

the cardiac movements (pl. 11).—Prof. Turner, the foetal membranes of *Oreas canna* and notes on the dissection of a second negro.—Dr. Anderson, a new abnormality in connection with the vertebral artery.—Dr. J. G. Garson, case of the development of wool on the cornea of a sheep.—Notices of books.—List of grants in aid of scientific investigation made by the British Medical Association.

THE *Archives des Sciences Physiques et Naturelles* (November and December, 1879).—These parts contain the following papers:—Meteorological recapitulation of the whole year 1878 for Geneva and the Great St. Bernard, by Prof. Plantamour.—Analysis of some recent works relating to the topography and the constitution of the moon (second part), by M. Rapin.—On the periodic movements of the soil as indicated by air-bubble levels, by Prof. Plantamour.—Essay on chemical mechanics, founded upon thermochemistry, by M. Berthelot.—Account of the sixty-second meeting (at St. Gallen) of the Swiss Society of Naturalists, on August 10-12, 1879.—On a portable and registering limnimeter, and observations made with it at the Peilz tower near Vevey, by M. E. Sarasin.—On the theory of joints in botany, by M. Clos.—Note on *Capsella rubella*, Reut., by M. Vetter.—Tables of meteorological observations made at Geneva observatory and on the Great St. Bernard during October and November last, by Prof. Plantamour.—Note on the "Elementary Treatise of the Qualitative Analysis of Mineral Matter," by Albert Ditti.—On the health of the pupils at the Lyons Lyceum, by Dr. H. Dor.—New researches on the quantitative determination of chromatic vision, by Drs. Dor and Favre.—On the historical evolution of the colour sense, by Dr. Dor.—Researches on the action of low temperatures on the germinative faculties of seed-grains, by C. de Candolle and Raoul Pictet.

THE *Verhandlungen der k.k. geologischen Reichsanstalt zu Wien* (Nos. 13 and 14, 1879).—From these parts we note the following papers:—On the flora of the clay of Preschen, by H. Engelhardt.—On the living analogies of the late-tertiary marsh-strata and of the melanopsis-marl of south-eastern Europe, by Th. Fuchs.—On the environs of the Adamello mountains and on the development of the Perm formation between Val buona Giudicaria and Val Camonica, by G. Stache.—Report of a geological excursion to the Herzegovina, by A. Bittner.—Numerous book-notices.—On the slate of Velhota, by J. Kusta.—On the Strypa river district in Galicia, by Dr. E. von Dunikowski.—On the plants of the Cipris-slate of northern Bohemia, by H. Engelhardt.—On the strata penetrated by the main shaft of the Société de Carbonages de Bohême between Königswarth and Grasseth, near Falkenau on the Eger, by the same.—On the eruptive formations and the relief of the district of Christiania, by Dr. E. Reyer.—On the Wieliczka mine, by C. M. Paul.—On the brachiopoda fauna of the oolites of Balin near Cracow, by L. Szajnocha.

*Bulletin de l'Académie Royale des Sciences de Belgique*, No. 11, 1879.—On a convenient means of distinguishing artificial from natural butter, by M. Donny.—On elimination (third and fourth note), by M. Mansion.—Theory à posteriori of elimination between two algebraic equations, by the same.—New reactions enabling to characterise very small quantities of morphine, by M. Jorissen.—On certain combinants of binary algebraic forms, by M. Le Paige.

THE *Revue Internationale des Sciences* (October, 1879), contains the following papers:—On the fauna of the depths of the sea, by Prof. A. Pagenstecher.—On lichens, by Prof. Reess.—On the adaptation and the mimetism in Turbellariæ, by Paul Hallez.—On the development of parrots, by Max Braun.—The part fur her contains the usual reviews, book notices, and scientific news.

