

## SCIENTIFIC SERIALS.

*American Journal of Science*, September.—From experiments here described, Messrs. A. A. Michelson and E. W. Morley infer the possibility of establishing a material standard a metre long, whose length in light-waves is known to within one part in one million, and perhaps one in ten millions.—Mr. H. Crew has measured spectroscopically the solar rotation for a zone some 60° wider than any before observed, getting the equatorial value 25·23 days, and finding no certain variation of period with latitude by this method. A comparison of the results from various methods appears to suggest a decrease of angular velocity outwards.—Stretching suddenly soft annealed wires by descent of weights through a trap-door, and measuring thermo-electrically the heat evolved, Mr. C. Burus finds that as much as one-half the work done in stretching up to the limit of rupture may be stored up permanently. The work thermally dissipated varies (e.g. 75 per cent. for copper, 60 for brass, and 50 for iron); and with a given metal, there is large potentializing in the first stages of strain, and large dissipation in the final stages.—Mr. J. Trowbridge shows reason for thinking that short waves of electrical energy are not absorbed by an approximately perfect dielectric.—A determination of the value of the B. A. unit of resistance in absolute measure by the method of Lorenz, by Messrs. Duncan, Wilkes, and Hutchinson, yields the value 0·9863 ohms.—The Carboniferous Echinodermata of the Mississippi basin are studied by Mr. C. R. Keyes. Crinoidea greatly predominated in the first part, and Blastoida in the latter part, of the period. Abrupt differentiation and extinction of genera towards the end of the Keokuk formation, point to decided changes in the environment.—Mr. M. Carey Lea continues his interesting account of the properties of allotropic silver. No other metal seems capable of such a variety of appearances. *Inter alia*, he notes the remarkable beauty of colouring in rings produced by a small crystal of iodine placed on paper that has been coated with allotropic silver in its moist and plastic state.—There are also papers on the "Grand Gulf" formation of the United States (Mr. L. C. Johnson); paragenesis of allanite and epidote as rock-forming minerals (Mr. W. H. Hobbs); a fossil spider (Mr. C. E. Beecher), &c.

*Revue d'Anthropologie*, troisième série, tome iv., quatrième fasc. (Paris, 1889).—Scientific anthropometry and artistic proportions, by Colonel Dahnouset. In treating of the origin of anthropometric canons of proportion, the writer considers that while there is no doubt of the influence exerted by the Egyptians on Hellenic art, the beauty of their own people must early have led Greek artists to adopt, as typical models for the representations of their divinities, the most highly developed specimens of the human form, as it was manifested in their immediate neighbourhood. It would appear that the most ancient canon of beauty recognized by the Greeks was derived from Polycletus (452-412 B.C.), whose celebrated statue, "Doryphorus," the spear-bearer, was long known as "canon" from its perfect embodiment of the ideal of the male figure. A century later this type gave place to the more idealized representation of Lysippus, who in his statues of the gods raised the height of his figures from the ordinary proportion of 7½ to 8 heads. Under Vitruvius the proportions of Lysippus received greater precision, and became the type that has essentially served through later ages as the true canon for the perfect human form. The purpose of the writer is to compare this artistic type with a scientific canon, for the establishment of which our recent progress in anthropology now for the first time supplies the necessary materials.—In a subsequent article, M. Topinard, following up the relations between these two canons of proportion, treats of the differences between the methods followed by the artist and the anthropologist. He considers that the establishment of a scientific canon demands a careful study of the skeleton and the body immediately after death, as well as of the living subject, and his observations, elucidated by numerous tables, will be found of great value to the artist. He suggests, e.g., that the decimal system of measurement should be used in determining the proportions of the several parts of the body to the whole body, while racial and sexual differences should be taken into account before the height of the figure is determined. This preliminary step is of importance, for while all races have a general similarity in the proportion of the height of the head to the whole body, the yellow races have comparatively "high" heads. Women, moreover, in all races, other things being equal, have higher heads than men. M. Topinard concludes that

