the chest over the nipples, with the arms hanging, instead of placed straight above the head; while the recruit is directed to cough once or twice, or count slowly from one to ten.

"It must be borne in mind," says Professor Longmore, "that many men, from practice and power of compensation, or from one habitually falling into disuse, can see without difficulty at certain distances when both eyes are open together, who could not accomplish the same result with either eye singly. It is absolutely necessary, therefore, in examining recruits, always to test each eye separately. Many mistakes occur from neglect of this rule."*

Professor Longmore has given the following instructions for the examination of recruits' vision, to which particular attention should be paid.

"Each test-dot on this card is one-fifth of an inch square, and corresponds, at a distance of fifteen feet, with the bull's-eye two feet square at six hundred yards, required by order to be distinctly seen by every acceptable recruit.

"Memo.—With perfectly acute vision, these test-dots ought to be clearly visible in full light at nineteen yards.

"Directions for Using the Card of Test-Dots.—1. Measure off fifteen feet with precision. 2. Hold the test-dot card perfectly upright in front of the recruit, and let it face the light so as to be fully illumined. 3. Examine each eye of the recruit alternately; the eye which is not under trial being completely shaded by the hand of an assistant, who should take care not to press upon the eyeball. 4. Expose some of the dots—not more than seven or eight at a time; and desire the recruit to name their number and relative positions. 5. Vary the groups frequently, to provide against deception. The covering card can be shifted into six positions; and thus numerous variations may be obtained, without exceeding the number of dots above mentioned."†

CLINICAL NOTES.

Reported from the Practice of Dr. WILKS, at Guy's Hospital, by Mr. MURPHY.

NO. II.—INTERMITTENT TETANY.

JOHN THOMAS R., aged 3, was admitted on March 23rd, 1870. He had always good health except during the time of the occurrence of infantile disorders. On March 17th, whilst having his face washed, he complained of pain in his feet, and asked to have his boots taken off. As soon as this was done, his feet were found to be contracted. He was brought to the hospital in the afternoon, when three grains of grey powder were ordered. The spasm gradually passed off, and he continued better until the following Monday, when his legs were again suddenly contracted. The spasm evidently caused him a good deal of pain, as he screamed loudly; it lasted about ten minutes, and then subsided, but his feet did not regain their natural position afterwards. The spasms occurred several times during this day, and became less severe on the next. This morning the child had a severe spasm, in which the hands were also affected; the fingers remained extended afterwards. On admission, both legs were affected, the feet being drawn into the same position as in talipes varus, the calf of the leg being very hard; the knees were flexed, and the thighs on the abdomen. The muscles of the arm were less affected, the fingers being extended and brought together in a conical form. The child was constantly calling out from the pain caused by the cramp, and was continually moving from side to side in the bed in order to procure relief. The legs were rubbed, but with no apparent benefit, and so cold water bandages were applied; these evidently afforded ease, as he immediately became tranquillised. He was also ordered ten grains of hydrate of chloral three times a day. On the following day, March 24th, the spasms were not so severe, and had only occurred in paroxysms three or four times in the twenty-four hours. On the 25th, the spasms were gradually passing off. No effect was produced by pressing on the femoral artery. On the 27th, there were no spasms, but the feet remained contracted. After this, the spasms gradually wore off, and he left the hospital.

CLINICAL REMARKS BY DR. WILKS.—Dr. Wilks remarked that such cases were more common than was supposed, but had hitherto received less consideration than they deserved, on account of the absence of a distinct appellation by which to know them. But when such

