the arrangements for graduation, and in simplifying and re-arranging examinations in the Faculties of Laws and Medicine. Your petitioners have accordingly opened communications with the above-named bodies regarding this subject. They understand, however, that the Royal College of Physicians and the Royal College of Surgeons are disposed to seek conjointly for independent powers of granting degrees in a Faculty of Medicine. Your petitioners deprecate any severance of the machinery for granting degrees in London from academic influences. Many serious defects of University education in London are due to such a severance.

14. That, with a view to avoid multiplication of bodies conferring a diploma or a licence to practise, it is expedient that the possession of the conjoint diploma of the two Royal Colleges above named should be a preliminary condition for obtaining a medical degree in the University, the conferring of such diploma remaining, as at present, the function of the said Royal Colleges.

15. That the objects above set forth would, in the opinion of your petitioners, be most readily accomplished by the issue of a charter to a body of persons suitably constituted to be the governing body of a new University in and for London; such body to consist of the following persons:—

(1) The Chancellor of the University; the first Chancellor to be appointed by Your Majesty, and named in the charter.

(2) Members to be named by Your Majesty in the charter. Vacancies to be filled by the Lord President.

(3) Members chosen by the governing bodies of University College, London; King's College, London; and such other Colleges as may be associated with the University.

(4) Members chosen by the governing bodies of the professional societies and corporations hereinbefore referred to, if associated with the University.

(5) Members chosen by the professors or teaching staff of associated institutions doing University work, and assembled in the Faculties, whether of Arts, Science, Laws, or Medicine, to which they respectively belong, such members to be in number not less than one-third of the whole governing body.

16. That power should be given to the governing body of the new University to accept the application for association with the University of any teaching institution in the metropolis, the conditions of such association to be—(*a*) that the institution is giving instruction of a University character; (*b*) that it has established a complete curriculum, and possesses a sufficient teaching staff in at least one of the recognized Faculties; (*c*) and that it has furnished proofs of its means and appliances for teaching being established on a satisfactory basis.

Your petitioners therefore humbly pray Your Majesty to be pleased to grant a charter to a body of persons appointed as is described in this petition, or to such other person as Your Majesty may be pleased to select, constituting a University in and for London upon the principles and for the purposes hereinbefore stated, and having power to grant its own degrees in the Faculties of Arts, Science, Laws, and Medicine, and that Your Majesty will be pleased to make such orders in the premises as to Your Majesty, in your Royal wisdom and justice, may seem meet.

And your petitioners will ever pray, &c.

Executive Committee of the Association for Promoting a Teaching University for London:—W. Grylls Adams, M.A., F.R.S., J. W. Cunningham, Sec. King's College, J. Curnow, M.D., F.R.C.P., Sir Dyce Duckworth, M.D., F.R.C.P., G. Carey Foster, B.A., F.R.S., M. Berkeley Hill, M.B., F.R.C.S., W. H. H. Hudson, M.A., LL.M., J. Marshall, LL.D., F.R.S. (Chairman), Norman Moore, M.D., F.R.C.P., H. Morley, LL.D., W. M. Ord, M.D., F.R.C.P., F. Pollock, M.A., R. S. Poole, LL.D., W. J. Russell, Ph.D., F.R.S., T. E. Scrutton, M.A., LL.B., Rev. Henry Wace, D.D., G. C. W. Warr, M.A., A. W. Williamson, LL.D., F.R.S., Gerald F. Yeo, M.D., F.R.C.S., Sir George Young, LL.D.; Secretary, F. C. Montague, M.A., 12 New Court, Carey Street, W.C.

THE TOTAL ECLIPSE OF THE MOON, JANUARY 28.

