size of all the bones was more marked; the pelvis was consequently tilted up on the right side. There was also slight temporary curvature of the spine; but on placing a firm body under the left foot, so as to raise it to the level of the right, the spine became perfectly erect. The right limb was two and a quarter inches longer than the left.

After a lapse of nine years, he was readmitted into Guy's Hospital (February 1867). He was then suffering much pain in the right hip and back, after having been employed as pressman in a printing-office, which occupation caused him to place undue pressure upon the

right leg, then $3\frac{1}{2}$ inches longer than the left. The patella was so increased in size that it projected laterally beyond the trochlear surfaces of the femur. The knee-joint itself was quite healthy. The transverse diameter of the patella was at this time $1\frac{3}{8}$ inches more than the left, the transverse surface-measurement being $3\frac{3}{8}$ inches in excess of that of the left. Mr. Stanley referred to some cases which had come under his observation in which the hypertrophic elongation seems to have been the result of inflammatory disease of the shaft. In this case, the growth appears to have been slow, and entirely free from pain or constitutional disturbance. From 1858 to 1867, a period of nine years, the increase in length of the right femur over that of the left was only half an inch.

In January 1869, the measurements were as follows.

Vertebra prominens to floor	...	...	...	...	55 $\frac{1}{2}$ in.
Greatest distance of spine from mesial line, both feet on the ground	...	...	...	...	1 $\frac{1}{2}$
				Right.	Left.
Great trochanter to end of fibula	...	...	35 $\frac{1}{2}$ in	...	32 in.
Femur to edge of external condyle	...	...	19	...	16 $\frac{1}{2}$
Fibula	...	...	15 $\frac{3}{8}$	...	14 $\frac{3}{8}$
Patella, transverse measurement	...	...	6 $\frac{3}{8}$	...	2 $\frac{1}{2}$
„ callipers measurement	...	...	3 $\frac{1}{2}$	...	2 $\frac{1}{2}$

A point of considerable interest in the case was the peculiar enlargement of the right patella. Was it an hypertrophy, or an exostosis? If from excess of growth, then it would probably be dependent upon the same cause as gave rise to the elongation of the other bones of the same leg—accelerated, perhaps, by the increased action of the quadriceps extensor cruris. Of all bones, the patella is least liable to hypertrophy, in consequence of its deficient blood-supply. The general appearance of the tumour would favour the opinion of its being an exostosis. The original shape of the bone was quite lost, being nodulated and very prominent on the right side. Mr. Erichsen and Mr.

Holmes are of opinion that hypertrophies of bone are exceedingly rare without a history of some previous inflammatory action. This lad had been under observation at different times for a number of years; but there was nothing which would lead me to suppose that there had been any inflammatory mischief, however slight, in the substance of the bones.

SOME NOTES ON NEURALGIA, AND ITS TREATMENT.

By J. SINCLAIR HOLDEN, M.D., F.G.S.,

Physician of Larne Union Hospital.

AMONG the secondary complications often attending neuralgia of the fifth nerve have been mentioned permanent tonic spasms, confined to the muscles to which the branches of that nerve are distributed. That a further reflex action may take place, implicating in tonic contractions the muscular system generally, the following case is an example.

Mrs. H., aged 35, a married lady with children, when a girl, had slight chorea. She was liable for several years to intermittent attacks of facial neuralgia, with gastric complication. Lately, after a period of fatigue and anxiety in tending a sick child, she got cold, which excited acute paroxysms of trigeminal neuralgia in the ophthalmic division; the pain was constant during the intervals. On the third day of the attack she felt stiffness of the right or affected side of the face, and painful rigidity of the fingers and toes, extending up the arms and legs during the intensity of the paroxysms. I was hurriedly sent for; the paroxysm had subsided, but she was much exhausted from pain and sleeplessness. I proceeded to inject subcutaneously a quarter of a grain of acetate of morphia and one-sixtieth of a grain of atropia; but so great was the exalted sensibility of her system that the entrance of the needle into the arm brought on a return of paroxysm so violent that most of the injection was lost. The right facial muscles were rigidly contracted; there was marked strabismus; the hands and feet, the arms and legs, of both sides were in a state of tonic spasm. A peculiar fixity of the mouth almost gave the alarming expression of "risus sardonius". She told me afterwards that the tongue felt cramped. Consciousness was not interfered with, and there was an agony of suffering. The breathing was so laboured and difficult that at one time I feared that the thoracic muscles were implicated, but this passed off. The quickest relief was found in hot-water stupes applied to the arms and legs. The attack lasted about ten minutes; then the rigidity slowly relaxed, leaving her greatly exhausted. An hour afterwards there was a return of all the spasms and sufferings. As speedily as I could procure it (my patient living six miles in the country) I administered 30 grains of hydrate of chloral, which gave her eight hours' sleep. This dose was repeated the next day on the threatening of a return of the paroxysm, with the best result. On the third day she was quite free from every pain.

