

takes Indian Ocean, France takes South Pacific, Sweden and Norway take North Sea, Baltic Sea and the Arctic Sea. Every nation should extract the information in regard to the temperature from ships' log books, put it in tables of approved description, and send it to the corresponding nation; this will give means to collect enormous information. The observations of every ship in a certain square ought to be placed on a separate card. Boxes containing these cards, say for the North Pacific, would not occupy more space than can be found in a good-sized book-case.

When a new journal of a ship is received, temperatures of sea water observed on board that ship should be placed on the cards, and the cards put in their corresponding place. In this way we should, each year, become richer in the knowledge of the temperature of the surface water, and no observation would be lost. Every observation would increase our knowledge of the temperature of sea water. It would be a real pleasure to see that progress of knowledge, and if ever this system or any other system be accepted, it will help us to study many details which, up to the present time, are unknown.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

MR. R. L. JACK, Government Geologist, Queensland, now on a visit to this country, is to receive the honorary degree of LL.D. of Glasgow University on July 20.

MR. E. A. MINCHIN, Fellow of Merton College, Oxford, has been elected to the Jodrell Professorship of Zoology in University College, London, in succession to Prof. W. F. R. Weldon.

THE Bill for establishing a Department of Agriculture and Technical Instruction in Ireland was read for a second time in the House of Commons on Thursday last, and referred to the Standing Committee on Trade.

FOR the purpose of encouraging the study of botany, the London Technical Education Board have had the botanical gardens in Battersea, Ravenscourt and Victoria Parks laid out upon an organised plan. Good collections of plants, representing various natural orders, have been obtained, and suitable arrangements have been made for the convenience of teachers and students. The more important trees and shrubs in the parks have been labelled, and lists have been supplied for insertion in the botanical guide which the Board proposes to issue shortly for the convenience of students. Teachers of botany can obtain tickets for themselves and pupils for admission to the botanical gardens at the Battersea, Ravenscourt and Victoria Parks by application to the Secretary of the Board.

By the recent gifts of Mrs. Stanford (*Science* states), Leland Stanford Jr. University becomes the richest university in the world, far surpassing in its resources Harvard, Columbia, or any other university. The resources of the University consist of three great farms, aggregating 95,000 acres of land, deeded by Act of Legislature. On one of these farms, which constitutes the University Campus, buildings to the value of one million dollars were erected before Senator Stanford's death. By his will the University received 2,500,000 dollars in cash, invested in interest-bearing bonds. During the litigation following his death, Mrs. Stanford gave to the University (by deed) her own private fortune, amounting to about a million dollars. By her recent gift she transferred the residue of the estate to the University, it being necessary to do this by deed of gift under the laws of the State. The property just transferred has a commercial value—judging from the revenue stamps put upon the deeds—of 35,000,000 dollars. What its actual value may be only the future can determine. The income arising from this final gift is at present relatively small, as by agreement among the railroads, in bonds and stock of which it largely consists, the earnings are for a time to be used in freeing the property from debt and in making improvements.

AT the annual dinner of the Old Students' Association of the Central Technical College, held on Thursday last, Prof. W. E. Ayrton, in proposing the toast of the Association, referred to the progress of the College and the insufficiency of accommodation due to the continued increase in the number of students. He announced that the electrical department would soon be

greatly extended by the erection of a large new dynamo room nearly six times the size of that at present in use, and occupying a considerable part of the ground floor of the new building of the Royal School of Art Needlework adjoining the College. The accommodation for this department would be further increased by the completion of a new drawing office and a new lecture theatre. Sir Philip Magnus, in proposing the toast of the College and its professors, remarked that the College was that day entering on a new period in its career, for it was likely to become an integral part of the new University of London, which had decided the day before to move into new quarters at the Imperial Institute next door to the College. The needs of the College were recognised in the new University by the decision to appoint a faculty of engineering for the first time in the history of University education, and by the variation of the University matriculation examination to suit the requirements of different classes of students. Prof. Armstrong, in replying to the toast of the Chairman, alluded to the research work done at the College, especially in relation to its value as a means of mental training.

SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, June.—Prof. F. N. Cole reports the April meeting of the Society held in New York City, and summarises the thirteen papers which were contributed. He also indicates where the papers themselves may be or will be found.—Surfaces of revolution in the theory of Lamé's products is a paper which was read by Dr. Safford at the February meeting. It is a review of an article by Haentzschel (reduction der Potentialgleichung), in which that writer criticises results obtained by Wangerin in the *Berliner Monatsberichte* (February 1878). Dr. Safford agrees with Wangerin in the results he gets, and so, in his opinion, invalidates Haentzschel's criticisms.—The next article is an enthusiastic review by Mr. Arthur Berry of Picard's "Théorie des Fonctions Algébriques de deux Variables indépendantes."—Another review is one of Jules Tannery's "Leçons d'Arithmétique théorique et pratique," by Prof. J. Pierpont. This latter is pronounced to be the first work on arithmetic which the reviewer has seen which, while intended entirely for secondary instruction, is written in accordance with the new ideas regarding the number concept and the need of rigour. Thus it is a pioneer of a revolution in secondary instruction.—Dr. L. E. Dickson contributes a note on Page's ordinary differential equations (*cf.* a review of this by Prof. Lovett in the *Bulletin*, April 1898).—The usual notes and new publications close the number.

IN the *Journal of the Royal Microscopical Society* for June, besides the usual summary of current researches in zoology, botany, and microscopy, is a further instalment of Mr. F. W. Millett's report of the recent Foraminifera of the Malay Archipelago; and an article by the president, Mr. E. M. Nelson, on the rackwork coarse adjustment, in which he traces the history of the application of rackwork to the focussing of the microscope from the time of Bonannus in 1691 down to the most recent improvements.

THE *Journal of Botany* for July contains an article, with illustrations, on a new British fresh-water alga, by Dr. A. B. Rendle and Mr. W. West, jun. The alga is a new species of the interesting genus *Pithophora*, first found by Wittrock in a tank in Kew Gardens. Like Wittrock's species, however, it has no claim to the title of "British" beyond the fact that it was found in a canal near Manchester, where it had unquestionably been introduced with cotton-bales. The remaining papers in both the June and the July numbers appeal to those interested in descriptive and geographical botany.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, July 3.—M. van Tieghem in the chair.—Considerations on the physical constitution of the moon, by MM. Lœwy and Puisseux. A summary of conclusions arrived at from recent photographic study of the moon. Certain

comparisons are drawn between the structure of the moon's surface and that of the earth, and evidence is adduced of the existence, at the present time, of a remnant of the original lunar atmosphere.—Examination of sea-water drawn from different depths: variation of iodine compounds therein, by M. Armand Gautier. Examination of water taken from the surface of the Mediterranean shows, as has been previously found to be the case with the Atlantic Ocean, the entire absence of iodides and iodates, the whole of the iodine present being contained partly in microscopic organisms and partly in combination with a complex organic substance which contains nitrogen and phosphorus, and is capable of dialysis. The total amount of iodine present is nearly the same for all depths, but the form in which it exists varies considerably. Thus, at the bottom of the sea iodine exists in the form of iodides and iodates to the extent of 0.305 milligramme per litre, and the quantity decreases with decreasing depth until it disappears altogether at the surface. On the other hand, the iodine contained in living organisms is greatest in amount at the surface, and gradually diminishes as the depth increases. The iodine present in the form of soluble organic compounds is much more constant in amount, the maximum quantity being found at a depth of 880 metres. The water of the Mediterranean appears to be somewhat poorer in iodine than that of the Atlantic, the total quantities found being 2.25 and 2.40 milligrammes per litre respectively.—Observations of Swift's comet (1899*a*) made with the Brunner equatorial at the Lyon Observatory, by M. J. Guillaume.—On the suppression of trial methods in the calculation of parabolic orbits, by M. L. Picart.—On the transformation of surfaces, by M. E. O. Lovett.—On the surfaces of Voss, by M. C. Guichard.—The groups of the order 16β , β being an odd prime, by M. Le Vasseur.—On the development of a uniform branch of analytic functions in a series of polynomials, by M. Paul Painlevé.—On two integrable equations of the second order, by M. E. Goursat.—On a class of equations to partial derived functions, by M. Ivan Fredholm.—Considerations on the works of MM. S. Lie and A. Mayer, by M. N. Saltykow.—Wandering globular sparks, by M. Stéphane Leduc. When two fine metallic points are connected with the poles of an electrostatic machine, and placed in contact with the sensitive film of a photographic plate resting on a metal surface, an effluvia is produced around the positive point, and a luminous globule appears at the negative point. This globule increases in size, detaches itself from the negative, and slowly wanders towards the positive point; on reaching the latter the luminosity ceases, and the machine is found to be discharged. The phenomenon suggests a comparison with globular lightning.—The frequency of nervous oscillations, by M. Auguste Charpentier.—On the nature and cause of the phenomenon of coherers, by M. Thomas Tommasina. An account of further experiments on the formation of conducting chains of metallic particles in coherers.—On the position of the points of magnetic transformation of nickel steels, by M. L. Dumas. The influence of chemical composition on the magnetic properties of steels is described and discussed.—On the volumetric estimation of zinc, by M. Pouget. In the new process here described the solution of zinc is treated with hydrogen sulphide and the precipitated zinc sulphide decomposed with a known amount of iodine solution, the excess of the latter being subsequently determined by titration with thiosulphate.—On the preparation and properties of the arsenides of strontium, barium, and lithium, by M. P. Lebeau. The arsenides of the metals in question were obtained by the reduction of the corresponding arsenates with carbon at the temperature of the electric furnace. They are reddish-brown substances presenting a crystalline fracture, and are rapidly decomposed by water with evolution of hydrogen arsenide and formation of the hydroxide of the metal.—A study of methylic oxymethylene-cyanacetate and some of its homologues, by M. E. Grégoire de Bollemont. Methylic, ethylic, and amylic oxymethylene-cyanacetates have been prepared from the corresponding ethereal salts, which have been previously described. These compounds exhibit the characteristics of strong monobasic acids, and may be looked upon as substitution derivatives of formic acid.—The use of tetrachlorohydroquinone for the characterisation and separation of fatty acids, by M. L. Bouveault. Tetrachlorohydroquinone reacts with one and two molecules of the chlorides of fatty acids to form stable, well-crystallised compounds which are easily purified, and thus eminently adapted for the identification, and

