

## ASTRONOMICAL NOTES

Planets during March 1939.—Venus will continue to be visible in the eastern sky for about a couple of hours before sunrise; it is gradually moving towards the Sun and getting fainter. Mercury will be an evening star during the month, and on March 17, reaches greatest elongation ( $18^{\circ} 27'$  E). Mars is in quadrature with the Sun on March 21 and will be on the meridian at about the time of sunrise; it is becoming brighter, the stellar magnitude being 0.7 about the middle of the month.

Jupiter is in conjunction with the Sun in March 6 and will not be in a favourable position for observation during the month. Saturn continues to be an evening star and will be moving slowly eastward along the southern border of Pisces. Uranus is in the neighbouring constellation Aries, only a degree north of the fifth magnitude star  $\sigma$  Arietis; on March 24, the Moon will closely approach the planet. Neptune is in opposition to the Sun on March 13 and its stellar magnitude at the time will be 7.7. The planet will be situated approximately midway between the stars  $\beta$  Virginis and  $\sigma$  Leonis and can be located with a small telescope.

Comets.—Information has been received

of the discovery of a comet (1939 *a*) by Cosik at Tashkent on January 17 and independently three days later by Peltier in America (U.A.I. Circular 736, 737). The comet is stated to be a diffuse object with a central condensation and a tail somewhat less than a degree. It was of the eighth magnitude at the time of discovery and has subsequently become brighter. An observation on February 10 shows that the comet was not far from Saturn. A parabolic orbit has been computed by Cunningham and the time of perihelion passage is found to be 1939 February 6. From the ephemeris based on this orbit, the comet appears to be moving rapidly in a south-easterly direction.

A Supernova.—Zwicky has reported (U.A.I. Circular 737) the discovery of a supernova in the extragalactic nebula N.G.C. 4636, about 0.6 north-west of the nucleus. The apparent brightness increased from magnitude 14 on January 17 to 12.5 on January 20. These objects are considered to belong to a distinctly separate class of temporary stars whose luminosity at maximum is about a thousand times greater than that of ordinary novæ.

T. P. B.

## SCIENCE NOTES AND NEWS

**The Nichrome-Constantan Thermocouple.**—In a communication, dated January 16, 1939, Messrs. M. R. Mandlekar and P. K. Sathe (Fuel Laboratory, Department of Chemical Technology, University of Bombay) write:—

In connection with the investigations in progress in this laboratory pertaining to industrial classification of Indian Coals, different base metal thermocouples<sup>1</sup> have been used for recording temperatures. The previously covered temperature range (upto  $800^{\circ}$  C.) has now been required to be extended to  $1000^{\circ}$  C. Nichrome-Constantan couple which was previously found to be highly satisfactory has been used at the higher temperatures with similar results. It has been observed that the temperature-e.m.f. relationship of the thermocouple, followed over the preliminary temperature range, can be extended to the higher range as well. A straight line relationship is followed over the temperature range covered in this investigation, a characteristic to be valued much in a thermocouple. This relation is followed at temperatures over  $300^{\circ}$  C. and an algebraic relation between the e.m.f. ( $e$ , in millivolts) and temperatures ( $t$ , in  $^{\circ}$  C.) has been established for temperatures  $300$ – $1000^{\circ}$  C. for the Nichrome-Constantan thermocouple.

$$t = 14.705 e + 47.1.$$

**The Electron Microscope.**—When the aperture of a lens is continuously diminished so as to minimise the spherical aberration and thus produce a well-defined image, diffraction effects due to the finite wave-length of light set in and the resolving power suffers in consequence. For this reason complicated lens combinations and ultra-violet light are employed to increase the power of a microscope and yet objects smaller than  $0.15\mu$  cannot be separately distinguished. Now it is known that electrons can be brought to a focus by axially symmetric fields while their de Broglie wave-length being very small, diffraction effects are not produced even when the aperture is drastically cut down. A very thin section of an object mounted on an extremely thin film of nitro-cellulose or sometimes collodion is placed in vacuum in the path of a pencil of electrons which have passed through a very small aperture, and they then pass through ironclad coils which behave like the condenser, objective and projection eyepiece of a microscope. They then fall on a fluorescent screen or photographic plate and "silhouette" images having a high degree of magnification (upto 16000) and a resolving limit at present of about  $0.01\mu$  are produced. The pioneer workers in this field have been Knoll, E. Ruska and H. Ruska on the continent. In England similar work has been taken up by Prof. L. C. Martin, who has contributed an article on this subject to *Nature* (1938, 142, 1062) from which the present account has been prepared. A picture of the

