REPORT ON THE PROGRESS OF ANATOMY.

By Professor Turner[1].

Osteology.—Observations by G. W. Callender On the formation and early growth of the bones of the human face occur in *Phil. Trans.* 1868. Those of most interest are in connection with the development of the superior and pre-maxillaries. He describes in a human fœtus 2·3 in. long a process which projects forward from the base of the nasal process, which he calls the *incisor* process. In a fœtus 4·3 the incisor process passes across the anterior boundary of the nostril, as the latter is continued forward to the middle of the lip. This boundary is partly covered above by the nasal process, whilst below the palatal part of the superior maxilla ends abruptly behind it, and between these two the incisor process crosses and indents the orifice of the nostril. In a fœtus 2·3 the pre-maxilla consists of deposits of bone formed in a membrane situated about the posterior edge of the incisor process, which deposits subsequently grow down to form the plate of bone on the inner side of the middle incisor socket and the posterior wall of the incisor sockets below and internal to the course of the incisor branches of the dental nerve. In a fœtus 4·3 the pre-maxilla is completely formed and may be traced as a distinct bone. In one 9 inches long it is in great part fused with the superior maxilla, though the well-known palatal fissure marks its position inferiorly. The pre-maxilla therefore in man is shut off from the face by the nasal and incisor processes of the superior maxilla.——H. v. Luschka applies (*Reichert u. du Bois Reymond's Archiv*, 1869, p. 326) the name of processus marginalis to a process which in many malar bones projects backwards from the posterior free temporal border. He regards it as an individual peculiarity and not a race character, for in 82 dolicocephalic skulls it was present in one half, and in 48 brachycephali it was present 26 times. ——Since the appearance of the note on the additional carpal bone, by J. Struthers, in our last number, W. Gruber has recorded cases (*Reichert u. du Bois Reymond's Archiv*, 1869), in one of which in the left carpus a very small ossicle was situated between the bones of the 1st and 2nd rows in an interval between the scaphoid, trapezoid and os magnum. This differed from one he had described in the same *Archiv* in 1866, in which the 9th carpal bone occurred in the 1st row and seemed to be derived from a subdivision of the scaphoid into two secondary bones. In a third case, *Archiv* p. 343, the 9th ossicle was, as in Dr Struther's specimen, situated between the trapezoid, os magnum, 2nd and 3rd metacarpals, and was only visible on the dorsal aspect; but it was joined to the trapezoid by synchondrosis: the

[1] To assist in making this Report more complete, Professor Turner will be glad to receive separate copies of original memoirs, or other contributions to Anatomy.

styloid process of the 3rd metacarpal was absent. In a fourth case he has seen this styloid process developed from an independent centre and constituting a 9th carpal bone. He arranges the supernumerary carpal bones under the following varieties: *a.* subdivision of the scaphoid or semilunar: *b.* intercalation of a supernumerary bone analogous to the os intermedium of the mammalia: *c.* a defect in the styloid process of the 3rd metacarpal and a separation of the coincidently enlarged trapezoid into two pieces: *d.* the occurrence and persistence of the styloid process of the 3rd metacarpal as a distinct epiphysis.——An elaborate memoir on SUPERNUMERARY CERVICAL RIBS, by the same author, is in *Mém. de l'Acad. Imp. de St Pétersbourg*, Oct. 28, 1868, which the Reporter has given an abstract of on pp. 137—139.——Hugo Magnus has seen (*Virchow's Archiv*, XLVII. 214) two crania in which the SPHENOIDO-MALAR SUTURE did not exist in the outer wall of the orbit, but the great wing of the sphenoid and orbital process of the malar were separated from each other by a fissure.——An abstract of a memoir by John Cleland ON THE VARIATIONS OF THE HUMAN SKULL, PARTICULARLY IN THE ANTERO-POSTERIOR DIRECTION, appears in *P. R. S. London*, June 15, 1869. A base line extending from fronto-nasal suture to back of foramen magnum is the longest in savage skulls: he subdivides this line into three parts; one the length of the foramen magnum, one from fronto-nasal suture to foramen opticum, one intermediate from foramen opticum to foramen magnum. The long base line of savages is due to the amount of orbital length and to that of the intermediate part of the base line. The line of orbital length forms with the foramen magnum an angle termed the cranial curvature, which in adult Europeans usually exceeds 180° and in negro and other savages falls short of that amount. The parietal region reaches its greatest predominance in the last month of fœtal life, after birth the frontal region grows most rapidly, then the occipital. It is not correct to say, that as far as mesial measurements are concerned the forehead is less developed in the lower than in the more civilized races. The distinction between dolicocephali and brachycephali should be based not merely on the 'cephalic index' but on the various characters pointed out by Retzius. The proportion of height to length is of more importance than breadth to length. Orthognathism and prognathism are concrete results of a variety of circumstances, and the extent of facial projection must be measured by an angle contained between the fore part of the face and the floor of the anterior fossa only of the skull. ——T. Zaaijer describes (*Nederl. Tijdsch. voor Geneesk.*, 1869) an ANOMALOUS CONDITION OF THE 1ST AND 2ND RIBS in a man, aged 43, where the shaft of the 1st rib was atrophied in its anterior half, its place being taken by a fibrous band, which reached to the manubrium; whilst the 2nd rib had a considerable tuber projecting from its shaft, with which the anterior end of the osseous part of the first rib was connected. He refers to corresponding anomalies of the upper ribs recorded by J. Struthers, von Luschka and Aeby.——To the *Gesellschaft der Wissensch. zu Haarlem*, 1866, T. Zaaijer communicates an important memoir on the FORM OF THE PELVIS OF THE WOMEN OF