in some cases for the separation, of the acids. The physical properties of some of these compounds are described.—On the presence in the animal organism of a soluble ferment which reduces nitrates, by MM. E. Abelous and E. Gérard. Experiments are described which show that the various organs of the body contain, in different proportions, a soluble substance of the nature of a ferment which reduces nitrates to nitrites. A temperature of 20–40° is most favourable to the reaction, which ceases altogether at 72°.—On the reducing power of urine, by M. Henri Hélier. The author determines the reducing power of urine by titration with potassium permanganate solution in the presence of sulphuric acid, the result being expressed with reference to urine of normal concentration, as measured by the amount of urea present. In many diseases, the reducing power is characteristically higher or lower than the normal.—Contribution to the study of the bark of *Rhamnus purshiana* (Cascara Sagrada), by M. Leprince. The presence is demonstrated of chrysarobin, chrysophanic acid, and emodin.—Direct transformation of acetamide into ethylamine by hydrogenation, by M. Guéret. The reduction is effected by means of metallic sodium in the presence of boiling amylic alcohol.—On the secretion of diastases, by M. Dienert.—Peculiarities of the eruption of Vesuvius, by M. Matteucci.

CONTENTS.

	PAGE
Saunders's British Birds. By R. L.	241
As Regards Regeneration. By J. A. T.	242
West African Fetish	243
Our Book Shelf:—	
"Catalogue of the Library of the Royal Botanic Gardens, Kew"	244
Davis (J. and W.): "The Larvæ Collector's Guide and Calendar"	244
Letters to the Editor:—	
A Lecture Experiment on the Relative Thermal Conductivities of Various Metals. (<i>Illustrated.</i>)—	
Edwin Edser	244
The Electrical Resistance of the Blood.—Dr. Dawson Turner	245
School Laboratory Plans.—T. S. Dymond	245
The Origin of the Doctrine of Compensation of Errors in the Infinitesimal Calculus.—Philip E. B. Jourdain	245
Robert Browning and Meteorology. By B. W. S.	245
A Plague of Frogs.—F. H. Fortey	246
The University of London	246
The Life of a Star. (<i>With Diagrams.</i>) By Prof. J. Perry, F.R.S.	247
William Henry Flower, K.C.B., F.R.C.S., LL.D., D.C.L., Sc.D., F.R.S., F.Z.S., F.L.S. By Prof. E. Ray Lankester, F.R.S.	252
The Duties of Provincial Professors	255
Government Grant in Aid of Antarctic Exploration	256
Notes	256
Our Astronomical Column:—	
Comet 1899 <i>a</i> (Swift)	260
Tempel's Comet 1899 <i>c</i> (1873 II.)	260
The New Allegheny Observatory	260
Leeds Astronomical Society	260
Theory of the Motion of the Moon. By P. H. C.	260
Investigations of Double Currents in the Bosphorus and Elsewhere	261
University and Educational Intelligence	263
Scientific Serials	263
Societies and Academies	263