THE *Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westfalens* (36ter Jahrg. i., 1879), contain but few papers of importance:—On the theory of the double refraction of light, by E. Ketteler.—Materials for an arachnida fauna of Japan, by F. Karsch.—On the occurrence of fossil bones near the Unkelstein on the Rhine, by G. Schwarze.—On the chemical cause of the poisonous action of arsenic, by Herr Binz.—On hamayite, newberyite and sillimanite, by Prof. vom Rath.—Several geological papers and reports of minor interest, by the same.

## SOCIETIES AND ACADEMIES

### LONDON

Royal Society, February 5.—"On the Epipubis in the Dog and Fox." By T. H. Huxley, Sec.R.S.

In 1871 I gave a brief description of a structure which I had observed in the dog, in the following terms:—

"In the myology of the dog, the insertion of the tendon of the external oblique muscle of the abdomen presents some interesting peculiarities. The outer and posterior fibres of this muscle end in a fascia, which is partly continued over the thigh as *fascia lata*, and partly forms an arch (Poupart's ligament) over the femoral vessels; by its inner end it is inserted into the outer side of a triangular fibro-cartilage, the broad base of which is attached to the anterior margin of the pubis, between its spine and the symphysis, while its apex lies in the abdominal parietes. The internal tendon of the external oblique unites with the tendon of the internal oblique to form the inner pillar of the abdominal ring, and is inserted into the inner side of the triangular fibro-cartilage. The *pectineus* is attached to the ventral face of the cartilage; the outer part of the tendon of the rectus into its dorsal face; but the chief part of that tendon is inserted into the pubis behind it. This fibro-cartilage appears to represent the marsupial bone, or cartilage, of the Monotremes and Marsupials."

The only reference to this statement which I have met with is by Prof. Macalister, in his "Introduction to the Systematic Zoology and the Morphology of Vertebrate Animals" (1878), p. 265:—

"Prof. Huxley describes a fibro-cartilaginous 'marsupial' above the pubis, from whose anterior surface the pectineus arises. I have failed to satisfy myself of its existence as a constant structure in many dogs, in the common and Bengal foxes, in the dingo, jackal, *Canis pallipes*, and wolf."

The wording of this passage does not make it quite clear whether the writer has not found the structure in any case, but does not mean to deny that it may occur occasionally in the various *Canidae* he mentions; or whether he has found it occasionally, but not constantly, in all or some of them.

Under these circumstances it may be desirable to publish the fact that, having recently dissected, for purposes of comparison, a male and female fox and a male and female dog, I have not had the slightest difficulty in demonstrating the existence of the structure which I described in 1871, in all four. And the only phrase which appears to require modification in that description is the use of the term fibro-cartilage. I do not remember whether, formerly, I submitted the structure to microscopic examination or not; but in the specimens lately examined, notwithstanding the firmness and density of the triangular plate, it contains no true cartilage cells, but is entirely composed of fibrous tissues which lie parallel with one another in the middle of the plate, while, at the thickened edges, they become closely interwoven.

A comparison of this triangular fibrous plate in the fox, with the "marsupial" bones of *Phalangista vulpina*, shows that the fibrous plate in the former animal exactly answers to the basal part of the "marsupial" bone in the latter. It may properly, therefore, be termed the *epipubic ligament*, and must be regarded as a structure of the same order as the rudimentary clavicle and the rudimentary hallux of the *Canidae*; that is to say, as the remains of an organ which was fully developed in the ancestral forms of that group.

It is interesting to remark, in connection with this interpretation of the facts, that, in the existing *Thylacinus*, which presents so many curious points of resemblance to the dogs, the epipubis is not ossified. As, however, the *Canidae* have certainly existed since the eocene epoch, there is no likelihood of the existence of any direct genetic connection between the dogs and the *Thylacines*. The existing carnivorous *Marsupialia* have evidently all proceeded from ancestral forms, characterised by the possession of a thumb-like hallux, a peculiarity which is presented neither by the dogs, when they possess a hallux, nor by any other carnivora with pentadactyle hind feet. Moreover, the early birth of the young and the development of a marsupium in the female, are evidences of the departure of the existing *Marsupialia* from the direct line by which the *Mammalia* have advanced from the ornithodelphous type. That the ancestors of all mammals possessed bony or cartilaginous epipubes is, I think, highly probable, but it does not follow that they had the marsupial method of bearing and nourishing their young.