In the treatment of neuralgia, hypodermic injection of morphia has come into general use. Prudence suggests commencing with small doses. This is safe, certainly, and a test for idiosyncrasy where there is no known tolerance of the drug; but to rest there is not sufficient; frequent repetition will alleviate pain, though falling short of the real relief capable of attainment. Where the neuralgia is intermittent, I find that a rapid, and at the same time careful, increase of the dose often reaches a point where the hypodermic injection acts like a charm: this is proportionate generally to the severity of the pain.

In one case, that of a woman aged 50, with severe facial neuralgia, when the paroxysm comes on, she at once seeks for ease in the puncture. Though she is not habituated to morphia, I inject a grain and a half into the arm—a quantity equal to 18 minims of Dr. Anstie's solution. After the injection she feels much nausea, and sleeps for several hours; she is rather stupid the following day, but the pain has fled. Before this dose was reached she had days of suffering, with frequent returns, and almost no benefit from injecting small quantities of morphia. Now, only a few hours can elapse before she has perfect ease, and no return of the paroxysms for two or three months.

Where the neuralgia is of long standing and pain is persistent, hypodermic injections seem only to be an addition, yet a valuable one, to other palliative remedies. If the patient be in the habit of using opiates, the injection is preferable from its quicker action and smaller dose, though there is often a difficulty in getting old habits changed to new ones, even when after a few trials the advantages of the injection have been admitted. However, in some cases the substitution is effected. A lady aged 55 had been a martyr to almost constant dorso-intercostal neuralgia for the last twenty years. She had consulted many physicians and tried many treatments; but, after all, settled down to morphia as her only panacea. She came under my care more than five years ago

suffering from dyspepsia, and was then taking daily a teaspoonful of solution of muriate of morphia. The hypodermic injection of morphia gave her so much relief that, though the dyspepsia soon left, she continued its daily use, I having instructed her servant how to introduce the syringe. The quantity of morphia injected was one-third of a grain; for a time this quantity was reduced, and one-sixtieth of a grain of atropia was substituted, but this had to be abandoned, owing to dryness of the throat supervening. After a trial of different localities, she has for the last five years preferred having the puncture in the calf of the leg. She prefers having it done in the morning before rising, and would feel great nausea if she did not take a cup of coffee first; half-an-hour after the operation she becomes intensely hungry, and then eats a good breakfast. By this means the neuralgia is kept in check, though she is conscious of its presence. No curative effect was produced by increasing the dose in this case.

In trigeminal neuralgia, where the periodicity of the pain is well marked, I can fully confirm the great value of quinine when given in doses of from three to six grains. I prefer administering it in a glass of sherry about an hour before the time when the pain is due, and seldom fail in cutting short the attack.

PROFESSOR FLOWER'S HUNTERIAN LECTURES ON THE TEETH AND ALLIED ORGANS IN THE MAMMALIA.

Delivered at the Royal College of Surgeons of England.

LECTURE XVII.—Monday, March 27th.

Sirenia.—These were formerly classed with *Cetacea*, on account of their habitually living in water and having some resemblance in form. They are, however, not carnivorous, as are the *Cetacea*, but herbivorous, grazing on seaweed. They mostly live in shallow water. They might be regarded as an aquatic modification of the *Ungulata*. The *Sirenia* are now represented by two genera—the *Manatus* or *Manatee*, and the *Halicore* or *Dugong*.

The *Manatee* is found on the coasts of the Atlantic Ocean. The West Indian *Manatee* frequents the northern coast of South America and the West Indian islands; and another species is found on the west coast of South America. In both upper and lower jaws, the front teeth are replaced in the adult animal by horny plates. In the very young *Manatee*, there are two very rudimentary incisor teeth in each jaw; but they become covered in. On each side there are, above as well as below, eleven well developed molars, which, however, are not all present at the same time, the anterior ones appearing before the posterior. They are all alike, except that in the young animal the anterior molars are the smaller. These teeth are formed on the same principle as the molars of the *Ungulata*. The upper teeth have an inner and two outer roots; the lower have two roots. The crowns are square and broad, and covered with enamel; they have two transverse ridges, each divided, as in the *Mastodon*, into points, which become worn down. In the lower jaw, especially at the posterior part, each tooth has a large heel behind, in addition to the transverse ridges. As far as is known, the *Manatee* has no milk-teeth; thus presenting the anomalous condition of being heterodont, and at the same time monophodont and having more than the typical number of teeth.

