

Museum, arranging and labelling his own and other collections, and his deep knowledge of African matters was always placed freely at the disposal of the staff.

Mr. Torday was also one of the most active members of the Royal Anthropological Institute, attending its Council meetings regularly, helping in the improvement of the library, reading papers, and rendering invaluable and unselfish service in a variety of ways. In 1929 the Institute awarded

him the Rivers Memorial Medal for anthropological work in the field. Torday was also a Chevalier of the Order of the Crown of Belgium, and by his own country he was awarded the Great Gold Medal for Literature and Science, a rare distinction.

By his death African ethnology loses one of its most brilliant, sincere, and devoted students, and his friends the privilege of a delightful and stimulating personality.
H. J. BRAUNHOLTZ.

News and Views.

IT was a remark of Lord Oxford's, that the business of biography is the vivid delineation of a person, and that for its success one of its obvious conditions is that the person delineated should have the power of permanently interesting his fellow-men. Of all men of science, Faraday assuredly was such a person, his rare mental qualities, combined with a singularly refined moral nature, making him as worthy a subject for the biographer as a Pasteur or a Lister. Some of the characteristics of Faraday were admirably brought out by Dr. R. L. Mond, who on June 11 delivered the Second Spiers Memorial Lecture to the Faraday Society. Referring to the approaching celebrations of the centenary "of one of the most fruitful conceptions of the human mind", Faraday's discovery of electro-magnetic induction, he said many, well qualified, will comment on the origin of this conception, its development and application, but there is one aspect of this triumph of the human mind which deserves special consideration, namely, the study of the conditions and of their influence on the individuality which makes the conception a possibility. This naturally led Dr. Mond to refer to Faraday's early environment. One dominating influence was his association with the Sandemanian form of belief, which combines (like that of the Quakers and Unitarians) a great simplicity of mind with exemplary conduct and love and esteem for your fellow-members. Next came the influence of books; the writings of Bacon, of Dr. Watts, of articles in the *Encyclopædia Britannica*, and of Mrs. Marcet's book on chemistry. Faraday also found both assistance and inspiration by his association with the ardent spirits of the City Philosophical Society; and then came the turning-point in his career when he was engaged by Davy, a step which in turn led to his memorable tour on the Continent, "a high school of incomparable value".

"BUT", said Dr. Mond, "what can we learn from Faraday's career, that we can usefully apply both to the search for new knowledge, the Perfection of what we all possess, and the Perfectibility of those who are devoting themselves to this research?" This question led to the examination of Faraday's views on education. Giving evidence before the Public School Commission in 1862, Faraday said, "I do think that the study of natural science is so glorious a school for the mind that, with the laws impressed on all these things by the Creator, and the wonderful unity and stability of matter, and the forces of matter, there

cannot be a better school for the education of the mind". Reverence for the beauties of Nature and the laws which control them, in Faraday was combined with a reverence for great thinkers and the truths they were unfolding. One of the problems of to-day is how to guide the footsteps of those whom we hope will emulate our great prototype, and the task often is "how to bring the great pupil to the great teacher". Modern civilisation has evolved an intellectual machine which, from heterogeneous raw materials, attempts to produce a uniform product, but we shall have to provide opportunities where the young mind can develop, untrammelled by any hard and fast system, under the ægis of a wise and kind direction, and where every suitable aid to self-development and facilities for scientific research are amply provided.

THE English Channel was crossed for the first time by a British-built glider with a British pilot, Mr. Lissant Beardmore, on June 19. The pilot, having been towed by an aeroplane to a height of about 14,000 ft. above Lympne, at 4.30 P.M. released his machine and glided in a continuously falling path, landing at St. Inglevert aerodrome just after 6 P.M. It is unfortunate that he will not be officially recognised as being the first person to glide the Channel, since he was prevented from applying to the British Gliding Association for the proper observation of his performance by the anomaly that he did not hold the most advanced of the certificates awarded to glider pilots, and was therefore not judged competent to undertake the feat. Herr Kronfeld, on a German-built machine, accomplished the same flight, in a similar manner, under official observation, on June 20. He flew from France to England, and thus becomes the holder of the official distinction. He afterwards made a return glide from Dover to St. Inglevert, being again raised to the required height by an aeroplane that had accompanied him, and qualified for the *Daily Mail* prize for the first glide across the Channel in both directions on the same day.