<sup>1</sup> "Manual of the Anatomy of Vertebrate Animals," p. 417.

**Chemical Society**, February 5.—Mr. Warren De la Rue, president, in the chair.—It was announced that a ballot for the election of Fellows would be held at the next meeting of the Society (February 19).—The following papers were read:—Note on the assumed formation of ozone by the atmospheric oxidation of phosphorus, by C. T. Kingzett. The author criticises a paper recently read on the above subject by H. McLeod, and contends that his arguments fall to the ground because he has made a mistake in calculating the results of his experiments.—Contributions from the laboratory of Tôkiô, Japan, by R. W. Atkinson; II. On persulphocyanate of silver. When this yellow salt is boiled with water it turns black; a mixture of sulphide and undecomposed persulphocyanate being formed in proportions which vary with time, temperature, and the quantity of free acid present, at the same time cyanogen disulphide is probably formed.—On methylated dioxethylenamines, by H. F. Morley. The author has prepared, by the action of mono and dimethylamines on glycolic chlorhydrin, mono- and di-methyl-dioxethylenamine, and analysed their platinum salts.—Note on igasurin, by W. A. Shenstone. The author has prepared this substance, obtained by Desnoix, and finds it to be a mixture of brucine and strychnine.—On some reactions of tertiary isobutyl iodide, by L. Dobbin. By prolonged shaking with a 12 per cent. solution of hydrocyanic acid or water at the ordinary temperature, trimethyl carbinol was obtained; by the action of zinc oxide at 15° isobutylene was formed; no isodibutylene could be separated. The author has also studied the action of sodium on tertiary isobutyl iodide. Isobutylene, isobutylene, and hydrogen were formed with small quantities of a hydrocarbon not absorbed by fuming sulphuric acid.

**Zoological Society**, February 3.—Prof. Flower, F.R.S., president, in the chair.—Capt. W. Vincent Legge, R.A., exhibited and made remarks upon some specimens of the Little Ringed Plovers of India and Ceylon.—A communication was read from Dr. G. Hartlaub, F.M.Z.S., containing the description of a new species of Heron obtained in Mohambo in Northern Madagascar, which he proposed to name *Ardea rutenbergi*.—Mr. Oldfield Thomas read a note on a specimen of *Myoxos elegans*, Temminck, which had been obtained by Mr. H. Pryer, near Yokohama, Japan.—A communication was read from Mr. H. N. Moseley, F.R.S., containing the description of a new species of Simple Coral, which he proposed to call *Desmophyllum lamprosteichus*.—Prof. F. Jeffrey Bell gave an account of *Palaeolamgas*, a new species of irregular Echinoidea, which presented, among others, the following archaic points:—(1) The rows of pores were completely parallel, and extended regularly to the ambitus; (2) some of the pores exhibited an elongation indicating the appearance of the connecting groove; (3) the outer row of each pore-series was continued uninterruptedly to the actinostome; and (4) two of the ocular pores retained indications of their primitively double character.—Messrs. C. J. Danford and E. R. Alston read a paper on the mammals of Asia Minor, Part II., in which they added certain species to their former list, and described a new species of Vole, under the name of *Arvicola guentheri*.—Mr. Sclater exhibited and made remarks on a fifth collection of birds from Duke of York Island and its vicinity, which he had received from the Rev. George Brown, C.M.Z.S. Four species were described as new, and proposed to be called *Megalurus interscapularis*, *Pacilodryas aethiops*, *Munia melana*, and *Kallus insignis*.

**Physical Society**, February 7.—Annual conversation.—The museum of King George III., the Wheatstone Laboratory, and other halls of King's College were occupied by a fine display of physical apparatus and artistic furniture, including numerous relics of Sir Charles Wheatstone. There was a large number of ladies and gentlemen present, and during the evening selections of music were played by the Musical Association of the Royal School of Mines. The apparatus was peculiar to the whole range of physical science, and was furnished in part by the college and in part by the various instrument-makers and electric engineers of the Metropolis. The Telephone Company and the British Electric Light Company contributed telephones and electric lamps, and Herr Faber exhibited his ingenious speaking-machine.