THE weather on the night of January 28 proved decidedly unfavourable for those astronomers in London and the neighbourhood who had prepared to observe the occultations of small stars by the eclipsed moon. The sky, which had been beautifully clear in the morning, but which had become partially clouded towards evening, had cleared again a little before the commencement of the eclipse, thus raising hopes which were destined to be disappointed, for the clouds returned, and, with the exception of two or three short breaks, the moon was enveloped in cloud more or less dense during the entire duration of the total phase. Very full preparations for the observation of the occultations had been made at the Royal Observatory, Greenwich, but only the observers at the four largest telescopes were able to see even one of the predicted phenomena. At the Cambridge Observatory a similar disheartening experience was recorded, and at Mr. Crossley's Observatory, Halifax, it was quite cloudy, but in the west and south of England, and in Ireland at Dublin and Belfast, the conditions for observing were very favourable. On the Continent, at Vienna no observations could be made, the moon being enveloped in thick haze; at Paris and Berlin the sky had been overcast, and there had been a fall of snow before the eclipse, but the latter half of the eclipse was well observed at the former station, and some good results were obtained at thelatter during a clear interval about a quarter of an hour after the commencement of totality. At Moscow the eclipse was seen in a very clear sky, and at Madrid it was partially clear.

The following table gives the number of observations obtained at those Observatories from which accounts have been received up to the present time:—

Observatory.	Aperture of telescope, inches	No. of Stars observed. Dis.	Reap.
Royal Observatory, Greenwich	24	3	7
,, ,, ,,	12¾	1	4
,, ,, ,,	6	3	1
,, ,, ,,	6½	0	3
Col. Tupman's—Harrow	18	3	2
Mr. Penrose's—Wimbledon	6	3	2
Mr. Brodie's—Fernhill, I. of W.	8½	9	5
Mr. Stothert's—Bath	6	11	13
Cambridge Observatory	12	0	2
Miss Petrie—Bradford	6	1	1
Mr. Backhouse's—Sunderland	—	1	0
Glasgow Observatory	9	6	7
Mr. Heath—Edinburgh	3¼	3	1
Dunsink Observatory	—	17	18

		No. of Stars observed.
Stonyhurst Observatory	8	1
,, ,,	5½	12
,, ,,	4	4

The 8-inch refractor at Stonyhurst was devoted to spectroscopic observations during the greater part of the eclipse. It had been in the programme to make similar observations at Greenwich had the night proved favourable, and also to take a series of photographs showing the progress of the eclipse. Three photographs were secured, but the clouds prevented all spectroscopic work. Dr. Copeland also at Dun Echt had intended to make spectroscopic observations, but was almost completely thwarted by snow-squalls.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, January 19.—"On the Secondary Carpals, Metacarpals, and Digital Rays in the Wings of existing Carinate Birds." By W. K. Parker, F.R.S.

In a paper "On the Morphology of Birds," already sent in to the Royal Society, but not yet published, I have described certain additional parts in the wings of Gallinaceous birds.

One of these lies on the radial side of the first metacarpal; the other two are on the ulnar side of the second and third metacarpals.

These parts, which at first caused me considerable surprise, being wholly unexpected by me, are only part of what I have since found in other families.

During the past year I have worked out the development of the skeleton in the Duck tribe ("Anatidæ"), in the Auk tribe ("Alcidæ"), and in the Gull tribe ("Laridæ"), and to some degree in some other families. The subject appears to me to be of great interest, and I have, through various English and American friends, obtained many scores of embryos and young birds, &c., that I may be able to trace these parts in every main group of the class. Normally, both the existing Carinatæ and Ratitæ,

and such extinct forms as have been worked out—*Archæopteryx*, *Hesperornis*, *Ichthyornis*—show that the primary form of the bird's wing is simply *tri-digitate*. In this I agree with Baur, who has helped me greatly in this matter, both by his valuable papers and also by personal discussion with me.

The normal "manus" of a Carinate bird contains two permanently distinct carpals: three carpals that lose their independence by anchylosis with the metacarpals, and three digital rays extending from the three fused metacarpals.

In some birds, *e.g.* the Passerinæ, the *pollex* of the first digit has only one phalanx attached to its short metacarpal, the second only two, and the third only one, phalanx. In others, Plovers, Gulls, Cormorants, &c., an additional or *ungual* phalanx is found on the first and second digit; and in some birds, *e.g. Numenius*, during their embryonic state, a small semi-distinct nucleus is seen on the end of the aborted phalanx of the third digit.

In my as yet unpublished paper I have mentioned a sub-distinct tract of very solid fibro-cartilage, which evidently corresponds with what has been called "præ-pollex" by Kehrer and others.[1]

I am satisfied, now, that this very notable part is the remnant of the skeleton of the *spur*, so remarkably developed in the Palamedidæ, certain Geese, Plovers, and Jacanas.