terms as idiopathic muscular spasm had made way for a definite name as intermittent tetany, a fresh interest was thrown over the disease. Such a name, given by Trousseau, was quite justifiable when the same group of symptoms were constantly seen to occur in different individuals. The disease is mostly met with in children, and might be passed over as one of convulsions; but the recurrence of the symptoms and those characterised by tonic spasms, show that the disease is a peculiar one. A child may be ill a few days and then recover; or the complaint may continue for a much longer period, and the whole body be affected, as in tetanus, whilst in others the limbs may be alone involved. The legs are drawn up towards the body, and the muscles are rigid, as in cramp; the arms may also be affected in the same way. If most of the cases were of this description, and like that of the boy in the present instance, the term tetanus might be objected to, seeing that in the tetanic state, excepting during the violence of the paroxysms, the spasmodic rigidity is confined to the neck, chest, and abdomen, those parts, in fact, which are more especially employed in respiration, whilst the limbs remain flaccid; there is in this an important distinction between the effects of tetanus and those of strychnine. In the present case, the spasms were confined to the limbs. The disease has always been regarded as a functional one, both on account of the remission of the symptoms and its non-fatal character. It might also be remarked how the fingers are extended and held stiffly together, just as is seen in hysteria, and it also sometimes happens that there is some amount of anæsthesia. As regards the cause of the disease, since teething, worms, etc., are sufficient to produce convulsions, so it has been conjectured that like causes may be present to produce intermittent tetany. This boy was a remarkably fine and muscular lad, and no cause whatever could be thought of sufficient to produce the malady. As the boy was suffering much agony, chloral was suggested, and this he took for some time; but, in order to afford immediate relief, some cold bandages were wrapped round the limbs. These were suggested by the remembrance of their great service in the cramps of cholera. As the disease under discussion subsides spontaneously, and as in this very case the paroxysms had already, on more than one occasion, rapidly abated, little can be said of the merits of the remedies employed.

BRIEF REPORT OF THE LAST ILLNESS OF T. NUNNELEY, F.R.C.S.; AND OF THE POST MORTEM EXAMINATION.

By SAMUEL HEY, Esq., F.R.C.S., etc.

It has been stated that Mr. Nunneley's health was good till his last acute illness. It should, therefore, be premised that this was not the case. He had suffered from more or less frequent attacks of sickness for many years, especially after taking food beyond his ordinary quantity. His own statement was, that this tendency existed for at least ten years; but of his son, that it was for a much longer period. Albumen was observed in his urine six weeks before his death; whether it had existed previously is not known. Vomiting was constantly recurring during the last six weeks of his life. Three weeks before his death he was present at operations at the Hospital. On noticing the illness expressed in his countenance, he said, "So would you look ill if you had been vomiting constantly for sixty hours." His great energy was exhibited in his performing one operation, then going aside to vomit, and returning to perform another. After this he went away from home, hoping that rest and change of air would restore the tone of his digestion, but he returned in three days much worse.

On account of the appearance of a small quantity of blood in the urine, and the continuance of vomiting, then incessant, I was asked to see him on Saturday, May 21st. He thought the hæmorrhage was due to the passage of a small calculus from the kidney. A dose of medicine brought away a large scybalous motion, and relief was therefore anticipated. But on Monday, the hæmaturia was decided, in considerable quantity, and several purpuric spots were observed in the skin. Dr. Chadwick was then requested to see him, and attended with me twice a day up to his death. The hæmaturia continued to the end, but changed in character. At first pure blood, it became disorganised blood, separating speedily from the fluid, and forming patchy deposit at the bottom of the vessel, and, finally, simple black granular deposit. The vomiting, which continued till two days before his death, had a melanic appearance. The motions were of a similar character. One of the most prominent causes of suffering was excessive hyperæsthesia of the surface of the body over the region of the liver; so that it was at no time possible to examine the state of that organ by the touch. I ought also to mention that he had cramps in the limbs, and severe occasional neural-

* Vide Notes on the Examination of the Visual Fitness of Recruits for Military Service, with special reference to Instruction in the Use of the Rifle. By Thomas Longmore, Deputy Inspector-General, Professor of Military Surgery. Pp. 462. Army Medical Department Report for the year 1860. Printed by Harrison and Sons, for Her Majesty's Stationery Office.

† Vide Pamphlet, "Recruiting Department, Adjutant-General's Office, Horse Guards, 1st August 1868." Printed by George E. Eyre and William Spottiswoode.

gic pains from the hips to the toes. The purpura regularly increased until there were several patches on the back as large as the hand, besides smaller ones on the limbs and abdomen. For the last week the symptoms were chiefly those of uræmia, producing a degree of confusion of mind, or, as he said himself, "A jumble of ideas;" and also an aberration of vision, causing one side of the room to appear as "studded with spangles of gold." This state gradually increased, yet his great energy of mind and will continued, though confused, to the last. He died on June 1st, quietly and rather suddenly, at 2.45 P.M.