<sup>1</sup> Mandlekar and Banerjea, *J. Soc. Chem. Ind.*, 1938, 57T, 276; *Curr. Sci.*, 1938, 6, 447.

apparatus designed by Prof. Martin and reproductions of interesting photographs obtained by Ruska are given in Prof. Martin's article. He there discusses the various difficulties which beset the path of progress in this field. The most important of these difficulties are the production of homogeneous pencils of electrons all having the same velocity (so that 'chromatic aberration' can be got rid of) and the building of ironclad coils, which, besides mechanical symmetry, possess magnetic symmetry to that high degree which is necessary to eliminate the 'spherical aberration' in such 'lenses'. When it is remembered that at present the high magnification to be brought about in two stages requires the whole instrument to be given a length of about two metres, and that the most stringent demands of high vacuum and symmetry have to be met, no one can fail to realise the difficult nature of the work. The effect of the electrons and nuclei of the object illuminated must also be taken into account, while there is also the possibility that the object may be disintegrated by the intense electron beam employed. While the X-ray and Electron-diffraction techniques are most useful in elucidating the regularities of crystalline and other kind of structure, electron microscopy will come in most handy in giving us a knowledge of the discontinuities and irregularities occurring in the same. The future is very bright as regards further improvements in this field and we may hope for the day when even the elements of crystal lattices may be made visible.

T. S. S.

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Gold in some Fungi.—Nemec and Babicka (*Chronica Botanica*, 1938, 4, 12) report having succeeded in proving the presence of gold, in traces, in the cells of plants growing on auriferous soils. More recently they have been able to demonstrate its presence in fungi also. Thus the spores of the genus *Polyporus* and their host plants (Beeches, Heinbuche) contain gold in traces.

Two species of *Boletus* (*B. bulbosus* and *B. rufus*) collected in 1935 and 1937 in Westslovakia were analysed. The following results were obtained: *B. bulbosus* (1935): Ash, 6.51; SiO<sub>2</sub>, 1.28; CuO, 0.10; Fe<sub>2</sub>O<sub>3</sub> + Al<sub>2</sub>O<sub>3</sub>, 6.01; CaO, 58.01; MgO, 6.20; Na<sub>2</sub>O, 5.50; K<sub>2</sub>O, 4.35; P<sub>2</sub>O<sub>5</sub>, 15.56; CO<sub>2</sub>, 1.50; SO<sub>3</sub>, 1.00; Cl, 0.5; Au, 0.0001. (Figures represent percentages of the ash.) The material collected in 1937 showed only a slight variation; but gave rather surprisingly, 0.53 per cent. of ZnO in the ash.

*B. rufus* also showed the presence of gold. This species was analysed for confirmation of the above analytical results. *Daedalea gibbosa*, parasitic on the stems of beech trees, contained also traces of gold.

It would be highly interesting to ascertain whether such absorption of gold is found in plants growing in the Kolar Goldfields area and how far such results could be used in locating auriferous regions.

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Significance of Trace Elements in Metals and Alloys.—Non-ferrous metallurgists have devoted considerable attention to the influence of 'trace elements', the term being applied to

designate elements present in amounts less than 0.05 per cent. According to the *Instrument Bulletin* (Bausch & Lomb, Rochester, N.Y., Dec. 6, 1938), the lead of commerce contains a number of trace elements—silver, copper, arsenic, antimony, tin, zinc, iron and bismuth, in amounts less than 0.01 per cent. Pure lead (99.999 per cent.) exhibits such low tensile and creep strengths that it is of little commercial interest. Knowledge regarding the effect of trace elements in zinc-base alloys containing about 4 per cent. aluminium has led to significant developments in the die casting industry. An alloy containing only zinc and aluminium (96 of Zn and 4 of Al) has very valuable properties, but if contaminated with traces of lead (0.01 per cent.) and tin (0.005) the castings will not retain their desirable physical properties when exposed to warm, humid atmospheres. Magnesium (0.02 — 0.04 per cent.) is decidedly beneficial and tends to counteract the effects of tin and lead.