This part therefore need not interfere with the consideration of the *true secondary digital* parts.

Among the last communications received by me from Dr. Baur, I find in print what I had already learned from him orally.

In some "General Notes" published in the *American Naturalist*, September 1887, p. 839, I find the following paragraph:—"The oldest Ichthyopterygia had few phalanges and not more than five digits; the radius and ulna were longer than broad, and separated by a space. Later, through the adaptation to the water, more phalanges were developed, more digits appeared, mostly by division of the former, or by new formation on the ulnar side. I have never found a new digit developed on the radial side."

These are most important facts, some of which—namely, the bifurcation of the digital rays—I had received some light upon before, both from Dr. Gadow and from Prof. D'Arcy W. Thompson.[2]

I find that the *carpus*, *metacarpus*, and digital rays are all apt to increase in number beyond what is normal.

Long ago I found, in one of the Palamedidæ, *e.g. Chauna chavaria*, *two ulnar carpals*, apparently an "ulnare" proper, and "centrale." More recently, in the embryo of a more normal Chenomorph—the Falkland Island Goose (*Chloëphaga poliocephala*)—I found the ulnare nearly divided into two segments.

On the other side of the carpus in an embryo Kestrel (*Falco tinnunculus*) and in a young Sparrow-hawk (*Accipiter nisus*), I found a "radiale" in two pieces, the outer of which in the latter was degenerating into the large "*os prominens*" which is found in the tendon of the "tensor patagii" muscle of rapacious birds.

In the embryos of Gulls, Auks, Guillemots, &c., the large "distal carpal" of the index or second digit sends forward a long wedge of cartilage towards an additional metacarpal nucleus. Evidently this is the rudiment of another carpal seeking to be attached to its own intercalary metacarpal.

Further on, on the large second digit, the flat dilated part of the proximal phalanx, on its ulnar side, also, is developed from a distinct tract of true cartilage, but soon loses its independence; it forms the plate on which some of the *primary quills* are fixed.

Still further on, on the ulnar side, near the small well-developed ungual phalanx of the embryo, but later, after hatching, a small oval cartilage appears, and *is ossified independently*.

A similar tract of cartilage is formed on the pollex or first digit, also, but is somewhat smaller than that on the second; it is on the ulnar side and near the ungual phalanx.

In the feeble third digit I only find a rudimentary secondary metacarpal, on the ulnar side; this is very constant throughout the *Carinatæ*; and sometimes, as I have already mentioned, there is a small rudiment of a second phalanx on that digit which, in the Lizard, has *four* phalanges.[3]

[1] "Beiträge zur Kentniss des Carpus und Tarsus der Amphibien, Reptilien, und Säuger," *Berichte der Naturforschenden Gesellschaft zu Freiburg i. B.*, vol. i, 1886 (Heft 4 und Taf. 4).

[2] See his paper on the hind limbs of Ichthyosaurus, &c., *Journ. Anat. Physiol.*, vol. xx. pp. 1–4 (reprint).

[3] The figures of these parts, and also of the rest of the developing skeleton in these birds—Ducks, Auks, Guillemots, &c.—are ready for publication.

In seeking for evidence of the manner in which these high and noble hot-blooded feathered forms arose from among the Archaic Reptilia, I think that something has been gained in what I have stated above.

The skull brings evidence of the same sort during its development, and it is to ancient long-beaked forms, and not to modern short-faced types of Reptilia, that we must look for any near relationship of the Reptiles in the Birds.

In the Guillemot (*Uria troile*) I have satisfied myself that there has been a considerable amount of *secular* shortening of the beak (rostrum and fore-part of mandibles), and if we look at Dr. Marsh's figures of *Hesperornis* and *Ichthyornis* we shall see what long bills these toothed birds possessed.

But there is no part of a developing bird's skeleton that is not rich with suggestive facts of this kind, as I propose to show in due time.

January 26.—"On the Emigration of Amœboid Corpuscles in the Star-fish (*Asterias rubens*)." By Herbert E. Durham, B.A., lately Vintner Exhibitioner, King's College, Cambridge. Communicated by Dr. P. H. Carpenter, F.R.S., F.L.S.