Java, 26 specimens of which he had examined. His general conclusions are as follows: the pelvis has an elegant shape; the surface of the iliac fossa is smaller than in the pelvis of European women and almost always has a translucent spot; the ilia incline for the most part strongly outwards and are very flat; the *præ-auricular sulcus* to which the anterior sacro-iliac ligaments are attached, and which is wanting, or only feebly developed, in the European pelvis, is met with in most of the Java pelves; the *linea arcuata interna* is not sharp, but rounded; the ischial spines project strongly inwards in most Java female pelves; the sacrum varies in shape but is absolutely less broad than in Europeans; the pelvic inlet is either round or longish-oval; the difference between the transverse and conjugate diameter of the pelvic inlet is less than in Europeans; the promontory is less projecting: in the specimens examined no connection between the form of the cranium and that of the head was observed. The memoir is illustrated by plates and copious tables of measurements.——A. Kölliker gives a brief description (*Verhand. der phys. med. Ges.* Würzburg, May 22, 1869) of the character of the cranial of the South Sea Islanders and the Australians. He had examined 9 crania of the former, mostly from the Feejee Islands, and 3 crania from Rockhampton on the East Coast of Australia. He refers in both series to specimens in which the two nasal bones were blended together.

Connective Tissue and Cartilage.—L. Ranvier publishes in *Archives de Phys.* No. 4, 1869, an important memoir on the cell-elements of the tendons and areolar tissue. His observations lead to the following conclusions: the connective tissue is essentially formed of connective bundles, of elastic fibres and of cells. Neither laminæ nor holes can be observed in it. The bundles of the connective fibres are cylindrical, they have a very variable diameter, they are limited by a special layer of annular or spiral fibres. These fibres appear to be a simple thickening of the membrane, thus they are coloured by carmine and differ therefore from elastic fibres. All the cells are formed of granular protoplasm and contain well-formed nuclei. These cells are placed between the bundles of connective tissue: some, globular in shape, appear capable of moving easily in the spaces left between the bundles: other cells, flattened, take up a position along the bundles which they do not easily quit. The stellate cells (*cellules plasmatiques*) seen in transverse sections of dried tendons, are situated at a point where many of the bundles come in contact, and at that spot a nucleus surrounded by protoplasm is situated in a space limited by the exterior of the bundles: the bundles cut transversely form a network-like arrangement, and Ranvier believes in the existence of a canalicular network in which the cells are included. He believes in the existence of a plasmatic circulation in the connective tissue and, from the presence of cells like the white blood-globules, conceives it to be a true lymphatic circulation, and he suggests the existence of a great space between the bundles of the sub-cutaneous connective tissue analogous

to a serous cavity.——R. Boehm relates (*Virchow's Archiv*, XLVII. 218) his experimental enquiries into the STRUCTURE OF THE DURA-MATER, with reference to the existence of pores or stomata on its free surface opening into the arachnoid space, similar to those which Recklinghausen and Dybkowsky have described in connection with the peritoneum and pleura. He has satisfied himself that such pores exist, and that whilst they communicate on the one hand with the arachnoid cavity, on the other they open into a system of large juice-canals, situated in the connective tissue of which the dura-mater is composed, which canals again communicate with the veins, which form a rich network on the outer surface of the membrane. Milk injected into the arachnoid space found its way through the stomata and juice-canals into the venous system.——N. Bubnoff contributes (*Sitz. der K. Akad.* Wien, 30 April 1868) observations on the VASCULARITY OF CARTILAGE. He states that both in young and adult animals and in man blood-vessels exist, which lie in especial canals in the cartilage. He refers to statements made by Reitz in the *Sitzungsb.*, Jan. 1868, of the presence of juice-canals in cartilage, and he considers that by treating fresh cartilage with chloride of gold and osmic acid he has proved the existence of juice-canals in this tissue. On this subject also the Reporter may refer to the observations of T. A. Carter, communicated to *R. S. London* in 1864, and printed *in extenso* in the present number of this *Journal*.——M. Peyraud (*Archives de Phys.* No. 5, 1869), from experiments made on rabbits and dogs, concludes that the COSTAL CARTILAGES CAN BE REGENERATED after removal.