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Rajgir in Ancient Literature.—Pursuant to its policy of publishing Monographs on India's ancient capitals, the Archaeological Survey of India have just brought out, in its series of Memoirs, a Monograph on 'Rajagriha in Ancient Literature', based upon a critical study of various ancient texts. The author is Dr. B. C. Law.

One of the most wonderful cities of ancient India, which goes back to the days of the Buddha and continues to be a place of pilgrimage and a health resort even to the present day, the identification of Rajagriha, still known as Rajgir, is rendered easy by the configuration of the hills by which it is surrounded, the other name of the town being Girivraja, or mountain fastness. The *Mahabharata* mentions Rajagriha as the capital of king Jarasandha, and as the place was hallowed by the presence of the Great Master, it is frequently mentioned in Buddhist literature. Modern excavations have been particularly fruitful at Rajgir and there is, it is said, ample scope for research at this most ancient historical city.

Details are given in the publication of the various names by which the ancient city of Rajagriha was known and their significance as also of the topography of the various sites in and around the city and of the hot springs, the bamboo forest, the mango grove of Jivaka, the Sattapanni cave and other places associated with incidents in the life of the Buddha and the history of Buddhism. The importance of Rajagriha in the religious and cultural history of India is brought out and in particular it is shown how, from the earliest times, Rajagriha was a notable centre of Naga worship—a conclusion confirmed by the recent discoveries of the Archaeological Department.

The identification of the five hills that enclose the city has always been a matter of some difficulty and confusion owing to the contradictory writings in different periods. A satisfactory solution is now given of the problem in the Monograph.

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Official List of Trade Names of Indian Timbers.—The Forest Research Institute and

College, Dehra Dun, has just brought out a new list of trade names of Indian timbers.

The first official list of trade names for Indian timbers was published in March 1929, and reprinted with a few additions and alterations in 1931.

Since then, experience has shown that the list was by no means perfect. It contained several names which were definitely unsuitable, and in addition several species were included in the list for which trade names were really unnecessary.

The Board of Forestry, which met at Dehra Dun in October 1934, decided, therefore, to publish a revised list of official trade names for Indian woods. The list prepared accordingly had the approval of the Board of Forestry, at which the Head of the Department of Forestry from each Province in India was represented.

The new list of trade names now brought out, is fundamentally the same as that published in 1934. A few necessary alterations and additions have been made, and several common vernacular names added. All Provinces were consulted, and every endeavour has been made to give effect to the suggestions received. In a few cases, where the suggestions of one Province clashed with those of another, the decision of the Inspector-General of Forests has been taken.

The separation of Burma also complicated matters, but it was finally decided to leave in all Burma timbers originally included if they also occurred in India. Other Burma timbers not found in India but imported into India, have been tabulated in a separate list, but included in the present publication.

The list now brought out carries the approval of every Province in India and is published under the authority of the Government of India. It is hoped that Forest Officers and others will do their utmost to further the use of these trade names, with a view to eliminating the confusion caused by the use of local vernacular names, more especially, in export and inter-Provincial trade and in publications.

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**League of Nations: Technical Commission on Nutrition.**—The *Bulletin of the Health Organisation* (Aug. 1938, 7, 4), recently issued, includes the report by the special committee which met in Geneva from August 22nd to 24th, 1938. The Sub-Committee dealt with the guiding principles for the study of the diets and nutrition of populations. Its work in this field resulted in the preparation of a handbook for use in surveys.

The Sub-Committee also noticed the special considerations which arise in connection with nutrition in the Far East, tropical countries and colonial territories. It referred in particular to the necessity of making a closer study of the nutrition value of local foodstuffs and the incidence of diseases directly or indirectly due to dietary deficiencies.

In this connection, the Sub-Committee submitted a programme of studies which, it is hoped, will be organised in 1939 with the assistance of the Nutrition Research Laboratories, Coonoor (India).