When small particles (*e.g.* Indian ink) are introduced into the body cavity of a specimen of *Asterias rubens*, they are soon ingested by the amœboid corpuscles of the cœlomic fluid; the latter are carried in various directions by the currents set up by the cilia of the cœlomic epithelium. In the dermal branchiæ these granule-laden corpuscles were observed to adhere to the wall of the branchia, and migrate by amœboid movement to the exterior. [Where such migration is proceeding very actively, a perforation filled by a plug of the corpuscles is formed.] Arrived at the exterior, the corpuscles retain an irregular shape for a while, then they become spherical, swell up, and disintegrate.

Besides corpuscles thus laden with foreign granules, corpuscles containing refringent sphærules (sphæruliferous corpuscles, "Plasma-Wanderzellen") were observed in the extruded material: emigration of such corpuscles was also noted to take place in specimens kept in captivity in glass vessels. Hamann's observation that "Plasma-Wanderzellen" occur in the branchiæ of Echinids helps to confirm the view that this a normal process: further observations are necessary to elucidate its significance. [Dr. Hartog's statements as regards the outward current in the water-tube (stone-canal), were confirmed by the presence of corpuscles in the pore-canals of the madreporite.]

With regard to the other point, it seems clear that minute foreign bodies introduced into the system of a star-fish can be, and are, got rid of by scavenging corpuscles.

"Note on the Madreporite of *Cribrella ocellata*." By the same.

The dogma laid down by Ludwig is that the cavity of the water-vascular system is isolated from other cavities. In a series of sections carried through the madreporite, &c., of *Cribrella ocellata*, it was seen that a few pore-canals of the madreporic plate open directly into the "Schlauchförmiger Kanal"; the ampulla into which the water-tube (stone-canal) dilates being also connected by an opening with the "Schlauchförmiger Kanal": this latter space being enterocœlic in origin, it is interesting to compare the arrangement in Crinoids.

Zoological Society, January 17.—Dr. A. Günther, F.R.S., Vice-President, in the chair.—The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of December 1887, and called attention to a small Fox from Afghanistan, presented by Lieut.-Col. Sir O. B. C. St. John, which should probably be referred to the species shortly noticed by Blyth as *Vulpes griffithi*. It was, however, somewhat doubtful whether the species was really distinct from *Vulpes leucopus*, Blyth, the small Desert Fox of Western India.—Mr. Francis Day exhibited and made remarks on some hybrid fishes from Howietoun, and on a British specimen of the Spined Loche.—Mr. Oldfield Thomas read a report on a collection of Mammals obtained by Emin Pasha in Central Africa, and presented by him to the Natural History Museum. The collection contained 115 specimens belonging to 39 species. The great mass of the collection had been obtained in a district called Monbuttu, just within the Congo Basin. A new Flying Squirrel, of small size, was named *Anomalurus pusillus*, and a new Tree-Hyrax, *Dendrohyrax emini*, after its discoverer.—Capt. G. E. Shelley read a paper on a collection of birds made by Emin Pasha in Equatorial Africa. The series had been formed partly in the Upper Nile district and partly in the Monbuttu country in the

Congo Basin, and contained examples of four species new to science, proposed to be called *Indicator emini*, *Spermospiza ruficapilla*, *Ploceus castanops*, and *Glareola emini*.—Dr. A. Günther, F.R.S., read a report on a collection of Reptiles and Batrachians from Monbuttu, sent by Emin Pasha. The author enumerated seventeen specimens, of which nine were almost generally distributed over the African region; of the remainder, seven were known from various parts of West Africa. One Tree-Snake was described as new, and called, after its discoverer, *Ahætulla emini*.—Mr. Edgar A. Smith, read an account of the Shells collected by Dr. Emin Pasha on the Albert Nyanza, Central Africa. Of the five species of which examples were obtained, three were referred to new species. It was stated that fifteen species of shells were now known from Lake Albert, of which seven were peculiar to it.—Mr. Arthur G. Butler gave an account of the Lepidoptera received from Dr. Emin Pasha. The collection contained examples of 155 species, of which thirteen Butterflies, and two Moths were new to science.—A communication was read from Mr. Charles O. Waterhouse, containing an account of the Coleoptera from Eastern Equatorial Africa received from Emin Pasha. One of the species was new to science, and six of them had previously been received at the British Museum from West Africa only.