there is no fixed relation between variations in the height of the head and those of other parts of the body, and that, consequently, the artistic method of taking the head as a standard for the relative proportions of the rest of the body is erroneous. Hence there is no absolute type of beauty, the canons of proportion varying with sex, age, race, and individuals.—On vestiges of pagan practices among the Provençals of our own days, by Dr. B. Férand. The Provençals, who from their origin were powerfully influenced by the Greeks and Romans, still retain in their modes of worship, and their social and domestic habits, numerous traces of paganism. Curious instances of this are supplied by the practice of libations, still followed by the peasants of Provence, who, after having concluded some unusual transaction, or an agreement of importance, commemorate the event by pledging those present, after which they invariably extend the right arm and turn their glass down, so as to let the last drop fall to the ground. Similarly, at the festival of Christmas, which is locally known as "Leis Festos de Caleno" (the Calends), a solemn repast is partaken of, known as "Lou gros Soupar," at which the eldest and the youngest member of the assembled family perform, amid a profound silence, the ceremony known as the "benediction of the fire." This act is performed by pouring wine three times upon the burning log, which must be of oak or olive wood. This is accompanied by the singing of some verses, in which the excellence of fire is praised, and God is thanked for having given man beneficent heat. These verses vary in different localities, but everywhere the ceremony of the silent libations precedes the supper of which the combined household partake.—On lacustrine and other pile-structures in Northern Italy, by M. P. Castelfranco. The writer gives an interesting summary of the various works which have appeared in Italy in recent years, regarding the different forms of pile-structures discovered in the Parmese and neighbouring lowlands. In Italy such explorations date back only to 1861, when MM. Pigorini and Strobel discovered extensive remains of prehistoric pile-dwellings at Castione. Since then other explorers, more especially Dr. Chierici, have followed up these researches in the province of Reggio, where the latter discovered traces of a *chaussée* raised above the level of the ground on closely adjusted piles. The remains of some of the pile-dwellings showed, moreover, that there had been in course of time as many as three distinct structures raised the one upon the substructures of the others. The animal remains and the flint implements found in the *débris* belonged to the Bronze Age. M. Castelfranco's summary is worthy of the careful attention of our most distinguished palæontologists, while the important facts which he adduces appear to warrant the interesting conclusion that in these palustrine habitations of Northern Italy we have the most ancient Italian stations of the tribes, from whom descended those prehistoric peoples whose occupation of the country is attested by the celebrated cemeteries at Villanova, Bologna, &c., which belong to the earliest period of the Iron Age. M. Pigorini believes that the civilization of the palustrine and land-pile dwellings—the *terrenare* of Northern Italy—is identical with that of prehistoric Hungary, which gradually penetrated to Central Europe by the Danube and its great affluents, the Drave and the Save, but never advanced to the western districts of France, or to Britain, where there is no trace of any but lacustrine pile habitations.

## SOCIETIES AND ACADEMIES.

LONDON.

**Entomological Society**, September 4.—Captain H. J. Elwes, Vice-President, in the chair.—Prof. C. H. Fernald and Mr. C. J. Fryer were elected Fellows; and Prof. C. V. Riley and Dr. A. S. Packard were admitted into the Society.—Mr. G. T. Baker exhibited two remarkably dark specimens of *Acronycta ligustri* taken near Llangollen.—Dr. P. B. Mason exhibited and remarked on a collection of Lepidoptera which he had recently made in Iceland. The following species, amongst others, were represented, viz.:—*Crymodes exullis*, *Triphena pronuba*, *Noctua conflua*, *Plusia gamma*, *Larentia caesiata*, *Eupithecia scoriata*, *Melanippe sociata*, *Coremia nunitata*, *Phycis fusca*, and *Crambus pascuellus*.—The Rev. Dr. Walker also exhibited a number of Lepidoptera, Diptera, and Hymenoptera, recently collected by himself in Iceland.—Mr. W. White exhibited, on behalf of Mr. G. C. Griffiths, a specimen of *Nephronia hippia*, Fab., var. *gza*,