**Meteorological Society**, January 21.—Mr. C. Greaves, president, in the chair.—Dr. Tripe read the Report of the Council for the year 1879, which showed that the Society was in a very satisfactory condition. Eighty-four new Fellows have been elected, and the total number at the end of the year was

473. The great local differences in temperature and humidity require to be more accurately ascertained than they are at present, and this remark applies not only to sea-side places, but also to inland districts in their relation to hills and valleys. It is with a view to obtaining better knowledge on this subject that the Council have instituted a new class of stations of a third order, to be termed "Climatological," at which observations of temperature, humidity, cloud, and rainfall are taken daily at 9 A.M. only, with certified instruments, the thermometers being in Stevenson screens, so that the observations of temperature at the different stations may be strictly comparable. The total receipts for the year were 799*l.* 6*s.* 9*d.*, and the expenditure 621*l.* 19*s.* 5*d.*, leaving a balance in favour of the Society of 177*l.* 7*s.* 4*d.*—The President then delivered his address, in which he advocated a more attentive inquiry by the students of meteorology into the subject of hygrometry. The appearance and disappearance of moisture, its diffusion, its origin in and withdrawal from the vaporous form, were matters which could now be readily defined through the increased supply of good observations, especially those so widely circulated by the Meteorological Office, and those recorded by the observers of the Meteorological Society. In furtherance of this object he produced a digest of all the observations published by the Meteorological Office for the year 1879, a year of abundant moisture, and one which could hardly fail to afford traces of the constancy or inconstancy of beds of moisture, if they were permanent anywhere, or of their coming and going viewed substantially as to their own existence, rather than as borne by the force of the wind, or acted on by the power of the air in its baric relations. The preparation of this digest from the hygrometric elements for 1879 proved such a laborious work that, being still incomplete and wanting the customary corrections for the various observations, he refrained from comments and deductions and gave the digest itself for the use of any students who might desire to work at the subject. The tables contained the calculated dewpoint, vapour-tension, relative humidity, and thermometric dryness throughout. These various and full data exhausted all the aspects of humidity in its vaporous state, and would supply means for a thorough study of the British climate in a year of maximum humidity.—The following gentlemen were elected the Officers and Council for the ensuing year:—President: George James Symons, F.R.S. Vice-Presidents: Edward Ernest Dymond, Charles Greaves, F.G.S., Rev. William Clement Ley, M.A., Capt. Henry Toynbee, F.R.A.S. Treasurer: Henry Perigal, F.R.A.S. Trustees: Sir Antonio Brady, F.G.S., Stephen William Silver, F.R.G.S. Secretaries: Robert Henry Scott, F.R.S., John William Tripe, M.D. Foreign Secretary: John Knox Laughton, F.R.A.S. Council: Arthur Brewin, F.R.A.S., William Ellis, F.R.A.S., Rogers Field, B.A., Frederic Gaster, Joseph Henry Gilbert, F.R.S., William John Harris, M.R.C.S., Baldwin Latham, F.G.S., Robert John Lecky, F.R.A.S., Hon. Francis Albert Rollo Russell, Richard Strachan, Henry Samuel Tabor, George Matthews Whipple, F.R.A.S.