Geological Society, January 11.—Prof. J. W. Judd, F.R.S., President, in the chair.—The following communications were read:—On the law that governs the action of flowing streams, by R. D. Oldham.—Supplementary notes on the stratigraphy of the Bagshot Beds of the London Basin, by the Rev. A. Irving. This paper contained the results of field-work during the year 1887. Additional notes on the stratigraphy of the Bracknell and Ascot Hills were given, justifying the reading of the country as shown in Figs. 1 and 2 of the author's last paper (Q.J.G.S., August 1887), the examination of this line of country having been extended as far as Englefield Green. Sections of the beds of the Middle Group as they crop out at Cæsar's Camp, Swinley Park, Ascot, and Sunningdale, were described and correlated with the 76 feet of beds which constitute that group in the Well-section at Wellington College. The stratigraphy of the hills known as Finchampstead Ridges has been worked out from numerous sections on their flanks; and the strata of the Bearwood Hills were correlated directly with them. All along the northern margin a general attenuation of (*a*) the Lower (fluviatile) Sands, and of (*b*) the Middle (green earthy) Sands was shown to occur, and in some places on the northern margin they are found to have entirely thinned away, admitting of distinct overlap at more than one horizon. The second part of the paper dealt with the Highclere district, where the author believes he has established the full succession of the three stages of the Bagshot formation, a section being given across the valley south of Highclere Station, showing the succession of the whole Eocene series (with the *Ostrea bellovacina* bed for its base) as it is developed there. Some important conclusions were drawn as to the Tertiary physiography of the South of England; and the revised tabulation of the Tertiaries put forward by Prof. Prestwich at the Society's last meeting was referred to as supporting some of the main points for which the author has contended. The reading of this paper was followed by a discussion in which the President, Mr. Monckton, Mr. Herries, and Mr. Drew took part.—The red-rock series of the Devon coast section, by the Rev. A. Irving.

Chemical Society, January 19.—Mr. W. Crookes, F.R.S., in the chair.—The following papers were read:—Morindon, by T. E. Thorpe, F.R.S., and W. J. Smith. Morindin, the active colouring-matter of A'l, the root-bark of *Morinda citrifolia*, yields 48·4 per cent. of morindon on hydrolysis. This latter substance is a methylanthracene-derivative of the composition $C_{15}H_{10}O_5$, and differs from all of the eight known compounds of the same formula.—Manganese trioxide, by T. E. Thorpe, F.R.S., and F. J. Hambly. The authors have repeated Franke's experiments (*Journ. für prakt. Chem.*, 1887) on the so-called volatile oxides of manganese, and have been unable to obtain any evidence of the existence of the blue gaseous manganese tetroxide. They find, however, that manganese trioxide exists, and can be formed by the action of a solution of potassium permanganate in sulphuric acid on dry sodium carbonate.—Note on Chatard's process for the estimation of small quantities of manganese, by the same.—Contributions to the theory of the vitriol-chamber process, by G. Lunge. The theory has been recently advanced by Raschig (*Liebig's Annalen*, 241, 161) that the vitriol-chamber process consists in the formation in the first instance from nitrous acid and sulphurous acid of dihydroxylaminesulphonic acid, which, being acted on by nitrous acid, yields sulphuric acid and nitric oxide, the latter being reconverted into nitrous acid. This theory is regarded by the author as untenable on all points, since it completely ignores the existence of nitrosyl sulphate (chamber-crystals), whilst nitric oxide, oxygen in excess, and water do not yield nitrous acid, but nitric acid. In the author's view it is not NO, but N_2O_3 which acts as a carrier of the oxygen in the vitriol-chamber, and the principal reactions are: $2SO_2 + N_2O_3 + O_2 + H_2O = 2SO_2(OH)(ONO)$; $2SO_2(OH)(ONO) + H_2O = 2SO_2(OH)_2 + N_2O_3$. Much NO is present in the front chambers along with N_2O_3; it is formed by a secondary reaction from nitrosyl sulphate, $2SO_2(OH)(ONO) + SO_2 + 2H_2O = 3SOH_2SO_4 + 2NO$, and is principally absorbed by the direct reaction, $4SO_2 + 4NO + 3O_2 + 2H_2O = 4SO_2(OH)(ONO)$; none of it can pass into NO_2 (which does not occur at all in normally working chambers), but some of it may pass into HNO_3, which is at once acted on by SO_2;—$SO + HNO_3 = SO_2(OH)(ONO)$. Thus the normal vitriol-chamber process is not as hitherto understood an alteration of reductions and oxidations, but it is a *condensation* of nitrous acid, or of NO with SO_2 and O_2 to nitrosyl sulphate, and a splitting up of the latter into N_2O_3 and sulphuric acid.

