be readily retracted and the glans presented a healthy appearance, except that it was not larger than a thimble, which it very much resembled in shape. The whole organ was, in its flaccid condition, about an inch and a half in length. The scrotum was long and pendulous and contained the remains of the testicles, which had almost entirely disappeared. Each one was the size of a small filbert, as well as I could judge. Pressure upon them gave slight pain. I supposed that the glandular structure had become almost entirely atrophied, little besides connective tissue remaining. The spermatic cords could be distinctly felt up to the external abdominal rings. There was slight varicocele.

In all other respects the organs were normal, there being no deformity of any kind. I was surprised at this condition, for I had expected to see some form of hermaphrodism, or at least cryptorchism.

He informed me that he had been a *mujerado* for seven years, and that previous to that time he had possessed in full all the sexual attributes of a man. First, his testicles had begun to get smaller, and with their disappearance he had lost all sexual desire, all liking for