**Anthropological Institute**, January 27.—Anniversary Meeting.—Mr. Edward B. Tylor, D.C.L., F.R.S., president, in the chair.—The following gentlemen were elected to serve as Officers and Council for the year 1880:—President: E. B. Tylor, F.R.S. Vice-Presidents: Hyde Clarke, John Evans, F.R.S., Prof. W. H. Flower, F.R.S., Major-Gen. A. Lane Fox, F.R.S., Francis Galton, F.R.S., Dr. Allen Thomson, F.R.S. Directors and Honorary Secretaries: E. W. Brabrook, F.S.A., W. L. Distant, J. E. Price, F.S.A. Treasurer: F. G. H. Price, F.G.S. Council: Lt.-Col. Godwin Austen, J. Beddoe, F.R.S., Prof. George Busk, F.R.S. C. H. E. Carmichael, M.A., W. Boyd Dawkins, F.R.S., Sebastian Evans, LL.D., A. W. Franks, F.R.S., Prof. Huxley, F.R.S., A. H. Keane, B.A., A. L. Lewis, Sir J. Lubbock, Bart., M.P., R. Biddulph Martin, The Earl of Northesk, F.S.A., Prof. Rolleston, F.R.S., F. W. Rudler, F.G.S., Lord Arthur Russell, M.P., Rev. Prof. Sayce, M.R.A.S., Alfred Tylor, C. Staniland Wake, M. J. Walhouse, F.R.A.S.—The President delivered his annual address, in which he gave an outline of the progress of anthropological science during the last forty years, with special reference to the work now being done in Germany.

**Entomological Society**, anniversary meeting, January 21.—J. W. Dunning, M.A., F.L.S., vice-president, in the chair.—The following gentlemen were elected as officers and council for the ensuing year:—President, Sir John Lubbock, Bart., M.P., F.R.S.; Treasurer, E. Saunders, F.L.S.; Librarian, F. Grut,

F.L.S.: Secretaries, R. Meldola and W. L. Distant; other Members of Council: H. W. Bates, F.L.S., W. Cole, J. W. Dunning, M.A., F.L.S., F. du Cane Godman, F.L.S., O. Salvin, F.R.S., H. T. Stainton, F.R.S., S. Stevens, F.L.S., and J. J. Weir, F.L.S. In the absence of the president, an address was read by J. W. Dunning, vice-president, and the meeting terminated with the usual vote of thanks to the officers.

**Photographic Society, January 13.**—J. Glaisher, F.R.S., president, in the chair.—Mr. Leon Warnerke having at the previous meeting described all actinometers hitherto used, now read a paper on a new actinometer, designed by himself; it is based upon the retention of light by a phosphorescent substance. In this case calcium sulphide being the medium chosen, an ingenious apparatus has been constructed, in which is a disk of this phosphorescent material, hermetically sealed between glasses, and revolving over this is another disk containing a series of small holes where increasing layers of coloured gelatine, with figures upon them, produce increasing opacity, and the last number seen before the figures become invisible, indicates the intensity of light at the moment. A contrivance is also introduced by which, after using, any remaining luminosity is extinguished by letting red or green light pass on to the disk containing the phosphorescent material. This actinometer is found to perfectly register the value of candle, gas, or any other light possessing actinic power, however small.

**Victoria (Philosophical) Institute, February 2.**—A paper on recent Assyrian and Babylonian research, illustrated by maps and specimens, was read by Mr. Hormuzd Rassam; in which, after sketching the route which a traveller would take from Aleppo by Diarbekir, Mossul, and Bagdad to Nineveh, he gave a full account of his exploration in Nineveh and Babylon, with a description of the different ancient sites existing there at present.

#### VIENNA

**Imperial Academy of Sciences, December 18, 1879.**—The following papers were read:—On the changes produced by chemical change of muscle-substance in polar excitation by the electric current, by Dr. Biedermann.—On the method and data of phyto-phylogenetic research; on researches of the kind in the Island of Skye; and on the phylogeny of Pinus, by Prof. v. Ettinghausen.—On the action of phosphonium-iodide on sulphide of carbon, by Dr. Jahm.—On the synthesis of biguanide, by Dr. Herth.—Report on searches and excavations during the past year (in Moravia, Lower Austria, and Krain).—On a new viviparous species of *Ungalia* from Peru, by Dr. Steindachner.—Geological observations in the Island of Chios, by Herr Teller.

