

Current Topics and Events.

ON September 27 Ivan Petrovich Pavlov, the great Russian physiologist, celebrated his seventy-fifth birthday, and it is gratifying to learn that he is still in the full force of his mental power and physically strong, working hard at various physiological problems. His birthday is indeed an international event. Prof. Pavlov's scientific work can be divided sharply into three periods: study of the heart and blood circulation (1877-1890), investigations on the digestive system (1890 until about 1905), and research on the physiology of the brain (the last period). This distinctness in the division of his life was made consciously and is not accidental. The present writer remembers a conversation in Prof. Pavlov's laboratory during tea time, when methods of increasing the productiveness of scientific workers were being discussed. After different ideas had been suggested by his pupils, Pavlov smiled and said, "Well, from my experience, the problem seems very simple, although hard to perform. There is only one method; concentrate all the powers of your soul and body on one idea, which you investigate. Stick to it for many years, think of it daily and dream about it during your sleep. That's all." The results of Prof. Pavlov's work in the three departments of physiology he has studied are brilliant. He has discovered many important facts in the physiology of the heart and circulation of the blood, chiefly concerning the vago-sympathetic innervation of the cardio-vascular system. His investigations on the physiology of the digestive processes have changed completely our ideas on this subject. The secretory innervation of the stomach and pancreas, and the discovery of the laws governing the secretion of the digestive juices by the use of fistulas, are the most important results of his and his pupils' work. Finally, Pavlov crowns a long life, which has been devoted to science, by investigating the physiology of the brain. He is now in the course of writing a book summarising the great results of this work, which he has obtained by means of a simple but ingenious method of conditional reflexes. For Russia, Pavlov is especially precious not only as a scientific worker of great distinction but also as an example to young Russia at the present time. During 1920 and 1921 he and his family suffered badly from lack of food. He was obliged to spend valuable time in domestic work and in searching for food and fuel. In spite of this, Pavlov continued his work, at that time in unheated laboratories, hungry himself with hungry pupils, giving an example of a truly great man, who lives for one thing only—the pursuit of truth.

THE retirement of Prof. F. O. Bower from the Regius chair of botany in the University of Glasgow reminds us of the remarkable developments for both teaching and research which have marked the past forty years. During the long tenure of his chair, Prof. Bower has taken a conspicuous part in raising the standard of biological teaching and research in British universities to the high position which it holds

to-day. The beautiful laboratories erected in Glasgow under his direction were indeed the material expression of the ideals born during his earlier associations with such men as Sachs, Vines, and Marshall Ward. In those days it was almost a belief that many of the manifestations of life which the microscope had revealed could be observed only in German laboratories. The removal of such views liberated botanical inquiry in Great Britain from the narrow courses of pure systematics. The widespread enthusiasm for biological investigation along lines not yet explored left their deep impression on a highly responsive mind and gave us a man of vigorous frame whose enthusiasm for the problems of plant-structure was coupled with a conspicuous power of exposition.

It may not be widely known that Prof. Bower was among the first of living botanists to deliver a course in botanical physiology in Britain. His investigations into those problems of structure and affinity of Pteridophytic plants, and their presentation in a long series of memoirs, are widely known and appreciated. It has been a pleasure to those who have known Prof. Bower at work to see his reliance on such simple apparatus and laboratory methods as have been the bare essentials to his investigations. As a teacher he will be long remembered. An army of enthusiastic students of medicine has passed under his influence in the University of Glasgow. Their instruction in the broad principles of life as illustrated by the plant-kingdom has been to him a peculiar responsibility and pleasure. As a teacher of advanced students he displayed those high qualities of presentation and a love of argument and reasoning which have so fully marked his scientific writings. To the retirement which Prof. Bower is now seeking he will carry not only the highest appreciation of those who have been privileged to work with him and to know him, but also of the many who have been quickened by the great philosophical considerations regarding the problems of life which have been the mainspring of his work.