MYOLOGY.—Wenzel Gruber describes several VARIATIONS IN THE MUSCLES OF THE WINDPIPE (*Reichert u. du Bois Reymond's Archiv*, 1868): a *m. Kerato-arytænoideus*, which arises from the posterior border of the inferior horn of the thyroid cartilage and is inserted into the muscular process of the arytænoid cartilage; this muscle is very rare: a variety of the *m. thyreo-trachealis*, which arises by two heads from the thyroid cartilage in front of the attachment of the crico-thyroid, descends anterior to the isthmus of the thyroid body, ends in an aponeurosis which blends with the perichondrium at and below the 4th tracheal ring: a *m. hyo-trachealis*, which arises from the anterior part of the great cornu of the hyoid and descends superficial to the *m. thyro-hyoideus* to be inserted into the tracheal rings from the 1st to the 3rd: a *m. incisuræ mediæ transversus*, which arises fleshy from the half of the incisura media and the process of the lower border of the thyroid cartilage on the one side and is inserted into the corresponding parts on the other: a *m. incisuræ mediæ obliquus*, which has somewhat similar connections with the last, but is more oblique in its direction, this obliquity varying in the different specimens in which it has been seen.——Gustav Fritsch records a variety in the MUSCULAR ARRANGEMENTS IN THE AXILLA (*Reichert u. du Bois Reymond's Archiv*, 1869), where on the right side one bundle passed from the latissimus tendon outwards over the coracobrachialis to be connected to the fascia: a second passed from this fascia to

the interval between the great pectoral and latissimus: a third bundle extended from the latissimus tendon horizontally forward to be inserted into the superficial layer of the axillary fascia.——John Wood communicates (*P. R. S. Lond.* June 17, 1869) a memoir on VARIETIES OF THE MUSCLES OF THE NECK, SHOULDER AND CHEST, which comprises an account of the *occipito-scapular*, *levator claviculæ*, *cleido-occipital*, *sterno-scapular*, *scapulo-clavicular* and *supra-costal*, and of certain transitional forms; together with an account of the muscles homologous to them in the mammalia.——C. Blumenthal records (*Henle u. Pfeufer's Zeitsch.* XXXVI., a variety of the right M. TRICEPS EXTENSOR CUBITI, in which a fourth head arose by a long slender tendon from the inner part of the humerus a little below the head and by an aponeurotic expansion from the capsule of the shoulder-joint: it passes down to blend by its muscular belly with the inner part of the triceps.——T. Zaaijer describes (*Nederld. Tijdschrift voor Geneeskunde*, 1869) a specimen in the left arm of a woman, of the M. RADIO-CARPOMETACARPEUS, the *Fl. carpi radialis brevis* of John Wood. Taking its rise from the lower end of the radius it was inserted into the transverse carpal ligament, the trapezium and the carpal ends of the 2nd, 3rd and 4th metacarpal bones.

In an account of the structure of a uterine myoma, H. Hertz (*Virchow's Archiv*, XLVI.) describes and figures, as Frankenhauser had previously done in the uterine muscular fibres (see Vol. II. p. 389), the termination of the fine nerves in the nuclei of the muscular fibro-cells.

Fritz Ratzel contributes (*Siebold u. Kölliker's Zeitschrift*, XIX. 257) the 1st part of a memoir on the histology of the lower animals. It contains an account of the *muscles* of lumbricus, tubifex, limnodrilus, enchytræus, lumbriculus, nais, chætogaster. He arranges them in 3 groups: *a. nematoid* muscles, closely allied to the muscles of the nematodes as they have been described by Schneider and Weissmann; *b. hirudinoid* muscles, the fibres of which present a sharp subdivision into a granular axial and a homogeneous cortical part; *c. simple* muscular fibres, ribbon-shaped, more or less flat elements, in which no such subdivision is recognisable. He has seen in neritina fluvialis muscular tissue consisting of primitive bundles with transverse striæ. In the same *Zeitschrift*, Anton Schneider remarks on the *muscles of nematodes*, and H. Grenacher on the *muscles of Gordius*.——In *Schultze's Archiv*, v. 205, G. Schwalbe prints a lengthy memoir on the STRUCTURE OF THE MUSCULAR FIBRES OF THE INVERTEBRATA. He has examined their structure in Coelenterata, Echinodermata, Annelides and Mollusca.——M. A. Quatrefages describes and figures (*Ann. des Sc. Nat.* XI. 1869) the MUSCLES IN ANNELIDES.

BLOOD-VASCULAR SYSTEM.—P. Gillette gives an account (*Robin's Journal*, Part V. 1869) of the VEINS OF THE BLADDER and the INTRA PELVIC VENOUS PLEXUSES. He considers that the vesical veins are arranged in 3 layers, a mucous, inter-muscular and sub-peritoneal. He