THE executive committee of the Committee on Intellectual Co-operation of the League of Nations at its April meeting considered a request from the Chinese Government for co-operation with the League organisations in the intellectual and scientific field. The principal suggestion related to the exchange of university professors. The Chinese Government proposed to send to Europe students, writers, philosophers, historians, and archaeologists, and invited the League to organise tours in China for specialists in medical,

political and natural science, and legal questions. A request was also made for professors of geography and geology for the University of Nanking, particularly of English, Austrian, Scandinavian, or Swiss nationality, who could give instruction in English. A further request for co-operation considered at the same executive committee meeting related to the better utilisation of leisure—a problem which is assuming ever greater importance as a result both of the reduction in hours of work and of the tendency to mechanisation and specialisation of labour. The request was received from the International Labour Office, and the Committee authorised the director of the Institute to accept the offer of the International Labour Office and assist in the study of the conditions of popular arts and public libraries in various countries, their resources, and accessibility to the workers, by collecting complete information on these subjects in relation to the problem of workers' leisure as a basis for comparison, conclusions, and appropriate action.

SINCE the old days of driving sheep from the Argentine to the southern sheep stations of Patagonia, no drive can compare, for duration and extent, with the reindeer movement now in progress in Canada. In 1929, 3000 reindeer were purchased in Alaska by the Canadian Department of the Interior, and in December of that year the work of herding the animals from the west coast of Alaska to the eastern side of the Mackenzie River was begun. In the spring of 1930, the herd had reached the Hunt River in the Kotzebue Sound area, where a halt was made for the fawning season. During the summer the herd, with its 2000 fawns, remained in this region, until the second stage of the drive began late in 1930. The movement was then continued in a north-easterly direction toward the pass leading to the Colville River. It was reckoned that the second fawning season on this long trek would be passed in the delta of that river, so that probably only about 400 miles now separate the herd from its new range to the east of the Mackenzie delta. Here it is expected to arrive during the winter of 1931–32.

THE *Quarterly Bulletin* of the Imperial Bureau of Animal Genetics, vol. 2, No. 2, just issued, contains a useful summary of recent developments in fur production and reindeer breeding. Since the first fox farms were established in Prince Edward Island, this industry has grown largely in Canada, and attempts, not very successful, have been made to domesticate other species. Questions of fur production from many animals are discussed, and it is pointed out that the most important fur-bearer in the world is the rabbit, because it breeds rapidly and well in captivity and can be produced genetically in a great variety of colours. The reports of the Porsild brothers on the possibilities of reindeer breeding in Arctic Canada and the problems of reindeer husbandry are considered at some length. The Mackenzie delta and Great Bear Lake regions are found to be capable of supporting large herds, hence the reindeer movement. Experiments are already being made in crossing the reindeer with the large

woodland caribou of Newfoundland. Other items in this bulletin are a list of literature on reindeer, reviews of books on fur farming and rabbit breeding, and notes on the domestication of mink. A bibliography on fur breeding will shortly be ready and obtainable from the Bureau in Edinburgh for 1s. One on the biology of the fleece has already been published at 2s. 6d., and another on the genetics of the rabbit is in preparation.

GERMAN oilfield developments have been prominent in the press lately, consequent on the Royal Dutch Shell Company's active interest in the operations, of which a report appeared in the *Times* of May 22. For some time past, both German and American companies have been engaged on exploratory work, but the results have scarcely justified the claims originally made as to resources, though there would seem to be evidence of petroleum occurrence over a wide area in the north-west. From a technical point of view, one of the best recent accounts of the fields is given by Von E. Krenkel in the April number of *Die Naturwissenschaften*. For all practical purposes, the chief developments have been in the Hanover region within a radius of some fifty kilometres from that city, and the features of geologic interest are the Zechstein salt bodies. This region includes the Oelheim, Hänigsen and Wietze fields among others, from which there has been a steady though not spectacular production; the prospective total for this year for the region as a whole is estimated at 200,000 tons. Unproved areas lie to the north (Oldenburg) and elsewhere in the Hanover province, already noted for the famous Limmer and Vorwohle rock-asphalt deposits. It is clear that although comparable salt-structures with those of certain other oilfields are known in this part of Germany, they are not, in the present state of our knowledge, significant of the existence of oilpools of magnitude.