Feld., which he believed to be hermaphrodite. He also exhibited, for comparison, a female of the same species. A discussion on hermaphroditism ensued, in which Mr. Distant, Captain Elwes, Mr. McLachlan, and Mr. Baker took part.—Dr. Sharp exhibited specimens of *Cyprinus luteus* and *fungicola*, Auct., and stated that they are the sexes of one species, *C. luteus* being the male, *C. fungicola* the female. In working through the Central American *Cyprinini*, he had found that in some genera the males differed greatly from the females in size and sculpture; but this was not a constant character, for in some species, while certain males scarcely differed from the females in these respects, others were so different that they would scarcely be recognized as belonging to the same species.—Mr. E. A. Butler exhibited specimens of *Platymetopius undatus*, from Ewhurst, Surrey. He remarked that the species was recorded as having been once previously taken near Plymouth by the late Mr. J. Scott.—Mr. G. T. Baker read a paper entitled "On the distribution of the Charlonia group of the genus *Anthocharis*." Mr. Baker stated that the species of this small division of the genus *Anthocharis* formed a very natural and closely allied group, presenting many points of interest, both in their relationship to each other, and in their geographical distribution, which extended from the Canaries on the west to the valley of the Indus on the east. The author's theories as to the causes of the present distribution of the group, which were based on geological data, were discussed by Captain Elwes, Mr. McLachlan, Mr. Distant, and Mr. Stainton.—The Chairman read a paper entitled "On the genus *Argynnis*," which gave rise to a discussion in which Mr. Distant, Mr. Jenner-Weir, and Prof. Riley took part.

SYDNEY.

Royal Society of New South Wales, August 7.—Sir Alfred Roberts, Vice-President, in the chair.—The Chairman announced that the Council had awarded the Society's bronze medal and a money prize of £25 to the Rev. John Mathew, Coburg, Victoria, for his paper upon the aborigines of Australia: also that the Clarke Memorial Lectures would be delivered to the members of the Society by Mr. C. S. Wilkinson, Government Geologist, as follows: (1) on the geological researches of the late Rev. W. B. Clarke, F.R.S., S. Stutchbury, and other early Australian geologists, November 13; (2) on the geology and ancient life-history of Australia, November 20; (3) on the economic geology of Australia, November 27.—The following papers were read:—On the source of the underground water in the western districts, by H. C. Russell, F.R.S.; on the eruptive rocks of New Zealand, by Capt. F. W. Hutton; on the application of prismatic lenses for making normal-sight magnifying spectacles, by Mr. P. J. Edmunds; flying-machine memoranda, by Lawrence Hargrave.

PARIS.

Academy of Sciences, September 23.—M. Des Cloizeaux, President, in the chair.—International Congress of Chronometry; International Congress of Applied Mechanics, by Mr. Phillips. The former, at his instance, expressed the desirability of thorough experiments, at Government expense, to determine how compensation is affected by the nature of metals and alloys used for springs and balance wheels, and the various types of the latter. The other Congress expressed a similar wish for the formation of testing laboratories for materials and machines, and for an International Commission to fix units and uniformize methods; it also proposed definitions of the terms used in mechanics. M. Mascart called attention to the fact, that, while the proposed unit of power, the *poncelet*, was 100 kgm. per second, the electricians' *kilowatt* was 102 kgm. per second. M. Berthelot objected to proper names being used for abstract units.—On analysis of the light diffused by the sky, by M. Crova. He made observations on the top of Mont Ventoux, with a modified form of his spectro-photometer, which could be directed to any part of the sky. The curves for zenithal light (alone examined) show a predominance of the more refrangible radiations at sunrise, diminishing towards midday, then increasing towards sunset; but not reaching, in homologous hours after noon, the same values as in the morning. The curves vary notably from day to day, with the state of the atmosphere. His figures show to what extent the light is bluer than the direct sunlight, and the light of the sky at Montpellier.—The Emperor of Brazil announced, by telegram, an observation of globular lightning on September 16.—Observations of Davidson's comet, with