arranges the veins of the mucous layer into those connected with the body of the bladder, near the neck and at the base and orifices of the ureters. The sub-peritoneal veins he arranges as anterior, lateral and posterior. The pelvic plexuses are pubo-vesical, vesical or vesico-prostatic, prostatic, and the plexus around the vesiculæ seminales and vasa deferentia.——E. Seseman describes the CONNECTIONS OF THE ORBITAL VEINS (*Reichert u. du Bois Reymond's Archiv*, 1869, p. 154). He disputes the view usually held, that the greater part of the blood in the orbit is carried away by the ophthalmic vein into the cavernous sinus, and whilst admitting that in most cases it may flow both into the sinus and facial vein, yet holds that the latter is the chief outlet. The *V. ophthalmica inferior* is an emissary for the cavernous sinus: it opens either into the *V. ophthalmica superior*, or into the *V. opthalmo-meningea* or the cavernous sinus, and has in the first of these cases a valve at its mouth. The *V. ophthalmica superior* has no valves and its canal is narrowed where it joins the cavernous sinus. The *V. centralis retinæ* opens direct into the cavernous sinus, once he saw it end in the *V. ophthalmica inferior*. The ophthalmo-meningeal vein of Hyrtl opens either into the sinus spheno-parietalis of Breschet, or passes above it into the orbit. The vein is rich in valves, which lie so as to prevent the centrifugal movement of the blood.——P. D. Handyside points out (*Proc. R. S. Edinb.* Feb. 15, 1869) in the HEART traces of its TRANSITIONS IN FORM DURING FŒTAL LIFE. He describes a large reticulated Eustachian valve extending to $\frac{3}{16}$th inch from the entrance of the sup. v. cava: also a male fœtus in which a *complete* semilunar valve was situated at the termination of the v. cava superior, and refers to the parallel case previously described by the Reporter (see our last number, p. 453): also a specimen in which five large Thebesian foramina opened into a deep lacuna at the rim of entrance of the v. cava sup. An oblique semilunar valve guarded this lacuna.——T. Zaaijer (*Nederl. Tijd. voor Geneeskunde*, 1869) describes a RIGHT AND A LEFT SUPERIOR VENA CAVA in a woman aged 77: and a specimen from a man in which the LEFT COMMON ILIAC V. close to its termination gave off a large loop-like branch, which joined the left renal V.; the iliac V. passed superficial to the right iliac artery on its course to form the V. cava inferior. Irregularities in the right kidney and ureter existed in the same individual.

STOMACH AND SPLEEN.—An important paper on the POSITION AND RELATIONS OF THE STOMACH AND SPLEEN by H. von Luschka appears in *Prager Vierteljahrschrift*, I. p. 114, 1869.—The stomach lies only in the left hypochondrium and epigastrium. The hypochondriac part embraces three-fourths of the organ and is almost *vertical* in position, whilst the epigastric part is transverse and corresponds in the distended organ to the two first lumbar vertebræ, crossing about three fingers' breadth below the ziphoid cartilage; great curvature mostly looks to left wall of chest, but a small part lies in epigastrium and corresponds in the distended stomach to upper border of third lumbar v.; small curvature runs downwards in a line with left border of sternum and is mostly concave to the right, but where

pylorus passes into duodenum is convex; œsophageal opening corresponds to upper fourth of 7th costal cartilage and does not lie in epigastrium; great cul-de-sac does *not* lie to left, but is the highest part of the organ; after a moderate expiration it corresponds to upper border of 5th rib in mammary and upper border of 6th in axillary region. Pylorus does not pass to right costal arch, and extends no further than a line drawn vertically parallel to right border of sternum. 1st part of duodenum is not transverse, but runs directly from before backwards. The pancreas lies behind pylorus and transverse part of small curvature, and then crosses vertical part of small curvature. The back of the stomach is in relation to spleen, pancreas, kidney and supra-renal capsule; posterior surface of great cul-de-sac lies on the diaphragm. The spleen corresponds to the curvatures of 9th, 10th and 11th ribs; its greatest breadth is from upper border of 9th to lower border of 11th; its direction is from behind and above, obliquely downwards and forwards. It lies altogether *behind* the stomach.

SECRETING GLANDS.—E. Pfluger publishes (*Schultze's Archiv*, v. 193) a second memoir on the TERMINATION OF THE NERVES IN THE SALIVARY GLANDS. His observations were made on specimens steeped in perosmic acid, which stains the medullated nerves black, without giving an appreciable tint to the gland substance. By this mode of examination he has satisfied himself of the correctness of his former well-known observations. At p. 199 he relates his observations on the NERVES OF THE PANCREAS, a gland which has the same general structure as the salivary glands, only that its alveoli are usually larger, its epithelial cells less sharply separated from each other, and, when treated with perosmic acid, their protoplasm is also fibrillated, the direction of the striæ being from the *memb. propria* to the canal of the gland. An extraordinary number of medullated nerve-fibres exist in this gland, which frequently divide, especially towards their termination. They closely resemble the nerve-fibres in the brain and spinal cord. The primitive fibres pierce the *memb. propria*, lose the medullary sheath almost entirely, and become connected with the epithelial cells.——In an article ON THE CONNECTIVE SUBSTANCE FOUND IN GLANDS in the same vol., p. 334, Dr. Boll records his observations on this structure in the salivary and lacrymal glands, pancreas, liver and kidney.——G. Saviotti investigates (*Verhand. der phys. med. Gesellschaft*, Würzburg, May 22, 1869) the STRUCTURE OF THE PANCREAS with reference to the existence of intercellular passages between the secreting cells within the acini. He describes an arrangement not unlike that which Hering, Kölliker, Eberth and others (see Report, Vol. II. p. 171) have described in the liver: a fine network capable of being injected, forming polygonal meshes in each of which a single gland-cell is situated, this network comes close to the membrana propria; a central canal exists in many though not in all the acini. Saviotti also describes fusiform cells with two, three or even more processes situated within the acini of the gland, and in the main agrees with Langerhans in his account of these structures.