A LARGE proportion of the current issue of *Africa* (vol. 4, pt. 2) is devoted to the consideration of matters of practical import. Instructions for missionaries who have opportunities for extended ethnographical observation, which have been prepared by Dr. Westermann, and suggestions for the teaching of hygiene to women, by Miss Mary Blacklock, have a grasp of the problems in their respective fields which gives them a claim to careful consideration. There are, however, two other communications which call for more than passing mention, as illustrating the principles, recently discussed by Prof. Malinowski and others in the pages of *Africa*, which bear on the value of scientific study of native institutions in relation to practical problems. It was urged that in a changing Africa neither an academic nor an anti-quarian interpretation of the field of inquiry is likely to have any practical effect, but that what is needed is a study of the functioning of existing institutions as integral parts of a culture considered as a whole.

IN the first of the two communications to which we refer, Mrs. A. W. Hoernle, in considering the native conception of education in Africa, points out the

significance of age and sex in determining occupation, the function of the family as a social unit, and the place of initiation in ensuring tribal continuity of tradition through the instruction given in the initiation schools, and discusses the bearing of these factors upon the problem of educating the native in present conditions. Mr. D. S. Knak, in his study of the influence of European civilisation on African family life, deals with native marriage on similar lines, referring particularly to native as opposed to European forms in marriage and the difficult problem of polygamy. The two papers may be commended to the attention of those who are prepared to consider impartially the respective claims of the scientific student and of the 'man on the spot' with practical experience but unbacked by specialist knowledge, to speak with authority on native problems which call for solution both now and in the immediate future.

IN his presidential address to the Devonshire Association on June 23, the Bishop of Plymouth gave an admirable, but necessarily brief, survey of the history of religious houses in Devonshire. Unfortunately, Devonshire had no chronicler in its monasteries to emulate, even *longo intervallo*, Jocelin of Brakelond, and, as Dr. Masterman was constrained to admit, the actual history of most Devonshire religious houses has passed into oblivion. Yet for five centuries they played a large part in the religious and social world of Devonshire, if we may judge from the contemporary evidence of a writer whom the Bishop quoted, even though he dealt with another county. It would appear that the monks dealt paternally with their tenants, if less efficiently than the landlords who succeeded them, and it is significant that among the demands of the Cornish and Devon rebels of 1549 one was that two of the chief abbeys in each county should be re-established. At the time of their abolition, the number of religious houses in Devonshire ranked sixth among the English counties, ten being included among the greater monasteries, that is, monasteries of which the income exceeded £200 (about £3000 in modern currency). The suppression seems to have been carried out by peaceful negotiation. In nearly every case the abbot and his brethren received pensions. Of Devonian monasticism one relic remains in 'the Abbot's Way', the rough track across Dartmoor which once linked Buckfast and Plympton with Buckland and Tavistock, marked by broken crosses set up to guard the traveller from the pixies that haunt the moor.

THE advantage of short over long wave transmission for broadcasting is that it is much less affected by atmospheric fading. In some parts of the world, for example, in Central and South America, these causes prevent reception of long wave stations sometimes for months at a time. This probably accounts for the great popularity of short wave broadcasting in America. At present, according to *World-Radio* for June 12, there are thirty-seven firms engaged in the manufacture of short wave receivers. These receivers range from the one valve to the thirteen valve set.

Home-built sets are almost a thing of the past; manufacturers are now competing with one another and the prices are very reasonable. Combination receivers which allow the listener to tune in at all wavelengths between 14 and 550, the latter being the upper limit of the American broadcast band, are the most popular. At present there are twelve operating short wave broadcasting stations in the United States and a few in Canada and Mexico. All relay musical programmes and can be heard in the United States. Distant reception is also to be had from all parts of the world. The Rome station on 25.4 metres is heard best in the eastern portion of the country, and the station at Saigon, in French Indo-China, in the western section. It is noticed that the Rome station does not fade so early in the evening as stations farther north. Many new stations are being built, broadcasting on short wave-lengths only.