EDINBURGH.

Royal Society, January 6.—Sir W. Thomson, President, in the chair.—Mr. J. T. Bottomley described and exhibited a practical constant-volume air thermometer. This instrument has been designed by Mr. Bottomley so as to be more sensitive, more accurate, and, at the same time, of much greater range than air thermometers hitherto in use. Mr. Bottomley also exhibited some glass globes with internal cavities produced by cooling.—Prof. Tait communicated a paper by Dr. G. Plarr on the roots of $\epsilon^2 = -1$; and a paper by Prof. Burnside on a simplified proof of Maxwell's theorem.—Prof. Tait also read a paper on the Thomson effect in iron.—Dr. Thomas Muir read a paper on vanishing aggregates of determinants. He has obtained the general theorem of which a particular case was discovered lately by Kronecker, and attracted much attention in Germany.—Prof. Crum Brown communicated a paper by Dr. Griffiths on the Malpighian tubes and the "hepatic cells" of the *arancina* and the diverticula of the *asteridea*.

PARIS.

Academy of Sciences, January 23.—M. Janssen, President, in the chair.—Remarks in reference to M. J. Bertrand's recent note on the law of probability of error, by M. F. Tisserand. A solution is given of the problem, "To determine the function $\psi(x_1 - x_2, x_1 - x_3, \ldots x_1 - x_n)$, where $x_1, x_2, \ldots x_n$ indicate n arbitrary quantities independent one of the other, in such a way that this function is symmetrical in relation to $x_1, x_2, \ldots x_n$."—The paper is followed by a communication from M. F. Tisserand on the law of probability as applied to target-firing.—On some notions, principles, and formulas, which come into play in several questions connected with algebraic curves and surfaces, by M. de Jonquières. A rapid summary is given of these principles, &c., some of which have been established by the author himself, some by other mathematicians.—Note on the second volume of the "Annales de l'Observatoire de Bordeaux," by M. M. Lœwy. This volume is largely occupied with the important observations undertaken for the purpose of revising the positions of the stars in Argelander-Oeltzen's catalogue. It contains the precise co-ordinates of about 3500 stars belonging to the southernmost region of the northern hemisphere.—Contributions to the history of the problematical organisms of old marine basins, by M Stanislas Meunier. The paper deals with the so-called Bilobites, regarded by some palæontologists as mere physical tracings, by others as real organic remains. Several arguments are advanced in favour of the latter opinion, which is regarded as fairly well established, although not yet rigorously demonstrated.—On the rapidity with which the report of fire-arms is propagated, by M. Journée. All the facts here described tend to show that a projectile possessing a greater velocity than that of the report produces, during its passage through the air, a continuous sound analogous to the explosion of gunpowder.—On the mean distances of the planets from the sun, by M. Roger. It is shown that, apart from certain deviations within a defined