NEUROLOGY.—The TOPOGRAPHY OF THE CEREBRAL CONVOLUTIONS has recently been discussed by Th. Bischoff (*Abhandl. der K. Bayer. Akad.*, Munich, 1868) and by Alex. Ecker, *Pamphlet*, Brunswick, 1869. The development of the brain has also been enquired into by Bischoff in his Memoir, and by Ecker in a separate Essay (*Archiv für Anthropologie*, 1869). Both authors adopt the plan now usually followed of subdividing each hemisphere into five lobes, frontal, parietal, occipital, temporo-sphenoidal and the insula; but they differ in some of their descriptive details. Bischoff for example follows Gratiolet in placing the *gyrus centralis anterior* in the parietal lobe, whilst Ecker, adopting the method pursued by the Reporter in his essay on the cerebral convolutions, places it in the frontal lobe. Both Bischoff and Ecker criticise the figure and description given by the Reporter of the ascending limb of the Sylvian fissure, but in the brain, from which Fig. 1 in the Reporter's essay was taken, the arrangement of the fissure was as is represented. Neither Bischoff nor Ecker seem to allow for the variations met with in different brains in the mode in which the inferior frontal gyrus springs from the ascending frontal gyrus, variations which materially modify the extent and relations of the ascending limb of the Sylvian fissure and the antero-parietal sulcus. Bischoff applies new names to some of the convolutions of the parietal lobe: the supra-marginal lobule he terms the anterior arched convolution; the angular gyrus the middle; the 3rd and 4th annectent gyri the posterior; the 1st annectent the internal superior, and the internal inferior annectent gyrus the internal inferior parietal arched convolution. Bischoff also expresses his inability to admit the intra-parietal fissure which the Reporter described in the parietal lobe, a circumstance which is the more surprising as this fissure is very accurately represented in various of the coloured drawings of the brain with which Bischoff's memoir is illustrated. Ecker however recognises the importance of this fissure both in the fœtal and adult brains, and carefully describes it. Ecker gives a minute description of the occipital lobe and of its connections with the parietal and temporo-sphenoidal. Ecker's memoir on the development of the convolutions and fissures is excellently drawn up and is illustrated by numerous figures. Bischoff enters into a comparison of the brain of the ape with that of man. He states that the primary convolutions and fissures in the human brain exist also in the orang, but he doubts if both brains go through the same developmental changes, or that the former is merely to be regarded as in a higher stage than the latter; much more is he satisfied that whilst both brains possess the same base-type, yet that they pursue different directions in their development, and at no time completely correspond with each other.——An abstract of a memoir ON THE STRUCTURE OF THE CEREBRAL HEMISPHERES by W. H. Broadbent is in *P. R. S. Lond.*, June 17, 1869. He examined the brain after hardening it in strong spirit. He states that the commissural connection between different parts of the hemisphere is much more extensive than has hitherto been described, and that the fibres more

commonly run longitudinally in the convolutions than cross from one to another, while large tracts of convolutions have no direct connexion with the crus, central ganglia or corpus callosum, and the preponderance of commissural over radiating fibres is shown by a comparison of the sectional area of the latter as they issue from the central ganglia with the large surface of white matter seen in the centrum ovale. He then proceeds to detail the result of his dissections, which will not allow any briefer abstract than the author has himself given.——J. M. Strachan, in his *Graduation Prize Thesis* (Edinburgh, 1869) on the HISTOLOGY OF THE CEREBELLUM, records the results of a microscopic examination of the cerebellum in 10 species of mammals, 32 birds, 2 reptiles and 3 fish. He found an uniformity in the elementary structures in all the cerebella examined. But the corpus dentatum in several birds, instead of presenting in a vertical antero-posterior section the appearance of a corrugated pouch, was seen to consist of nerve-cells scattered throughout the medullary portion of the cerebellum. The folia also differ greatly in number, form, and relative length and breadth. Speaking generally the number increases in the mammalia with the development of the lateral hemispheres, whilst in the lower classes of the vertebrata the number depends on the degree of development of the median lobe. The number, size and complexity of the folia are apparently in direct proportion to the variety and complexity of the movements which the animal performs. There is no great difference in the absolute and relative thickness of the inner and outer grey layers. From a measurement of 38 cerebella with the micrometer it appears that whilst in man the two layers are of equal thickness, in all the others the outer layer is the thicker of the two, except in the Bishop bird of South Africa. The characteristic structures in the inner layer are not free nuclei, but each nucleus is surrounded by a differentiated mass of protoplasm. Gerlach's views of the connexion of these structures in the inner layer with nerve filaments, passing between and into them, are so far confirmed as that in the cerebellum of a monkey nerve filaments were seen continuous with the processes of these nucleated masses of protoplasm. The cerebellum of a mule (between linnet and canary) is identical in structure with that of a linnet and of a canary, in which the sexual activity was not impaired, an observation which is antagonistic to the theory of the sexual function of the cerebellum.—H. Hadlich describes (*Virchow's Archiv*, XLVI.) a varicose condition of the CENTRAL PROCESS OF THE CORPUSCLES OF PURKINJE IN THE GREY MATTER OF THE CEREBELLUM. He was enabled to trace in several cases the continuity of this process with a medullated nerve-fibre in the rust-coloured granular layer.——A. Koschennikoff (*Schultze's Archiv*, v. 332) has also seen in two instances IN THE GREY MATTER OF THE CEREBELLUM the thin process, which extends from the corpuscle of Purkinje towards the inner rust-coloured layer, directly continuous with the axial cylinder of a medullated nerve fibre. He has never seen this process branch or become connected with the granules of the rust-coloured layer. At p. 374 of the same vol., he states that in the cerebrum of a man who