Lastly, the Sub-Committee's attention had been drawn to the fact that critical situations exist, even in Europe, where emergency measures are urgently required for famine relief. Its report contains simple and very inexpensive diets sufficient to maintain life and to prevent serious malnutrition. These diets include cereals, milk (whole milk or skim-milk), yeast, cod-liver oil and various salts, so as to provide the necessary vitamins and inorganic elements.

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**Chronicle of the Health Organisation.**—The Health Organisation branch of the League of Nations which has been issuing a number of publications, relating to subjects which come under its purview, has felt the need for a periodical publication which would keep members of the Organisation's commissions, its various collaborators, doctors, scientists, public health specialists, health departments, scientific institutions and medical reviews and publications, informed of the essential day-to-day activities of the Organisation. After a trial, which proved conclusive, the Health Committee decided to issue the *Chronicle*, the first number of which we have just received. It will appear twice a month and is intended to give an account of the work in progress and to provide informative matter in as succinct a form as possible. The first number contains a report of the recent work of the Permanent Commission on the Biological Standardisation, with regard to anti-toxins and sera. The annual subscription for the *Chronicle* is 5sh.

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**Heavy Chemical Industry in India.**—Tata Sons, Ltd., have started a new venture in the Indian Chemical Industry by the manufacture of heavy chemicals in the Baroda State for which the State will give special facilities. The authorised capital of the enterprise is Rs. 5 crores. 1¼ crores will be issued at present.

The company will set up its works near Port Okha which belongs to the Baroda Government, which, besides granting valuable concessions, will subscribe shares to the extent of one-fifth of the present issue. Although the initial programme of the company is confined to the manufacture of basic heavy chemicals such as soda ash and caustic soda, the company contemplates the gradual development of the undertaking so as to embrace practically the whole field of production of heavy chemicals and fertilisers as well as special chemicals for use in industries such as pharmaceutical and photographic.

The scheme is being undertaken after two years of patient and careful preparation and thorough examination at the hands of British, American and other experts, who have satisfied the promoters as to the possibility of working it successfully. (*The Chemical Age*, 1938, 39, 531.)

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At the fifteenth annual general meeting of the Indian Chemical Society held on the 7th January at Lahore, the following were elected Office-bearers for 1939:—

*President:* Dr. H. K. Sen; *Vice-Presidents:* Dr. S. S. Bhatnagar, Dr. P. Neogi; *Hon. Secretary:* Dr. P. K. Bose; *Hon. Treasurer:* Dr. A. C.

Sircar; *Hon. Editors*: Dr. J. N. Ray, Prof. P. R. Ray; and *Hon. Auditors*: Mr. P. C. Nandi, Mr. T. K. Roychaudhury.

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The Entomological Society of India.—The first annual general meeting of the *Entomological Society of India*, was held on the 4th January 1939 at Lahore during the 26th Session of the Indian Science Congress. The following Office-bearers were elected:—

*President*: Khan Bahadur M. Afzal Husain (Lahore); *Vice-Presidents*: Dr. Hem Singh Pruthi (New Delhi) and Dr. T. V. Ramakrishna Ayyar (Coimbatore); *Secretary and Treasurer*: Dr. K. B. Lal (New Delhi); *Joint Secretary*: Dr. K. D. Baweja (Lyallpur); *Members of the Executive Council*: Dr. N. C. Chatterji (Dehra Dun) and Dr. Khan A. Rahman (Lyallpur); *Editorial Committee*: Dr. Hem Singh Pruthi (Chief Editor), Dr. T. V. Ramakrishna Ayyar, Dr. N. C. Chatterji, Dr. D. R. Mehta, Dr. Khan A. Rahman and the General Secretary (*Ex-officio*).

It was decided to publish an entomological journal from the current year, to be called the *Journal of the Entomological Society of India*. The Office of the Society for the next four years will be located at the Imperial Agricultural Research Institute, New Delhi.

