

SCIENTIFIC SERIALS

Max Schultze's Archiv für Mikroskop Anatomie, Band vi. Heft. 2, 1870, is a paper by M. J. C. Eberth on the termination of the Cutaneous Nerves. Eberth's experiments were undertaken upon the skin of man, of rabbits, guinea-pigs, dogs, and cats, but chiefly on that of man and of Albino rabbits; the processes of pigment cells in the other animals often closely resembling nerves when stained with gold chloride. The strength of the solution that was used varied from $\frac{1}{2}$ to 1 per cent., in which portions of skin were allowed to soak for from $\frac{1}{4}$ to 4 hours. In the cutis of man the nerves form first a rich web of dark-edged fasciculi, which break up into a plexus of fine fibrils and small fasciculi of fibrils. These soon lose their medullary sheath, and enter more or less vertically into the papillæ in the form of fine axis cylinders with fusiform nuclei lying upon them. He particularly insists that the final finest terminations which can be followed to the attached surface of the epithelium are free and do not form a plexus. He corroborates the statements of Langerhans respecting the presence of peculiar cells in the deeper parts of the epidermis of stellate and fusiform shape; often with a distinct nucleus. They blacken with chloride of gold; but neither Eberth nor Langerhans have been able to trace their connection with nerves. These cells usually send off from five to eight simple or branched processes towards the surface, but only one or two towards the cutis.

In the *Annales des Sciences Naturelles, Zoologie*, Paris, 1870, p. 1, is a contribution by M. Léon Vaillant to the anatomical investigation of the genus *Pontobdella*, the principal points of which we extract. M. Vaillant states that he has had peculiar opportunities of observing this genus of the Hirudinidæ, and the particular species he has investigated is that of the *P. verrucata*, so called on account of the proper zoonites or segments of the animal supporting four tubercles, though the *cutaneous* segments or zoonites only bear two. The total number of cutaneous zoonites is 67. The anterior orifice of the digestive system is placed at the centre of the anterior sucker. The posterior orifice opens dorsally just in front of the posterior sucker. The skin presents a dermis and an epidermis, the latter being composed of a delicate cuticle and of a layer of epithelial cells, corresponding to the pigmentary layer of Moquin Tandon. The dermis is composed of cells concealed by a network of what appear to be anastomosing tubes. Beneath the skin, and almost forming part of it, is a dense layer of smooth muscular tissue, the external fibres of which are circular, the deeper longitudinal. By the agency of these the locomotion of the animal is chiefly effected. Between the muscular layer and the digestive tube an immense number of yellow granules are found, which appear to be of the same nature as the unicellular glands described by Leydig, possessing fine ducts, that can in some instances be followed to the skin, and therefore almost precluding the idea of their being hepatic organs. The nervous system presents 22 ganglia, excluding the cesophageal collar; the last one is the largest, and is found in the anal sucker. No eyes have been discovered in them, and their relations to the outer world appear to be restricted to those derived from the sense of touch. The digestive organs present no remarkable deviations from that of the leeches in general. Its divisions are a proboscis, with its sheath; a crop; the gastro-iliac portion, and the rectum. The jaws are reduced to three minute projecting points. The crop extends quite to the posterior part of the body, and presents a series of constrictions. The gastro-iliac portion is a single tube lying above the *cul de sac*, formed posteriorly by the ingluvies, and appears to correspond to the true stomach of other animals. The circulation is effected through a closed system of vessels, and the contents of these vessels are colourless, and destitute of corpuscles. M. Vaillant considers that the blood is represented properly by the fluid contained in the general cavity of the body, which contains definite morphological elements. There are four principal vessels, a dorsal, ventral, and two lateral, and these lie in the muscular layers. The dorsal and ventral vessels communicate freely by large branches; the lateral vessels receive their blood from a delicate plexus of vessels distributed on the intestine, which, however, communicates with the dorso-ventral system; and it is probable that an oscillation of the fluid is constantly occurring from one set of vessels into the other. On the whole, the vascular system is much less complicated here than in the leech. The respiratory function is effected essentially if not exclusively by the skin, and there is no special organ for its performance.