It is interesting to notice that when the London United Tramways were faced with the necessity of a heavy expenditure in connexion with their tram track and vehicles, for about seventeen miles of their tramway system in Surrey they decided to adopt trolley bus working. The first trolley bus service in London started on May 16 and has given satisfaction. This type of transport is common in many towns both in Great Britain and abroad, and the number of trolley buses in operation is increasing very rapidly. In the *English Electric Journal* for June an account is given of various types of 'English Electric' trolley buses. They run smoothly and quietly, and are capable of rapid acceleration and powerful braking. When fully loaded they are capable of a speed of about thirty miles per hour on the level and eighteen miles per hour on a five per cent gradient. The maximum operating acceleration is three feet per second per second, which allows twenty miles per hour to be attained in ten seconds, in a distance of about sixty yards. In the Twickenham-Teddington route the vehicles are double-decked 56-seaters. They are fitted with an 80-horse-power 500-volt motor, and the speed control is effected by a pedal which actuates an electric controller. Three braking systems are provided, hand, rheostatic, and vacuum, the two latter being operated in succession from one pedal. Retardation can be effected at eight feet per second per second for ordinary stops, and at twelve feet per second per second for emergency stops, these rates being uniformly maintained until the vehicle comes to rest. Thus in an emergency a bus that is running at thirty miles an hour can be brought to a standstill in about eighty feet.

WHEN the last estimate for the Reichskuratorium für Wirtschaftlichkeit was passed by the Reichstag, a recommendation was put forward that in all investigations on rationalisation carried out at the public expense the human factor should receive special study. An official conference to discuss rationalisation and the human factor was held in Berlin on Feb. 27 and 28, the conference being opened by the president of the Board of Trade and a representative of the Ministry of Labour. The programme was divided

into two sections, the first, on the optimum organisation of labour, being opened by papers on recent discoveries in the field of labour psychology (Dr. Lipmann); practical investigations to ascertain the optimum organisation of labour (Dr. Ascher); and measures taken by employers to introduce the optimum organisation of labour. The discussion was unusually animated, and was guided by the Reichskuratorium by means of statements, opposing statements, and syntheses of the communal and individual points of view. The second section was concerned with vocational selection and training. The discussion in both sections indicated the divergent views held on rationalisation, and also the ease with which the gap could be bridged by eliminating misunderstandings due to differences of language and definition, and by concentrating on views common to all parties. The Reichskuratorium is following up the conference by a closer study of the special fields, and their investigation by the central organ of the German rationalisation movement should ensure that they are studied less from the personal than from an unbiased scientific point of view.

IN his address on "Industrial Administration" before the Association of Technical Institutions, Mr. A. S. Comyns Carr referred to the scant attention which industrial administration had received from the majority of those engaged in industry, in spite of its necessity in every industrial enterprise. This want the Institute of Industrial Administration is endeavouring to supply. Regarding industrial administration as the co-ordination and control of all the activities of an industrial enterprise, from the purchase of the raw material to delivery of the finished product, the Institute seeks to provide the industrial administrator or general manager with sound information on the principles which his experts should follow. The effort to establish industrial administration among the recognised professions is already leading to the recognition that management occupies a unique position in industry. That position involves responsibility not merely to the proprietors of the business but to those employed by it, and also towards the public.

THE Institute of Industrial Administration sets as its first aim the establishment of industrial management as a responsible profession. The promotion of research into the principles of management is a further main line of advance, particularly in Great Britain, where the spirit of secrecy has greatly hindered the interchange of information on management methods and principles, which is a first step towards raising the general standard of administration. Referring to the educational work of the Institute, Mr. Comyns Carr asserted the importance of teaching the principles of administration. Once these are understood, the appropriate system for meeting with a given set of conditions will easily be developed. In discussions on the need of first-class administrators for industry loose references to the importance of personality tend to obscure the need for training. Personality is not a substitute for training, and the Institute of Industrial Administration insists that

management requires real qualifications and not the accidents of financial interests or family relationships.