AFTER twenty-four years' work, Mr. Ling Roth, who is in his seventieth year, has resigned the keepership of Bankfield Museum, Halifax, owing to ill-health. Acting on the fact that Halifax is a textile manufacturing town surrounded by towns carrying on various branches of the textile industry, Mr. Ling Roth judged that an historical collection of textile tools might be useful, educational, and interesting to the town; and he has succeeded in gathering together a fascinating assembly of specimens of primitive textile tools from many parts of the world. The grouping begins with a selection of basketry followed by samples of matwork, including mat looms in which the filaments are not spun. Then follows a series of implements for spinning with spindle only, spindle and distaff and hand-spinning machines, ending up with an old local wooden hand-spinning jenny which was in use so late as 1916. The collection of hand looms

and rug looms is large and varied both in character and origin and includes two recently acquired and so far undescribed braid looms from China. There is also a considerable series of spools and shuttles, with a set showing the process of manufacture, and one wall case with specimens illustrating the development of the shuttle. From plain cloths we come to patterned cloths and embroideries, and finally there is a collection of the embroidery tools used by ladies of the eighteenth and nineteenth centuries and a rare selection of ladies' work-boxes and their muneries and often exquisite fittings or tools. The whole forms a unique collection such as exists nowhere in any other museum, and gives the visitor or student a clear survey of the tools used in the industry from its very beginnings up to the period when power spinning and weaving came into being.

MR. J. C. MOUTTON, of the Residency, Kuching, Sarawak, directs our attention to a "General Report on the Fisheries of British Malaya," published at the Government Printing Office in Singapore, in 1923. There Mr. David G. Stead writes: "In making this essential appointment [Superintendent of Fisheries Investigation in Malaya] I recommend the Government to give the fullest encouragement to the great College of Fisheries of Seattle, Washington (United States of America), or to the Stanford University of California, to offer a candidate for the position. . . . If only a marine biologist had been wanted I would have unhesitatingly recommended to the Government to make an appointment from amongst the scions of one or other of the universities of Great Britain—but however good may be (and undoubtedly is) the training given in biological work in these institutions, there are none of them, unfortunately, specialising to any great extent in applied fishery work." Now an institution that trains investigators can only become "great" and well known by reason of the work done by its past students, and the College of Fisheries at Seattle, Washington, U.S.A., has still to become famous, judged in this way. It is, in fact, only a few years old. Thus a comparison with the British university training schools cannot be made. But, for any work in fishery investigation, the essential training is that in marine biology and oceanography. That can be obtained at Liverpool or Cambridge, and at the Plymouth or Port Erin Biological Stations, in a perfectly satisfactory manner.

It is true, as Mr. Stead suggests, that no British university has a Fisheries College attached to it, but those with experience of what fishery investigation involves know that this kind of training can best be obtained, by actual post-graduate work, at the Marine Biological Stations, at the official fishery laboratories, and at sea with the fishery investigation vessels. All these opportunities exist and are used in the training of fishery workers. The ordinary period of time required for an honours degree in marine biology and oceanography is certainly not too long for a really useful knowledge of those subjects, and the man who intends to superintend fishery investigations ought to have this knowledge, as well as practical experience of the special methods of research and of the actual

conditions of the fishing industry. At present this training can be obtained at British universities, at biological and fishery laboratories, by actual contact with the industry at the fishing ports, and on board fishing vessels. It can probably be so obtained better than anywhere else in the world, and it is this kind of preparation for investigation of fishery problems that is expected by Government departments concerned with the administration of the industry.

THE Western Union Telegraph Company has little fear that the new developments in radio communication will seriously affect the traffic by submarine cable. The Company has just completed laying a cable between New York and the Azores, a distance of 2400 miles. It was manufactured and laid by the Telegraph Construction and Maintenance Company of London. It is interesting to remember that this Company laid the original Atlantic cable. The new cable marks an epoch in the development of submarine signalling. To borrow a "telephone" phrase, it is "uniformly loaded" with a band of that highly magnetic material called by the Western Electric Company, which first introduced it to engineers, "permalloy." It is an alloy of nickel and iron. This band enables signals to be sent six times quicker than with an ordinary cable. It is expected that 1500 letters a minute will be transmitted when the cable is in full working order. It is to be used with an ordinary cable made by an Italian company which will connect the Azores with Italy. When this is completed, submarine communication between Southern Europe and North America will be established for the first time.