In regard to the secretions, reference has already been made to the unicellular glands of the skin; and the only others are some peri-cesophageal glands, which are generally considered to be salivary, and the muciparous follicles, which are ovoid vessels, six in number, on each side, placed in the testicular region, and opening externally with a ciliated orifice. The sexes are united in the same individual. The eggs are deposited either separately or several together enveloped in a common capsule.

In the third part of M. Brown Séquard's "*Archives de Physiologie*" are the results of an investigation of the mode in which nerves terminate in smooth muscular tissue, by M. Hénoque. He has examined the smooth muscles of numerous vertebrate animals and of man, with a great variety of reagents, as serum, pyroligneous acid, chromic acid, and chloride of gold and potassium, which in a strength of one part in 200 he particularly recommends. He finds that the appearances presented are the same in all animals, and in all organs; and states that in following out the nerves towards their peripheral terminations, they may be found to form three plexuses or networks—namely, a fundamental plexus, with which numerous ganglia are associated, and which is situated *outside* the smooth muscle; an intermediate plexus; and lastly an intra-muscular plexus situated in the interior of the fasciculi of smooth fibres. The terminal fibres are everywhere identical, they divide dichotomously or anastomose, and end in a slight button or swelling, or in a punctiform manner. These little buttons are seated in various parts of the smooth muscular fibre, more frequently round the muscles or at the surface of the muscular fibres, or, finally, between them.

The *American Naturalist* for May commences with an interesting article on the Indians of California, their manners and customs, by Edward E. Chever; followed by one on the "Time of the Mammoths," by Professor N. S. Shaler, in which he gives a full account of the geological distribution on the American continent of the different species of the genus *Elephas*. W. G. Binney contributes a paper on the "Mollusks of our Cellars."

In the *Revue des Cours Scientifiques* for May 21 we have M. Faye's important paper on the form of Comets, which occupied one of the *Soirées Scientifiques de la Sorbonne*, and a continuation of M. Bernard's series on Suffocation by the Fumes of Charcoal. In the number for May 28 is an epitome of M. Belgrand's *résumé*, presented to the Academy of Sciences, of the prehistoric history of the Paris basin, to which we refer in another column; the Rectorial Address, by M. H. Kopp, to the University of Heidelberg, on the State of Science during the Middle Ages; and a paper by M. Bert on Physiology and Zoology.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 19.—A paper was read, entitled "On the Effects of Alcohol (*Ethyl Alcohol*) on the Human Body," by Dr. Parkes and Count Cyprian Wollowicz. The experiments given in detail by the authors were undertaken with a view of testing the physiological and especially the dietetic effects of alcohol, and to clear up some points left doubtful by previous observers. They were fortunate in obtaining as the subject of experiment a healthy and very intelligent soldier at twenty-eight, 5 feet 6 inches in height, weighing from 134lb. to 136lb., with a clean, smooth skin, a clear bright eye, good teeth, largely developed, powerful muscles, and but little fat. As he had been accustomed to smoke, he was allowed half an ounce of tobacco daily, lest the deprivation of it might disturb his health. The amount of alcohol administered varied, but it was never carried so far as to produce any extreme symptoms of narcotism.

The plan of observation was as follows:—For twenty-six days the man remained on a diet precisely similar as to food and times of meals in every respect, except that for the first eight days he took only water (in the shape of coffee, tea, and simple water); for the next six days he added to this diet rectified spirit, in such proportion that he took, in divided quantities, on the first day one fluid ounce (= 28 c. c.) of absolute alcohol; on the second day two fluid ounces; on the third day four ounces, and on the fifth and sixth days eight ounces on each day. He then returned to water for six days, and then for three days took on each day half a bottle (= 12 ounces, or 341 c. c.) of fine brandy,