IN view of the great development of the work of the Long Ashton Research Station of the University of Bristol, the governing body of the Station has recently formulated a new scheme of membership of the Station. This scheme provides for three classes of members, on a basis of varying rates of annual subscription to the Station, the privileges of the members in the three classes being graded according to these rates. Class A, on a subscription of £1 1s., allows the member to consult the staff without fee; to purchase at preferential rates any material of the nature of buds, grafts, cuttings, or plants of any varieties of fruit; to submit, without charge for examination, not more than six samples of cider and perry annually; and to have priority over non-subscribers in respect of any advisory services. Class B, entailing a subscription of £2 2s., includes all the privileges of Class A, also to receive one copy of reprints of papers published by the staff, and to participate in the seedling distribution scheme, which has been adopted after consultation with the Ministry of Agriculture and Fisheries and the Horticultural Trades' Association. Class C, for which the subscription is £5 5s., differs from Class B only in the seedling distribution scheme.

THE original air maps of the United States, which were first published a few years ago, were known as strip maps, because, individually or in series, they covered strips of territory 80 miles wide between one air port and another. Of the 42 sheets planned, 22 are now completed and 7 are in hand. The Annual Report of the United States Coast and Geodetic Survey for the year ending June 30, 1930, announces a new project in air maps. Since 80 per cent of flying is now over routes which do not follow the airways provided with strip maps, it has become necessary to have a map covering the whole country. This will be provided in 92 sheets, excluding Alaska. It will be based on the United States topographic map, which, however, is available for only about 40 per cent of the country. The Report announces also that financial resources have now been provided for the completion of the topographic map in some twelve years' time. This will allow the air map to follow rapidly.

AT a meeting of the Royal Society of Arts on May 6, the Earl of Crawford and Balcarres made a strong plea for the retention of the natural and artificial beauties of England, in an address upon "The Preservation of the Country-side". The appositeness of the speaker's remarks and the need for his criticism of many tendencies of present-day development were emphasised by a series of lantern pictures of England spoilt and unspoilt. The text of the address was "orderliness, tidiness, and discipline", and the illustrations showed how much could be accomplished by the application of these qualities, none of which was incompatible with the picturesque and the inspiring. Amongst the special points dealt with were the litter nuisance, the choice of building materials, ribbon

development of building (a serious and very important issue), and the value of trees. The address and the comments made upon it by various speakers, including Mr. Cass Gilbert, the architect of the Woolworth Building in New York, appear in the *Journal* of the Society for June 5.

As announced in *NATURE* for March 7, the 'Dechema' (Deutsche Gesellschaft für chemisches Apparatewesen) held its general meeting in Vienna on May 28 and 29 at the same time as did the Verein deutscher Chemiker. The scientific proceedings were well attended, and the papers which were communicated on "The Separation of Liquids and Solids" aroused wide interest. In all, twelve papers were communicated dealing with filtration in the laboratory and on the technical scale, the latter being naturally in the majority. We are informed that this interesting series of lectures will shortly be published in volume form of the 'Dechema' Monographs. On May 30 those taking part in the general meeting were able to visit the almost completed new Institute of Chemical Technology of Inorganic Compounds, a part of the Vienna Technical High School. This Institute provides an almost ideal solution of the problem of enabling the students to work with apparatus which corresponds to factory scale conditions.

IN connexion with the International Illumination Congress which is being held in Great Britain next September, the General Council of the Congress has issued a booklet on the origin, organisation, and work of the International Commission on Illumination, under the auspices of which the Congress is being held (International Illumination Congress, 1931, 32 Victoria Street, London, S.W.1). Its object is the provision of an international forum for all matters relating to the science and art of illumination, and the International Commission at the present time has national committees in Austria, Belgium, Czechoslovakia, France, Germany, Great Britain, Holland, Hungary, Italy, Japan, Sweden, Switzerland, and the United States. Meetings of the Commission are held every three years, the last being held in the United States in 1928. This meeting was attended by 71 delegates from nine countries, while the Congress held just previously was attended by 514 delegates. Among the more important work of the future is that of securing international agreement on the fundamental bases of illumination, the standardisation of illumination materials, and international agreement on illumination legislation. Added to this, is the necessity for research and the education of public opinion to the value of good lighting. The booklet includes an article on "The International Commission on Photometry", the names of the officers of the Commission, and lists of the papers read in 1921, 1924, 1927, and 1928.