POST MORTEM EXAMINATION, June 3rd, thirty hours after death.—*Heart* much enlarged; left ventricles hypertrophied and dilated.—*Aorta* much dilated, and presenting large patches of atheromatous deposit under the lining membrane.—*Aortic Valves* a little thickened; the others healthy.—*Stomach* empty and contracted; mucous membrane roughened, but not abraded; no colour of blood; the intestinal viscera also empty and colourless.—*Pylorus* and entrance of the duodenum much contracted, but not carcinomatous.—*Liver* very large, dark in colour, deeply congested, but not degenerated.—*Gall-bladder* much distended.—*Pancreas* large, and in two parts so hard as to cut like cartilage.—*Right Kidney* one-third smaller than natural; the constituent parts confused.—*Left Kidney* contracted and much smaller even than the right, dark coloured, both externally and on section; the capsule adherent; the cortical and tubular substance blended together, and it appeared that the blood had come mainly from this source.—*Both Kidneys* were surrounded by a very dense cellular tissue, which rendered their separation more difficult than common; both also appeared to come under the description of granular and gouty kidney. The immediate cause of death would seem to be general blood-poisoning, chiefly from the state of the organs last mentioned, though influenced by that of others indicated in this report.

PROFESSOR FLOWER'S HUNTERIAN LECTURES ON THE COMPARATIVE ANATOMY OF THE MAMMALIA.

Delivered at the Royal College of Surgeons of England.

LECTURE XIV.—Wednesday, March 16th.

THE skull of the Rhinoceros resembles that of the Horse in many essential points. The supraoccipital bone is much developed, and the parietals meet it, so as to form a crest, reaching from the frontal to the occipital, in which large air-cells are developed. The frontal is expanded and flat; the nasal region is wide and thick, and supports the great median horn. When two horns are present in the Perissodactyla, the posterior one is always borne on the frontal bone. The orbit has no posterior boundary; the postorbital process of the frontal bone is wanting. The lacrymal bone forms a large surface, and projects in front of the orbit. The præmaxilla is very small. The maxillæ do not send up long processes to join the frontal bone as in the Horse. The pterygoids are very small. The paroccipitals are supported in front by the posttympanic process of the squamosal bone. The tympanic bone is rudimentary, and is ankylosed with the periotic bone, which is very small, and has no true mastoid process. There is no distinct tympanic bulla; the tympanum is much encroached on above by the upper element of the interior arch of the hyoid. The stylohyal element is large, and less compressed below than in the Horse; it is ossified with the keratohyal. The thyrohyals are ankylosed with the basihyal. The glossohyal is smaller than in the Horse.

In the Tapir, there is a high and compressed parieto-occipital crest. The peculiar character of this animal is the extent and direction of the anterior nares: the front of the face appears to be hollowed out by them, and the space from the orbit to the nares is reduced to a narrow ridge. The præmaxillaries are small and bent down; they do not form part of the wall of the nares, being shut out by the maxillæ. The mesethmoid is well developed, and is spread out above, to support the nasal bones. In the American Tapir, the mesethmoid cartilage is ossified a long distance in front of the nasals; and the projection is clasped on each side by a process from the maxilla. In some of the extinct Rhinoceroses, the nasal septum was ossified. In the Tapir, there are grooves on the nasal bones for the lodgment of cartilaginous tubes proceeding from the outer wall of the nasal chamber. In the hinder part of the skull, the Tapir is intermediate between the Horse and the Rhinoceros. The occipital and squamosal bones meet below,

but not above, and allow a small portion representing the mastoid to appear. The tympanic bone is generally supposed to be absent in the Tapir; but Mr. Flower had lately had an opportunity of dissecting a dead Tapir, and had found, by careful search, a very rudimentary ossified tympanic bone; it is not ankylosed with the periotic, and hence is very easily lost.