WE learn from the Paris correspondent of *The Engineer* that the decree authorising a French government concession for the construction of a tidal power generating station at Aber Vrac'h, near Brest, to the cost of which the State will contribute in a large proportion, has been published. While the Aber Vrac'h scheme is mainly experimental, it is intended to pay its own way and will provide Brest with current by a high-tension main of 30,000 volts, and to ensure a regularity of supply the tidal power plant will work in conjunction with a power station utilising a head of water provided by a barrage across the mouth of the river Diouris. The Aber Vrac'h barrage will be 150 m. long and from 12 m. to 24 m. wide, and will be composed of three concrete caissons containing the reversible turbines and alternators. A sluice gate will permit of the basin above the barrage being filled by the rising tide. The turbines will run from nine to eleven hours each tide. Spare chambers are to be reserved in the barrage for carrying out experiments with different kinds of turbines, with the idea of attacking any problems that appear to present difficulties in the utilisation of tidal power. The power station will not ensure an uninterrupted supply of current; this will be provided for by the Diouris river barrage with a head of from 8 m. to 24 m. and actuating four turbines, each of which will develop from 75 horse-power to 1200 horse-power according to the tides.

ARCHÆOLOGISTS and others who are interested in the history and topography of Great Britain will welcome the admirable map of Roman Britain which has been issued by the Ordnance Survey (price 4s.). The scale is 16 miles to the inch. The map shows the principal settlements both military and civil, but not single villas, though a contingent promise is made that they may be included in a later issue. The roads shown are those constructed by the Romans, the trackways which belong to an earlier system, such as the Icknield Way, being omitted. The names in use in later times—Watling Street, the Fosseway, and Akeman Street, and the like, for which there is no evidence before the Saxon invasion—are also not shown. This is perhaps to be regretted on the ground of their general familiarity. Where the course of a road is known with certainty from direct evidence, it is shown by a continuous double line; where it is uncertain, by a broken double line. Roads known to have existed, but for the course of which there is no evidence, are omitted. Modern names are written in italics; ancient names (when known) in Roman capitals. No attempt has been made to restore the coast line, which is known to have differed considerably on the south and east in Roman times, but the existing coast line has been shown.

THE International Commission of Eugenics held its annual meeting in Milan on September 20–22, representatives from Norway, Holland, Belgium, France, Russia, and Italy being present. The proceedings related chiefly to business matters, to international co-operation with other bodies, and to the publication in Italy of an international "Bibliothèque d'Eugénique" by the Bureau of the Società per Prevedenza ed Assistenza Sociale under the auspices of the Italian society. At the same time, the first Italian Congress of Social Hygiene and Eugenics was being held in Milan, at which Major Leonard Darwin, president of the Commission, read a paper on the "Criminal from the Point of View of Eugenics." An interesting feature of this meeting was the presence of the Rev. Prof. Agostino Gemelli, rector of the Catholic University of Milan, who read an interesting paper on eugenics and intervened in debate with interesting reports of researches in heredity. Birth-control figured largely, probably for the first time in Italy. At the inaugural meeting it was announced that a chair in social eugenics was now to be founded in the new University of Milan, and at the closing banquet a munificent endowment for the same was announced. Prof. S. Patellani, general secretary to the congress, will be the first occupant of the chair.

THE American aviators, leaving Boston on September 8, have completed their voyage of circumnavigation by their arrival at Seattle on September 28, just under six months from the official start on April 8. The crossing of the United States was of the nature of a triumphal procession rather than a serious test of the possibilities of air transport, as might be inferred from the time taken. The only serious geographical obstacle was that presented by the Rocky Mountains.

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THE Department of Agriculture of the Irish Free State is requiring an assistant plant pathologist. Candidates must hold the Associateship of the College of Science, Dublin, or a University degree in science, including botany. Applications should reach the Secretary of the Department, Upper Merrion Street, Dublin, by, at latest, October 9.

THE second session of the Liverpool Psychological Society will commence on October 7, when the president, Dr. Betts Taplin, will deliver his inaugural address at the University at 8 P.M. on "The Power of Suggestion." The Society's first session was very successful, and an interesting programme of scientific research has been arranged for the coming winter. Further particulars may be obtained from the Secretary, The University, Liverpool.