THE Report on the work of the Department of Petroleum Technology of the Sir John Cass Technical Institute for the session 1930-1931 is to hand, and, as in the past, shows a creditable record of progress. This constitutes the tenth session during which provision has been made for instruction in petroleum technology, and it is significant of the farsightedness

of the sponsors of the courses involved that little material departure from original schedule has been found necessary during that time. Students are drawn principally from the clerical, distributive, and technical branches of the industry, and the average number per session, taken over the whole decade, who have profited by the teaching at the Institute, is one hundred. During last session, courses were provided on general technology of petroleum, on internal combustion engines and lubrication, on chemical and physical properties of petroleum and its examination, on the applications of engineering to industry, and on construction of works. The past session was also marked by a striking increase of the number of student hours, from 2876 previously to 4144, a testimony to the keenness of the members of these classes and a source of gratification to the teaching staff.

AN important congress of naval architects will be held in Paris on June 29-July 4 at which papers will be read dealing with shipbuilding, marine engineering, and civil aviation. The meeting will be confined to members of the Institution of Naval Architects (London) and members of the Association Technique Maritime et Aéronautique.

THE United States Government sets a good example in the matter of industrial statistics. Much of interest can be culled from even the dry bones of such documents as "The Coke and By-Product Tables for 1929", compiled by the U.S. Bureau of Mines, Coal Division (Washington, D.C.). It throws interesting light on the immense American carbonising industry. In 1929, nearly sixty million tons of coke were produced—an increase of 50 per cent on the figures of 1915, but the proportion made in by-product ovens had grown in that period from one third to 90 per cent of the total. The coke is mainly used as metallurgical fuel, but an increasing proportion is going into the domestic 'furnace'. The immense quantities of tar cannot be absorbed for manufacturing purposes, and more than one-half is consumed as fuel, mainly in the steel works, the average price being 5 cents a gallon. The surplus gas is used mainly as industrial fuel and commands an average price of 16 cents a thousand cub. ft., but up to 29 cents for use as town's gas. These figures are instructive in indicating the limits set by economic circumstances to the extension of coal carbonisation.

THE observatory of De Bilt lies about 40 miles east of the Hague. The seismological section, founded in 1904, possesses a pair of Galitzin's horizontal seismographs and his vertical seismograph with the usual magnetic damping and galvanometric registration, one of Wiechert's astatic horizontal pendulums, and a pair of Bosch horizontal pendulums. The first number of the *Seismische Registrierungen* contains the records for part of 1904 and for the interval April 1908-1913. Since then, the numbers have been published annually. We have recently received the sixteenth number, that for the year 1928, compiled by Dr. G. van Dijk, the director of the seismological section. It contains the records of

433 earthquakes, giving, as usual, the epoch, period, and amplitude of the various phases, and, with very few exceptions, the approximate position of the origin.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—Two chief assistants in the department of psychological medicine of St. Thomas's Hospital—The Secretary and Clerk to the Governors, St. Thomas's Hospital, S.E.1 (June 30). A labour superintendent at the ordnance factories of the Royal Arsenal, Woolwich, with workshop training in an engineering establishment—The Under-Secretary of State (C. 5), War Office, S.W.1 (July 3). A Sir Ernest Cassel reader in commerce at the London School of Economics—The Academic Registrar, University of London, S.W.7 (July 6). A lecturer in agriculture under the Hertfordshire County Council—The Clerk of the Hertfordshire County Council, 28 Castle Street, Hertford (July 7). A head of the engineering department, a lecturer in mechanical engineering and drawing, and a graduate lecturer in electrical engineering (with physics and mathematics as subsidiary subjects) in the engineering department of the Merchant Venturers' Technical College, Bristol; also a head of the building department, a lecturer in building construction and building subjects, and a graduate lecturer in chemistry and physics (with mathematics as subsidiary subject) in the building department of the Merchant Venturers' Technical College, Bristol—The Superintendent, Merchant Venturers' Technical College, Bristol (July 7). A full-time lecturer to take charge of the electrical engineering department of the Chesterfield Technical College—The Principal, Technical College, Chesterfield (July 11). A pathologist at the National Hospital