limit, these distances form a geometric progression modified by a periodic irregularity. In a future communication the connection will be pointed out between this law and the theoretic views advanced by the author on the formation of the planetary system.—Summary of the solar observations made at Rome during the last quarter of the year 1887, by M. P. Tacchini. The diminution of spots already noted in September was continued during the two ensuing months, so that the mean was even less than in the previous quarter. The protuberances also were less frequent.—On the phases of Jupiter, by Dom E. Siffert. Most of these observations, which were taken at the Observatory of Grignon, are tabulated for the period from March to December, 1885.—On the application of the Cremonian quadratic substitutions to the integration of the differential equation of the first order, by M. Léon Autonne. In this paper the author develops, for the integration of the differential equation of the first order, the method based on the employment of the Cremonian quadratic substitutions, and applies this method to some special cases of a simple and comprehensive character.—Electric solution of algebraic equations, by M. Félix Lucas. It is shown how, by means of electricity, the solution of equations of any degree p, whose real or imaginary coefficients are given numerically, may be reduced to that of equations of degrees lower than p.—Action of vanadic acid on the alkaline fluorides, by M. A. Ditte. The present paper deals with the fluorides of sodium and ammonium, whose composition is shown to be analogous to that of the fluoride of potassium.—Action of hydrochloric acid on cupric chloride, by M. Engel. The results are tabulated of a series of experiments with the hydrochlorate of cupric chloride. In this substance the chloride of copper appears to be in the anhydrous state, all the water being ultimately combined with the hydrochloric acid.—On the alcoholic fermentation of galactose, by M. Em. Bourquelot. From these experiments, undertaken to determine the true character of the action of the yeast of beer on galactose, the author concludes that pure galactose does not ferment in the presence of the yeast at 15° to 16° C., but that it undergoes alcoholic fermentation when glucose, lævulose, or maltose are added.—On two new genera of Epicarides, by MM. A. Giard and J. Bonnier. The specimens here described live in the fresh waters of the Dutch East Indies, and are regarded as the types of two new genera, Probopyrus and Palegyge, whence are respectively derived the genera Bopyrus and Gyge. They are here named *Probopyrus ascendens*, Semper, and *Palegyge borrei*, G. and B.

BERLIN.

Physiological Society, January 13.—Prof. du Bois Reymond, President, in the chair.—Prof. Fritsch described the detent-joint of a Sheat-fish (Siluridæ). In this fish, as found in the Nile, the adjusting and fixing of the dorsal and pectoral fins is provided for by the various shape and arrangement of the surfaces of the joints, which take the form of hooks and detents. The speaker explained the above arrangements by means of drawings and preparations, by means of which it was easily seen that when once the dorsal spine is fixed it will withstand a very considerable force. These spines constitute a protective mechanism against other predatory fishes, and accounts for the numerical development of these fishes in the Nile. The speaker stated his inability to accept Sörensen's view that the detent-joints of these fishes are organs for the production of sound.—Dr. Joseph had studied the minute structure of the axis-cylinder in the nerves of the electric organ of *Torpedo marmorata* treating them with osmic acid and various staining reagents. By making a careful series of transverse sections he has become convinced that not only the medullary sheath, but also the axis cylinder, possesses a fan-like structure, and that the longitudinal fibrils run in the meshes of the radiating fibres, and are the true conducting tissue of the nerve. The diameter of the axis is six or seven times as great as that of the sheath.—Dr. Weyl had subjected silk to a thoroughly chemical examination, and obtained values for its percentage composition, after purification by treatment with caustic soda, which corresponded with those given twenty-five years ago by Cramer; according to these, silk may be taken as belonging to the proteid class of bodies. Raw silk, and to a greater degree that which has been purified by soda, is soluble in fuming hydrochloric acid; if this solution is poured into alcohol, a white cloudiness is produced, which speedily increases in intensity, and on cooling gives rise to a solid white gelatinous mass. The percentage composition of this new substance obtained from silk, and called by the speaker seroin, is, as regards its carbon and hydrogen, the same as that of silk, but it contains less nitrogen. It possessed in all cases the same composition, so that it is undoubtedly a distinctly characterized chemical substance, and is neither pure silk nor some closely related proteid formed by a splitting-off of ammonia. When treated with dilute acids, seroin yields the same products of decomposition as does fibroin—namely, large quantities of leucin and tyrosin, by which it is characterized as being a proteid. Dr. Weyl hoped shortly to resume this investigation in the direction of a general consideration of the proteid group.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Voltaic Electricity: T. P. Treglohan (Longmans).—Practical Physics for Schools and the Junior Students of Colleges, vol. i. Electricity and Magnetism: Stewart and Gee (Macmillan).—Behind the Tides: C. B. Radcliffe (Macmillan).—Pflanzen-Teratologie: M. T. Masters; German by U. Dammer (Leipzig).—Practical Amateur Photography: C. C. Vevers,

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