The *Halicore* or *Dugong* inhabits the Indian Ocean from the Red Sea as far as the north coast of Australia. In the male animal, there are two nearly straight tusks in the upper jaw, projecting forwards. They have persistent pulps and a partial coating of enamel; in the latter respect, they resemble the incisors of *Rodents* rather than those of the *Elephant*. In the female *Dugong*, these teeth project very little if at all; they cease to grow, and the pulp-cavity becomes filled up with osteodentine. In the young *Dugong* there is also a small incisor on each side; but whether this is a milk-tooth or a deciduous incisor of the permanent series, is not certain. Beyond these teeth, the mouth as far as the molars is covered by a horny substance having some analogy to whalebone. The surface of the lower jaw bends downwards and forwards, and presents on each side pits, which in the young *Dugong* are occupied by teeth—five on each side—about an inch long. These become covered up by the dense horny plate; but they can be found for many years. The horny plates are covered by strong tufts of bristles, forming a kind of rasp; and the tongue also is provided with some of these bristles. Their use is not certain, but they are probably employed in mastication. They consist of the papillæ of the mucous membrane, covered with thin epithelium, hardened, and welded together. There are five

simple molars above and five below on each side. The anterior one is cylindrical, and has a groove on each side, giving it the appearance of a double tooth. These teeth consist of dentine and cement, without any true enamel.

In the *Rhytina*, an extinct *Sirenian*, there were no teeth as far as is known; but the animal had well developed horny plates, marked with ridges.

The *Halitherium*, also extinct, presented a kind of transition to the *Ungulata*. There were rudimentary hind legs. The anterior molar teeth differed from the posterior; and the animal apparently had a succession of teeth.

Edentata.—Of these animals, some have teeth in the position of the incisors; one or two genera only have teeth in the back part of the præmaxilla. None of these have any enamel on the teeth. They are nearly all homodont and monophodont. They are divided into the *Phyllophaga* or vegetable-feeders, represented by the *Sloths* and by the extinct *Megatherium*, *Mylodon*, etc.; and the *Entomophaga*, which feed on insects or carrion.

The *Three-toed Sloth* has on each side $\frac{5}{2}$ teeth, much resembling each other. The first one in the upper jaw is the smallest. The teeth are almost cylindrical, and are slightly fluted at the sides. The pulps are persistent. The upper surfaces of the teeth are at first rounded, but become cup-shaped by wear; this arises from the dentine being softer at the inner part than externally. There is apparently no succession of teeth.

The *Two-toed Sloth* has $\frac{5}{2}$ teeth, the first of which in each jaw becomes greatly developed, so as to resemble a canine, but differing from it in that the lower tooth passes behind the upper.

In some extinct *Sloths*, as the *Mylodon*, the teeth were formed on the same principle, but were a little more compressed. There was a curious modification in the *Megatherium*. The teeth had quadrilateral fluted crowns, having the grinding surface divided into two prominent ridges with sharp edges. Each tooth had a large pulp-cavity, around which was a layer of soft dentine, and beyond this a layer of ordinary dentine, covered in with soft cement, accumulated mostly behind and in front. The cement and soft dentine wore away, leaving the remaining part projecting in the form of two prominent ridges.

All the members of the genus *Armadillo* (*Dasyus*) have teeth. In the *Six-banded Armadillo* and an allied genus, alone among *Edentata*, there are teeth on the posterior part of the præmaxilla. The *Six-banded Armadillo* has nine or ten compressed cylindrical teeth on each side, with persistent pulps, and no enamel. As far as is known, this *Armadillo* does not change its teeth.

The *Great Armadillo* has a very large number of teeth, from seventy-five to one hundred, or even more in young animals. Of these teeth, the anterior ones are compressed, and the posterior cylindrical.

The *Nine-banded Armadillo* has a distinct set of milk-teeth, which remain until the animal is almost full grown. The permanent teeth are eight on each side; and all but one have predecessors: hence, though there is no distinction in appearance, they are described as seven præmolars and one molar. The permanent teeth are formed beneath the milk-teeth, which they push up, sometimes splitting them in the process. This is the only genus of *Edentata* in which a succession of teeth has been observed.

In the extinct *Glyptodon*, the teeth resembled those of the *Armadillo*, but were deeply fluted on each side by deep grooves. The teeth had also raised hard ridges on the surface, produced by the dentine wearing down and leaving the harder osteodentine projecting.

The *Manis* or *Pangolin* and the true *Anteaters* (*Myrmecophaga*) have no teeth. The *Manis* has two spicula of bone in front of the jaw.

In the *Orycteropus* or *Cape Anteater*, the number of teeth varies with age, being greatest in the young animal. The old animal has generally five on each side in each jaw; the last are the smallest. The second and third are rather large from before backwards, and are grooved. Each of these teeth contains a number of small pulp-cavities lying side by side, running from the base to the apex, with connate hexagonal tubules of dentine radiating from them. There is no enamel; the denticles are held together by a layer of cement on the outside.

Monotremata.—These have no true teeth. The *Echidna* has many processes on the palate and tongue. The *Ornithorhynchus* has a broad plate largely supplied with nerves. In the hinder part of the mouth, the bone is expanded above and below into oval plates, long from before backwards, corresponding somewhat to the rough plates in the *Dugong*. In the anterior part, above and below, are raised sharp ridges, slightly serrated in the young animal.

THE Hospital for Sick Children, Dyke Road, Brighton, will be publicly opened on the 28th instant.