for Diseases of the Heart—The Secretary, National Hospital for Diseases of the Heart, Westmoreland Street, W.1 (July 11). An assistant master, to teach mainly science subjects in the junior technical school and engineering departments of the Bolton Municipal Technical College—The Director of Education, Education Offices, Nelson Square, Bolton (July 11). A lecturer in chemistry at the Technical College, Sunderland—The Chief Education Officer, 15 John Street, Sunderland (July 11). An assistant lecturer in physics in the University College of Wales, Aberystwyth—The Secretary, University College of Wales, Aberystwyth (July 11). A lecturer in philosophy at Jesus College, Oxford—The Principal, Jesus College, Oxford (July 11). A lecturer in physics at the Northampton Polytechnic Institute—The Principal, Northampton Polytechnic Institute, St. John Street, E.C.1 (July 13). An assistant lecturer in physics at University College, London—The Secretary, University College, Gower Street, W.C.1 (July 13). An assistant lecturer in chemistry in the University of Sheffield—The Registrar, University, Sheffield (July 13). A demonstrator in civil engineering and surveying at the City and Guilds (Engineering) College—The Secretary to the Delegacy, City and Guilds (Engineering) College, Exhibition Road, S.W.7 (July 15): A woman professor of mathematics at the Huguenot University College, Wellington, South Africa—The Secretary, Office of the High Commissioner for the Union of South Africa, 73 Strand, W.C.2 (July 31). A Savilian professor of astronomy in the University of Oxford—The Registrar, Old Clarendon Buildings, Oxford (Oct. 10). A director of research of the British Launderers' Research Association—The Secretary, British Launderers' Research Association, 17 Lancaster Gate, W.2.

Our Astronomical Column.

Tempel's Comet 1866 I.—This is the comet associated with the November meteors; it has a period of about 33 years, but was not recovered at its return in 1899. In the hope of facilitating its recovery at the forthcoming return, the computing section of the British Astronomical Association undertook the computation of the perturbations from 1366 (when a comet, believed to be the same, was observed) to 1866 and onward to 1933; the results are published in the April number of the *Journal* of the Association, and were supplemented by a further statement at the meeting on May 27. The deduced orbit for the next return is found to be nearer the earth's orbit by half a million miles than it was in 1899, which gives hopes of a better display of meteors. The most hopeful dates for meteors are 1932 Nov. 16.5 and 1933 Dec. 16.8, but search should also be made on 1931 Nov. 17.3.

The first rough date announced for the comet's perihelion passage was 1933 May 4; but revision of the work has made this some three months earlier, or the end of January; in 1866 perihelion was on Jan. 11, so if the date is only slightly later than this, there will be good hope of observing the comet. There is still uncertainty of a month or more either way in the predicted date, but before the investigation the uncertainty was quite two years, so that it has been notably reduced. The recovery of the comet is highly desirable; it would make possible the accurate study of its motion in the past, and would verify, or otherwise, the conjecture of Le Verrier that the comet and

meteors owed their introduction into their present orbit to the action of Uranus in A.D. 126. Some textbooks refer to this conjecture as an established fact, but it is not so; however, the near approach of the comet's orbit to that of Uranus makes it likely that there was a close appulse of the two bodies at some epoch.

The Distance of the Galactic Centre.—*Astr. Jour.*, No. 957, contains articles by P. van de Kamp on the distance of the galactic centre and the thickness of the galactic absorbing layer. He notes that the existence of this layer, first announced by Trumpler, has been further confirmed by Schalen, Ohman, Miss Slocum, and himself. Hubble's work on the spiral nebulae gives further support, as he finds an irregular zone of avoidance of such nebulae along the Milky Way, while their distribution elsewhere is fairly uniform. The thickness of the layer is given as 210 parsecs, with a probable error of 40.

The distance of the centre of the galaxy is found from (1) the centre of the system of globular clusters, (2) from a study of cluster-type variables in a Milky Way field, (3) from the constants of galactic rotation. The extreme values of the distance of the centre in parsecs are 16,700 and 7000. He suggests 12,000 as a mean (say 40,000 light-years). This implies an absorption intermediate between Trumpler's value and that of Bottlinger and Schneller; it would be somewhat over a magnitude at 1000 parsecs.