died with abscess in the brain, he found it possible to isolate the nerve-cells with long processes in the grey matter of the convolutions. In one instance he saw a process from the basal part of one of the large pyramidal nerve-cells of the frontal lobe pass centrally to be continuous with a medullated nerve-fibre: four other processes passed off from the base of the same cell, which subdivided into minute branches but were not continuous with nerve-fibres. The author does not seem to be aware that Lionel Beale, *P. R. S. Lond.* June 18, 1863, describes each nerve-cell of the grey matter as connected with at least two nerve-fibres.——Rudolf Arndt publishes (*Schultze's Archiv*, v. 317) a 3rd memoir on the CONSTRUCTION OF THE CEREBRAL CONVOLUTIONS, which like the 2nd is chiefly devoted to the structure of the nerve-fibres and cells. The brain of the rabbit was specially examined. The nuclei and surrounding granular fibrous substance, which constitute the neuroglia of most authors, are the matrix out of which all the nervous structures, both ganglion bodies and fibres, met with in the central organs, proceed. The central processes of the ganglion bodies branch in the granular fibrous substance, whilst the *peripheral* are connected with the axial cylinder of the nerve fibres. He regards the interganglionic granular fibrous substance, or the terminal fibrous network as it appears in the adult, as protoplasm modified for a special purpose, as the proper conductor of all the processes which take place centrally.——M. Roth enters (*Virchow's Archiv*, XLVI.) into the nature of the CONNECTIVE SUBSTANCE IN THE CEREBRAL CONVOLUTIONS, and describes the lymph space, which surrounds the arteries and even the capillaries of the brain, as traversed by extremely delicate radiating fibres. Similar fibres may be seen between the pia mater and most superficial nervous layer traversing the space termed by His epi-cerebral.——R. Lepine also describes the CONNECTIVE TISSUE IN THE PERIVASCULAR CANALS (*Archives de Phys.* No. 3, 1869). He states that a delicate filamentous tissue connects the tunica adventitia of the blood-vessels of the brain with the hyaline membrane which limits the canal externally. In certain pathological conditions in children the cell-elements of this connective tissue, which are few in number in the normal state, abundantly proliferate.——J. M. Philipeaux and A. Vulpian state (*Archives de Phys.* No. v. 666) that the ANASTOMOSIS BETWEEN THE SUPERIOR AND INFERIOR LARYNGEAL NERVES consists exclusively of a branch proceeding from the first of these nerves.——F. Jolly records a case of IMPERFECT DEVELOPMENT OF THE CORPUS CALLOSUM (*Henle u. Pfeufer's Zeitsch.* XXXVI. 4).

EYEBALL.—David Smith describes the STRUCTURE OF THE ADULT HUMAN VITREOUS HUMOUR (*Lancet*, May, and *Monthly Micros. Jnl.*, July, 1869). He has sometimes seen, in the adult, traces of the hyaloid canal, which gives passage to the embryonic hyaloid vessels: eight or ten concentric circles formed of strong, smooth fibres arise at right angles from and surround the inner surface of the zonule of Zinn: they are directed backward to the entrance of the hyaloid canal and subdivide the entire circumference of the humour

into shallow horizontal spaces, which build up layer on layer the sides of the vitreous body. In the spaces between these smooth fibres, and in the part of the humour which lies behind the lens, an anastomosing cell network lies, the filaments of which cross the short diameter of the spaces and have a radiating direction from the vertex to the sides of the vitreous body.——Henry Lawson communicates the 1st part of an essay ON THE ANATOMICAL RELATIONS OF THE CILIARY MUSCLE IN BIRDS (*Monthly Micros. Jnl.*, Oct. 1869). He regards it as forming not so much a ring as a zone of muscular tissue, the fibres of which pass forwards to the line of junction of the cornea and sclerotic, and backwards for some lines between the sclerotic and choroid. The fibres are inserted into the sheath of the muscle at its anterior extremity and the inner lamina of the cornea, whilst they arise mostly from the sclerotic, but in part from the choroid. The fibres are striated, and the author considers that it does not act through the choroid on the lens, but on the border of the cornea, and thus increases the curvature of the latter.——A valuable course of lectures on the MINUTE ANATOMY OF THE EYE-BALL, delivered by J. W. Hulke in the theatre of the College of Surgeons, illustrated with numerous original drawings, appears in the *British Medical Journal*, commencing July 3.

MISCELLANEOUS.—F. E. Schulze communicates his observations (*Schultze's Archiv*, v.), on the FORMATION OF THE CUTICLE and the conversion of the epithelial cells into horny tissue.——C. L. Heppner enters (*Virchow's Archiv*, XLVI.) into the discussion of the STRUCTURE OF THE GLANDULA CAROTICA, a body which, like the coccygeal gland of Luschka, has had its structure very much canvassed of late years. Heppner's dissections in the main bear out the views which Luschka published in 1862.——In *Robin's Journal*, Parts 4 and 5, 1869, M. Grandry records his observations on the corpuscles of Pacini, and on the termination of the nerves in the skin, and E. Goujon describes tactile corpuscles in the bill of the parroquet.