APPLICATIONS are invited by the Ministry of Agriculture and Fisheries for the post of an inspector in connexion with agricultural and horticultural education and research. Candidates must have taken a course in science or agriculture at a university or college of agriculture and had special training in the science and practice of poultry and small livestock keeping, including goats and rabbits. The necessary form of application (returnable not later than October 20) may be had from the Secretary of the Ministry, 10 Whitehall Place, S.W.1.

THE South African Institute for Medical Research, Johannesburg, is undertaking a research into the harbouring of plague by wild rodents, and the specific prophylaxis and therapy of the disease in man. In connexion with the inquiry, applications are invited for the posts of a bacteriologist and an entomologist. The former should preferably be a medical man with special experience of plague; the latter not necessarily a medical man, but, if possible, with special experience in the study of ectoparasites of rodents. Further particulars can be obtained from "Bacteria," c/o the Director, Lister Institute, Chelsea Gardens, S.W.1.

MR. J. W. HAYWARD sends us an account of an unusual display of lightning which he observed in the neighbourhood of Lake Superior, Quebec, on August 31 last. The lightning took the form of an orange-coloured spark the size of a bright star which traced a narrower and whiter irregular line in a horizontal direction across the sky. Just before disappearing, the head of the flash divided into three or four parts which traced out divergent paths. The motion was sufficiently slow to be followed by the eye, and the whole path with its diverging ends remained visible for an instant. This is apparently a case of rocket lightning, an example of which was described by Mr. W. H. Everett in NATURE of October 22, 1903, p. 599.

THE Council of the Institution of Civil Engineers has made the following awards in respect of selected engineering papers published without discussion during the session 1923–1924: A Telford Gold Medal to Mr. E. H. Lamb (London); and Telford Premiums to Messrs. F. C. Temple (Jamshedpur, India), H. A. Lewis-Dale (London), and Mr. C. J. Gyde (Pretoria). And in respect of papers read at students' meetings in

London, or by students before meetings of local associations during the same period: The James Forrest Medal, the James Prescott Joule Medal, and a Miller Prize to Mr. R. W. Mountain (London); and Miller Prizes to Messrs. H. S. Smith (London) and C. D. Crosthwaite (London), H. C. Toy (Birmingham), F. W. S. Hawtayne (London), E. G. Wilson (North Shields), and W. W. Davies (London).

THE various types of microscopes manufactured by Messrs. C. Baker, of 244 High Holborn, London, W.C., are described and illustrated in a recently issued edition of this firm's catalogue. Instruments suitable for use in biological, metallurgical, and mineralogical work are included, as well as simpler models for science students. With the view of obtaining greater facility of adjustment or increased rigidity or efficiency, modifications have been introduced in several of the firm's well-known models, and standardisation of parts has been effected wherever possible. Full details are given of all necessary optical equipment, including a series of orthochromatic eyepieces recently designed by Lt.-Col. Gifford to give an increased field. A very complete list of mechanical accessories and illuminating apparatus is also given. Amongst the photographic apparatus may be mentioned the

Universal Geometric Slide Camera, designed by Mr. J. E. Barnard. In the design of this apparatus the geometric principle has been observed throughout, with the result that extreme rigidity can be obtained, and relative movement of any parts avoided when the apparatus is subjected to vibration.

MESSRS. Percy Lund, Humphries and Co., Ltd., hope to publish in December the Transactions, in four volumes, of the recently held World Power Conference. The work will include all the papers presented at the conference, and contain a synopsis of the discussions which followed the presentation of the papers. Most of the papers will be illustrated by maps, charts, diagrams, and reproductions of photographs.

WE learn from Messrs. Adam Hilger, Ltd., 75A Camden Road, London, N.W.1, that the firm has been entrusted with the manufacture of the interferometric apparatus with which the metre will be established in Japan, in accordance with the law passed in March 1921 by the Japanese Diet making the metric system compulsory in that country. The apparatus will also provide for the measurement of the 5-metre base, which is the foundation of the geodetic survey in Japan.

Our Astronomical Column.