Among the Artiodactyla, the Pig may be taken as the type. A section of the skull shows that the face forms an angle downwards from the basicranial axis. No idea of the size of the cranial cavity can be formed from external view, on account of the largely developed air-cavities. The face is much elongated; the mesethmoid and turbinal bones are large. The orbit is not marked off from the temporal fossa. The nasal bones are very long. The palate is long, and extends backwards. The pterygoids are rudimentary. The paroccipital process of the exoccipital is very long. The tympanic bulla is large, and filled up with cancellous bone. The tympanic ring is completely ankylosed to the squamosal at an early period; the periotic bone is free and loose. The mastoid portion is very small; no part of it appears on the outside. The auditory meatus is long, and runs upwards. The anterior cornua of the hyoid bone is but little ossified. There are well marked keratohyals; but the stylohyals are represented by only one or two slightly ossified points. The thyrohyals are large and strong, and early ossified.

In the Hippopotamus, the orbits form almost tubular processes, in which the eyes are placed. As in the Pig, there is a long paroccipital process, and the mastoid is wedged in so as not to be seen at the surface. The tympanic bulla is rather large, and cancellate. The lacrymal bone is largely dilated in front of the orbit.

Among the Pecora, as the Sheep, the face slopes downwards from the basicranial axis, and the occipital plane is inclined forward. The nasal bones are long; the orbits are encircled by bone; the zygomata are long; and there are well developed præmaxillary bones. There are large paroccipital processes; the tympanic and periotic bones are united, but remain separate from the squamosal. A small slip of the mastoid process appears externally. There is a well marked tympanic bulla. The skull in the Ox generally resembles that of the Sheep; but the occiput rises, whereas in the Sheep it slopes backwards. The parietals form long narrow strips between the occipital and the frontal, and are very early ankylosed with the supraoccipital bone. The skull of the Ruminants is generally very uniform in structure. In an Antelope, the facial part is modified somewhat as in the Tapir, the nostrils being thrown much backwards. In the Deer, the planes in which the bones lie resemble those of the Dog rather than of the Sheep. There is often a large vacuity on the side of the face in Ruminants between the frontal, maxillary, lacrymal, and nasal bones. In the Camel, the mastoid portion does not come to the outside of the skull; and the tympanic bulla is cancellated as in the Pig. In the Tragulidæ, the structure of the tympanic bulla is similar; but the mastoid appears slightly at the surface.

In the Proboscidea, the skull undergoes great modification in passing from the foetal to the adult form, in order to provide for the support of the trunk and muscles. The tables of the skull are widely separated in the adult Elephant, and the air-sinuses are exaggerated in size and filled with trabeculae; while in the young animal the walls of the skull are thin and compressed. The supraoccipital bone is large, and slopes forward; there are a large squamosal bone, a complete zygoma, a very small malar bone (it is large in most Ungulata), a large parietal, a narrow frontal bone, a small lacrymal bone, and a very large præmaxilla. The anterior nares are directed upwards and forwards, somewhat as in the Cetacea. The nasal bones are very short, but are massive, conical, and excavated. The bones of the upper part of the skull become united into one mass, hollowed out by cavities; in some cases, even the mesethmoid and vomer have air-cells. The periotic bone is large, and is ankylosed with the tympanic. The mastoid bone does not appear externally; it is wedged in by the squamosal.

Among the Edentata, the Great Anteater has the skull much elongated. The parietals are narrow, the frontals very straight, and the nasals very long; the præmaxillary bones are very rudimentary, forming mere rings. A depression above the middle of the side of the skull and a slight projection from the squamosal represent the incomplete zygoma; the malar bone is small, and is sometimes absent. The anterior portion of the palate is formed by the maxilla, and is very long; and the internal pterygoid bones send out horizontal lamellæ, which continue the palate backwards. These are expanded, and have cavities into which air passes from the tympanum. This construction is met with also in the Manis, but not in all Edentata. The skull of the Cape Anteater is more like that of ordinary Mammalia. It has small pterygoids, and (as also the skull of the Armadillo) a rudimentary tympanic ring.