MALFORMATIONS.—Hugo Magnus describes (*Virchow's Archiv*, XLVII. 307) a case of CONGENITAL MALFORMATION OF THE MALE URETHRA, in which the tube, just within the external orifice, was subdivided into two canals by a horizontal membranous septum. The lower canal was the proper urethra. The upper had the aspect of a fossa lined by mucous membrane, and at its lowest part was a small aperture, which opened into a *cul-de-sac*.——Wenzel Gruber describes (*Virchow's Archiv*, XLVII. 303) MALFORMATION OF THE FINGERS in a man in whose right hand the middle and little fingers had a circular constriction; in the middle around the 1st phalanx, in the little around the joint between the 1st and 2nd. The ring-finger again had only the 1st phalanx. In the left hand the phalanges of the 3rd finger were wanting, and the ring-finger had only a single phalanx. In the same Vol., p. 304, he records a case of MALFORMED FOOT, in which only four toes (great, small, and two intermediate) existed, and in which the ecto- and meso-cuneiform were blended into

a common bone. In Vol. XLVII. he relates a case of CONGENITAL DIAPHRAGMATIC HERNIA, in which the jejuno-ileum and ascending colon had a common mesentery.——Otto Obermeier relates a case of CONGENITAL FISSURE OF THE STERNUM (*Virchow's Archiv*, XLVI. p. 209), which corresponds in many respects with the well-known case of E. Groux.——Ed. Thorner describes a fœtus (*Reichert u. du Bois Reymond's Archiv*, 1869, p. 200), in which DEFECTIVE FORMATION OF THE AMNION was conjoined with other malformations.—— In the same Vol., p. 267, Dr Preuss relates a case of DOUBLE MONSTROSITY, where a child had a tumour over the sacral region, in which parts of a second fœtus were contained.——H. v. Luschka describes (*Virchow's Archiv*, XLVII. 378) a specimen of CONGENITAL MALFORMATION OF THE ESOPHAGUS, in which its cervical part ended in a *cul-de-sac*, whilst its thoracic part opened into the trachea. The case closely resembles one described by T. Annandale, and referred to in our last report (p. 456).——Julius Arnold records (*Virchow's Archiv*, XLVII. 7) the dissection of a 7 months' fœtus in which there was a UTERUS MASCULINUS, together with congenital stricture of the urethra, and extreme dilatation of the bladder and ureters.—— H. Hertz describes (*Virchow's Archiv*, XLVI.) a case of extreme ATROPHY OF THE LEFT KIDNEY, conjoined with congenital narrowing of the corresponding renal artery.

EMBRYOLOGY.—E. B. Truman gives an account (*M. Mic. Jnl.* Oct. 1869) of the DEVELOPMENT OF THE OVUM OF THE PIKE.——R. Buchholz describes (*Siebold u. Kölliker's Zeitsch.* XIX. 95) the DEVELOPMENT OF ALCIOPE, and in the same Vol. Claparede and Mecznikow contribute to the history of the DEVELOPMENT OF THE CHÆTOPODA; F. Raetzel to that of LUMBRICUS AND NEPHELIS, and Pagenstecher records a new mode of DEVELOPMENT IN THE SIPHON-OPHORA.—— In *Schultze's Archiv*, V., A. Schneider gives an account of the DEVELOPMENT OF THE BRYOZOA AND GEPHYRÆA, and at p. 356 Rieneck records observations on the LAMINATION OF THE GERMINAL MEMBRANE in the egg of the trout.——Waldeyer distinguishes (*Schlesische Gesellschaft für vaterl. cultur.*, May 7, 1869) from the very commencement a subdivision of the WOLFFIAN BODIES into a sexual and a urinary portion. The canals of the latter are broad, and contain a more opaque granular epithelium. Between them narrower canals, with paler epithelium belonging to the sexual part, are situated, and these grow in both sexes towards the genital glands, and sink more or less deeply into their stroma. There is in all the higher vertebrata a stage where the genital gland is invested with germinal epithelium (*Keim-epithel*), in which the first indications of ova are visible, whilst at the same time the paler canals, already referred to in the Wolffian body, penetrate into the stroma of the genital gland. These canals in their further development become seminal tubes, whilst those lying outside form the epididymis. In the stroma of the hilus of the ovary of the dog, the remains of seminal tubes may be recognised, so that the sexual organs of the higher vertebrata are in their early condition hermaphrodite.——M. A. Lafont (*Ann. des*

Sc. Nat. XI. 1869) records his observations on the FECUNDATION OF CEPHALOPODA, and M. Balbiani has in the same Vol. a memoir on the GENERATION OF APHIDES.