FINSLER'S COMET, 1924 *c*.—This comet has been well observed, and was of at least the fifth magnitude on September 22, when it was visible in considerable twilight. Dr. W. H. Steavenson traced the tail to a length of 15'. The following elements, by J. P. Möller and B. Strömgren, from observations on September 21, 22, 23, are near the truth.

$$\begin{aligned} T &= 1924, \text{ Sept. } 4.559 \text{ G.M.T.} \\ \omega &= 66^\circ 26.5' \\ \Omega &= 79 \quad 5.8 \\ i &= 121 \quad 59.8 \end{aligned} \left. \vphantom{\begin{aligned} T \\ \omega \\ \Omega \\ i \end{aligned}} \right\} 1924.0$$

$$\log q = 9.61047$$

EPHEMERIS FOR GREENWICH MIDNIGHT.

	R.A.	S. Decl.	log <i>r</i> .	log Δ .
Oct. 6.	15 ^h 12 ^m 6 ^s	7° 51'	9.9446	0.1688
„ 10.	15 22 12	10 39	9.9804	0.2033
„ 14.	15 31 0	13 2	0.0132	0.2347
„ 18.	15 38 36	15 6	0.0433	0.2633

The comet will be difficult to observe, being in the evening twilight, and low down. It is, moreover, fading rapidly.

RELATIVE NUMBERS OF STARS OF DIFFERENT SPECTRAL TYPES.—Many valuable papers on stellar statistics have been published. One of the latest is by K. G. Malmquist (K. Svenska vetenskaps. Handlingar, 3rd series, Band 1, No. 2) on the distribution of absolute magnitudes. The author adopts as his unit of distance the siriometer, which is a million astronomical units, or 4.85 parsecs. He gives as the number of stars of each type in a cubic siriometer in the neighbourhood of the sun:—B 0.005, A 0.033, F 0.300, G (giant) 0.006, (dwarf) 0.830, K (giant) 0.045, (dwarf) 2.100, M (giant) 0.004, (dwarf) more than 2.400; total 5.723.

The table brings out in a striking manner the vast excess of dwarfs over giants. The actual excess is probably much higher than the above figures indicate. Thus, Malmquist gives some 24,000 stars within 10 siriometers of the sun, of which 1 is of absolute magnitude -4, 7 of -3, the number per magnitude

increasing to about 4000 in the neighbourhood of mag. 8, and then falling off to 30 for mag. 12. This falling off is probably only apparent, and due to the manner of selection of the stars he used, as a study of the sun's nearest neighbours suggests that the absolutely faint stars are far more numerous.

It is to be hoped that a decision will be made between the siriometer and the parsec as units of stellar distance. The use of two different systems causes needless confusion.

ORBITS OF COMETS.—A Copenhagen circular gives the following elements of Comet 1924 *a* (Reid) from observations made at the Cape in March, April, May.

$$\begin{aligned} T &= 1924 \text{ March } 13.290 \text{ G.M.T.} \\ \omega &= 271^\circ 20'.19 \\ \Omega &= 113 \quad 59 \quad 5.7 \\ i &= 72 \quad 20 \quad 36 \end{aligned} \left. \vphantom{\begin{aligned} T \\ \omega \\ \Omega \\ i \end{aligned}} \right\} 1924.0$$

$$\log q = 0.24432.$$

An ephemeris is given for September, the estimated magnitude being 10. But as no observation is reported, it is probably fainter than this.

Prof. A. Dubiago, of Kasan, gives in *Astr. Nachr.* 5311 the following elliptical elements of the comet 1921 I, discovered by him.

$$\begin{aligned} T &= 1921 \text{ May } 4.87982 \text{ G.M.T.} \\ \omega &= 97^\circ 26' 32''.2 \\ \Omega &= 65 \quad 59 \quad 8.8 \\ i &= 22 \quad 21 \quad 20.0 \end{aligned} \left. \vphantom{\begin{aligned} T \\ \omega \\ \Omega \\ i \end{aligned}} \right\} 1921.0$$

$$\log q = 0.048102.$$

$$e = 0.939585.$$

$$\log a = 1.266949.$$

$$\text{Period, } 79.50 \text{ years.}$$

The comet was observed from April 24 until June 11, 1921, at eleven observatories. It was ill-defined, and the probable errors of the observations are large, but a parabolic orbit appears to be definitely excluded.

The comet is an eighth member of Neptune's family. Five of them, including Halley's, have been seen at more than one apparition.