the bent equatorial (0.35 m.) of Lyons Observatory, by M. Le Cadet.—Observations of Biocoks's comet and its companion, by the same. The nebulosity of the companion was elongated in the line of junction, and, at times, seemed to join the other.—On the determination of integrals of certain equations with partial derivatives by their values on a contour, by M. E. Picard.—Physiological researches on hydrocyanic acid, by M. N. Grehant. Diminishing the force of the poison by dilution, &c., he found (in dogs and frogs), the heart-beats persist after the respiratory movements (gradually) stopped.—On the phosphorescent infection of *Talitrus* and other Crustacea, by M. A. Giard. On examining microscopically a brightly phosphorescent *Talitrus* he found walking slowly on the beach (instead of leaping like its companions), he traced the light to bacteria in its muscles, which were greatly altered. He inoculated other individuals (both *Talitrus* and *Orchestia*) with blood containing these microbes, and produced the disease with entire success. The laboratory cellar had quite a "fairy-like" aspect in the evening. The inoculations were continued to the sixth (luminous) generation, without attenuation, apparently, of the microbes' action. The disease follows a regular course; and the animal dies in three or four days, the phosphorescence lingering some hours after death. M. Giard also inoculated crabs successfully, and will describe results later.—On the metamorphosis and the migration of a free Nematode (*Rhabditis oxyuris*, Cls.), by M. R. Moniez. This animal is common in cow's dung. Young individuals fix themselves to the carapace of an Acarian (sometimes as many as sixty on one), by a chitinous plate (secreted from the anterior part) and short stem; then the tissues and organs shrink together from the transparent skin, forming a smaller ovoid body. When the dung dries, the Acarian, with these new larvæ on it, attaches itself to some insect, and is conveyed to fresh dung, where new transformations doubtless take place (not followed by the author). This was observed in August.—On the probable cause of the frondal bifurcations of ferns, by Dom B. Rimelin. When one of these anomalies is met with, others may generally be found quite near. The author thinks they must be due to fungi, e.g. of the family of Uredineæ; basing this induction on the diseased look where they are numerous, reproduction of the anomalies from spores of those divided ferns (considered with the fact that some parasitic fungi specially affect the organs of reproduction), &c.—Recent eruptive rocks of the Western Pyrenees, by MM. Seunes and Beaugéy.

CONTENTS.

PAGE

Psychology of Protozoa. By Prof. George J. Romanes, F.R.S. . . . . . 541

Our Book Shelf:—  
 Johnson: "Treatise on Trigonometry" . . . . . 542

Letters to the Editor:—  
 Taming the Puma.—Wm. Lant Carpenter . . . . . 542  
 On some Effects of Lightning.—Arthur E. Brown; A. F. Griffith; W. G. S. . . . . 543  
 On the Remarkable Form of Hailstones.—J. Shearson Hyland . . . . . 544  
*Erinus hispanicus* (?) on the Roman Wall.—Dr. Sydney H. Vines . . . . . 544  
 Noctilucous Clouds.—Prof. John Le Conte . . . . . 544

On Boscovich's Theory. By Sir William Thomson, F.R.S. . . . . . 545

Notes . . . . . 547

Our Astronomical Column:—  
 Mr. Tebbutt's Observatory, Windsor, New South Wales . . . . . 550  
 The Variable  $\eta$  Argûs . . . . . 550  
 The Rotation Period of the Sun . . . . . 550  
 Comet 1889 d (Brooks, July 6) . . . . . 550

Astronomical Phenomena for the Week 1889  
 October 6-12 . . . . . 551

Geographical Notes . . . . . 551

The British Association:—  
 Reports . . . . . 551

The American Association for the Advancement of Science. By Arnold Haultain . . . . . 556

The Iron and Steel Institute . . . . . 560

Scientific Serials . . . . . 562

Societies and Academies . . . . . 562