COMPARATIVE ANATOMY AND MORPHOLOGY.—H. Magnus records (*Reichert u. du Bois Reymond's Archiv*, 1869, p. 207) his anatomico-physiological observations on the THORACIC AND ABDOMINAL MUSCLES OF BIRDS. He describes in detail their attachments, and examines their actions, more especially with regard to their influence on the respiratory movements. The muscles of birds he thinks supply an additional argument to those advanced by Henle, of the inspiratory action of both sets of intercostals. The scalenus primus is absent in some birds, as the Corvini, Psittacini; and when present in other birds it is weak. He describes a new muscle, sterno-costalis superior, passing from the sup. lateral process of the sternum to the last cervical rib, and regards it as an inspiratory muscle. The serratus major compensates for the want of levatores connected with the lower ribs. The abdominal muscles are limited in their action to emptying the abdominal viscera, the external oblique alone to any extent acting on the chest.——A. Macalister gives (*Ann. Nat. History*, July 1869) a detailed account of the MYOLOGY OF BRADYPUS TRIDACTYLUS, and in the October number of the same *Magazine*, J. C. Galton describes the MYOLOGY OF CYCLOTHURUS DIDACTYLUS or two-toed Anteater.——In the 6th Vol. *Trans. Zool. Soc.* R. Owen gives his 12th memoir on the ANATOMY OF DINORNIS: and at p. 501, W. K. Parker describes the OSTEOLOGY OF THE KAGU (*Rhinochetus jubatus*).——A very elaborate memoir on the ANATOMY OF THE LEMUROIDEA by Messrs Murie and Mivat appears in *Trans. Zool. Soc.* London, VII. They have dissected *Lemur catta*, *varius*, *niger*, *xanthomystax*, *nigifrons*, *Galago crassicaudatus*, *garnettii*, and *allenii*, and in their present memoir, taking *L. catta* as the type, describe the external characters and myology. Their figures however illustrate the anatomy of *Galago crassicaudatus*. The myological description includes not only a detailed statement of the connections of the different muscles, but a careful comparison of their arrangement with those in other Lemuroids, in the Primates and in the lower mammals.——In *Proc. Zool. Soc.* Feb. 25, 1869, J. Murie describes the GULAR POUCH and sphincter muscle in *Otis tarda*. He regards the aperture of the pouch as sublaryngeal rather than sublingual, and that the sphincter is a development of the superior constrictor and stylo-pharyngeus muscles.——In *Robin's Journal*, July 1869, G. Pouchet completes his memoir on the BRAIN OF THE EDENTATA. He considers that the great variety exhibited in the brain in the different groups of these animals is correlated with variations in the outer form of the body, the central part of the nervous system being modified parallel with the other anatomical systems, and concludes from this that the brain and its convolutions cannot form the best basis for a zoological classification.——Ludwig Stieda continues his observations on the CENTRAL ORGANS OF THE NERVOUS SYSTEM, and in this memoir (*Siebold u. Kölliker's Zeitsch.* XIX.) describes those

of several birds, more especially the domestic fowl, and of the mouse.——Miklucho-Maclay, in a letter to Gegenbaur (*Jenaische Zeitsch.* v. H. 1), refers to some points in the BRAIN OF CHIMÆRA MONSTROSA, the great peculiarity consisting in the important extension forward of the cerebral axis (*Hirnstiel*), and the consequent separation of the prosencephalon (*Vorderhirn*) from the di-encephalon (*Zwischenhirn*).——W. H. Flower examines the BASE OF THE CRANIUM in the CARNIVORA, with a view to their classification (*Proc. Zool. Soc.* Jan. 14, 1869). He especially describes the auditory bulla and the structures surrounding it. In *felidæ* and *viverridæ* the bulla is greatly dilated, thin-walled and subdivided into two distinct portions, which communicate by a narrow aperture: in *canidæ* the bulla is smooth and evenly rounded, but the septum subdividing it into two chambers is very incomplete: in *ursidæ* the bulla varies in the amount of inflation, but its cavity is simple, and though traversed by trabeculæ, yet possesses no definite septum. He applies the same method of comparison to the determination of the zoological position of *hyæna*, *proteles*, *arctictis*, and *bassaris*.——J. Murie (*Proc. Zool. Soc.* Jan. 28, 1869) reports on the EARED SEALS of the Falkland Islands, and gives figures of the male and female crania of *Otaria jubata*.——J. E. Gray (*Ann. Nat. Hist.* Oct. 1869) makes some additional notes on the crania of OTARIADÆ.——J. G. H. Kinberg gives (*Öfversigt af Kongl. Vetens. Akad. Forhand.*, Jan. 13, 1869) a careful anatomical description of the OSTEOLOGY of the following species of ARCTIC SEALS: *grœnlandica*, *barbata*, *fœtida*, *vitulina:* in a previous number, Oct. 14, 1868, he enquires into the ossification of the axis in various mammals. He forwards also to the reporter a series of memoirs on the ANNELIDA published in 1865 and 1866 in the same periodical, in which he describes many new species. C. Gegenbaur (*Jenaische Zeitsch.* v. Heft 1) describes the tissue which forms the SKELETON of the CYCLOSTOMATA. In the chorda dorsalis he finds a well-marked intercellular substance situated between large elongated cells, but near the surface the cells are smaller and the intermediate substance more sparing. Next the sheath is a layer of cells which he calls the epithelium of the chorda. The chorda is enclosed in the skeletal layer which gives off dorsal and ventral processes. He considers that the skeletal tissue differs from that of the other vertebrata, and he recognises in it three forms: *a.* the tissue of the skeletogenic layer: *b.* the cartilaginous tissue in the rudiments of ribs: *c.* the cartilaginous tissue of the cranium and gill-sacs.