#### PARIS

**Academy of Sciences, February 2.**—M. Edm. Becquerel in the chair.—The following papers were read:—On some applications of elliptic functions, by M. Hermite.—On a linear differential equation of the second order, by M. Gylden.—Complement to recent note on the deformation of substances, by M. De Saint Venant.—Experiments on the compression of gaseous mixtures, by M. Cailletet. Compressing in his apparatus 5 vol. carbonic acid and 1 vol. air he easily liquefies the former. On carrying the pressure to 150 or 200 atmospheres, the meniscus of liquefied acid, concave and quite distinct, becomes plane, loses distinctness, and is gradually effaced, till at length the liquid wholly disappears, the tube being then, apparently, filled with a homogeneous matter, which resists all further pressure, like a liquid. On diminishing the pressure the liquid suddenly appears again, at a constant pressure for determinate temperatures (132 atm. at +5.5°, 110 atm. at 19°, &c.). This disappearance of liquid cannot be due to heat liberated in compression, for the tube was immersed in water keeping a constant temperature, and the compression was slow. It seems that at a certain pressure the liquid and gas are dissolved in each other. M. Cailletet tried to test this by colouring the CO<sub>2</sub> with iodine, but this, attacking the mercury, masked the phenomenon. (The supposition that the disappearance of liquid is only apparent, he disproves.)—Evolution of inflorescence in Gramineæ (2nd part); types of structure of the primary rachis; order of appearance of the first vessels, by M. Trécul.—M. Gaudin submitted a method of dividing masses of ice, viz., placing on them a flexible tube of lead or alloy of tin and antimony, of small calibre, connected with a steam boiler, and open at the end to let the water of condensation out. It penetrates into the ice by its weight and heat. The trenches thus made are kept from closing by means of boards, and charges

of dynamite may be put into them.—On the theory of linear differential equations, by M. Mittag-Leffler.—Remarks on the new metals of gadolinite and samarskite, by M. Delafontaine. He regards *ytterbium*, *decipium*, and *philippium* as definitely acquired for science; *scandium* he cannot speak of; *mosandrum* should be eliminated; *samarium* requires more proof; the characters of the yellow oxide, *philippine*, are those of M. Soret's earth X and the *holmene* of M. Cleve; the latter name, therefore, should not be retained.—Artificial reproduction of scorodite, by MM. Verneuil and Bourgeois. Iron wire is treated with a concentrated solution of arsenic acid in a sealed tube, heated to 140°–150°; it gets covered with grey gelatinous matter (a mixture of amorphous arseniate of sesquioxide of iron and arsenious acid in small crystals); this matter gradually disappears, being transformed into scorodite. The authors hope to get erythrine, annabergite, and some other hydrated arseniates thus.—On the anatomical characters of blood peculiar to intense and extreme anæmia, by M. Huyem. In what he calls *aglobulie intense* (the globular richness varying from 2,000,000 to 800,000), he notes that crystals form in the dried blood, like those of dried lymph; and in the fresh blood he finds white globules with coloured contents, and still retaining amoeboid contractility (such are also found in lymph). In *aglobulie extreme* (800,000 to 450,000 globules) there are elements like the red nucleated globules of oviparous animals. In all cases the white globules are much more numerous and smaller than in normal blood. In anæmia, then, the blood becomes in some sort lymphatic, i.e., it is formed of a mixture of blood properly so called and lymph.—Researches on the movements of the uterus, by M. Polailon. A registering apparatus and manometer were connected with the enlarging instrument sometimes introduced into that organ. The author calculated the specific force of the uterus to be about 178, and therefore very much below the force of striated muscles in man, which is about 1087. Uterine contraction produces a regular movement without shock, and remarkable for its length, nearly two minutes (contraction and relaxation together; the former being the shorter). Violent respiratory movements raise the pressure considerably.—A note from M. Macagno treated of the composition of the air in different parts of Palermo; another, of the production of tannin in leaves of sumac; he finds leaves at the upper extremity of the stem richer in tannic acid than those at the base. The quantity of acid diminishes as the plant grows older.

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