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The Indian Botanical Society.—At the Annual General Meeting of the Indian Botanical Society held at Lahore on 7th January 1939, the following persons were elected Office-bearers for the year 1939:—

*President*: Rai Bahadur Professor K. C. Mehta (Agra); *Vice-Presidents*: Mr. H. G. Champion (Nainital) and Dr. H. Chaudhuri (Lahore); *Secretary*: Professor Y. Bharadwaja (Benares); *Treasurer*: Professor M. O. P. Iyengar (Madras); *Executive Council*: Professor S. P. Agharkar (Calcutta), Dr. K. Biswas (Calcutta), Professor S. R. Bose (Calcutta), Professor T. Ekambaram (Madras), Professor S. L. Ghose (Lahore), Dr. E. K. Janaki Ammal (Coimbatore), Dr. A. C. Joshi (Benares), Professor J. H. Mitter (Allahabad), Professor P. Parija (Cuttack), and Professor B. Sahni (Lucknow).

Professor F. E. Fritsch, F.R.S., and Professor A. H. R. Buller, F.R.S., were unanimously elected as Honorary Members of the Society.

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Indian Committee of Phytosociology and Geobotany.—At a meeting of the Botany Section held on 7th January 1939 at Lahore, a Committee consisting of the following members was appointed to consider the question of the formation of an Indian Committee of Phytosociology and Geobotany and place recommendations before a joint meeting of different sections at the next meeting of the Congress to be held at Madras in 1940.

*Members of the Committee*: Prof. S. P. Agharkar (Calcutta), Dr. N. L. Bor (Dehra Dun), Dr. F. R. Bharucha (Bombay), Secretary.

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Benares Hindu University.—Mr. G. K. Das, M.Sc. (Benares), has been awarded the degree of D.Sc. in Physics by the Benares Hindu University in consideration of his theses on (1) the Doppler Effect of Positive Rays of

Hydrogen and its correlation with the Velocity of the Light-emitting Atoms: and (2) the Doppler Displacement with Positive Rays of Mercury.

The research incorporated in these theses was carried out under the supervision of Prof. Dr. Dasannacharya, in the Physics Laboratory of the Benares Hindu University. The theses were examined by Prof. Dr. J. Stark, Nobel-laureate, and Director of the Reichsanstalt for Physik und Technik, and Prof. Dr. E. Ruchardt of the University of München.

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University of Mysore.—I. *Examinations*: The results of the Pre-Medical and M.B.B.S. examinations held in December 1938 were published. They were as follows:—

	No. Examined	No. Passed
1. Pre-Medical	29	10
2. I M.B.B.S.	25	13
3. II M.B.B.S.	29	19
4. Final M.B.B.S. Part I	21	14
Part II	28	14

II. *Lectures*.—(a) The Appu Rao Extension Lecture, 1938-39, was delivered by Rajadharma-pravina Diwan Bahadur Mr. K. S. Chandrasekhara Ayyar, B.A., B.L., retired Chief Judge, Mysore High Court, and Chairman of the Committee on Co-operation in Mysore, on "Co-operation as a Constructive Force" at Bangalore. (b) The following lectures were delivered under the Scheme of Extension Lectures during the month:—(i) Miss J. M. Black, M.A., Principal, Maharani's College, on "Trends of the Modern English Stage" in English at Bangalore. (ii) Mr. P. Kodanda Rao, M.A., Servants of India Society, Poona, on "A View of Civilization" in English at Mysore. (iii) Sri. B. Indiramma, M.A., Superintendent, Maharani's Women's Training College, Mysore, on "The Need for the Study of Educational Psychology by Parents" in Kannada at Kolar.

III. *Meeting of the Academic Council*.—A meeting of the Academic Council was held on the 30th January 1939. Among the propositions that were passed, mention may be made of the following:—(1) Holding the final examination for the M.B.B.S. degree twice a year. (2) Institution of Geography as an optional subject of study in the Intermediate and Degree courses. (3) Appointment of a committee to review the working of the course of studies and scheme of examination for the Intermediate and to make suitable recommendation for changes, if necessary. (4) Commencement of the University Session on the 1st June instead of on the 24th and holding University examinations in February-March instead of March-April.

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University of Bombay: Royal Institute of Science.—(1) Principal G. R. Paranjpe has been elected a member of the Council of the Indian Science Congress Association. (2) Dr. N. R. Tawde, of the Physics Department has been elected a Fellow (F.Inst.P.) of the Institute of Physics, England. (3) Dr. S. Parthasarathy, an ex-student, has sailed for Sweden to do research work, being awarded a Fellowship by the Nobel Institute, Stockholm. (4) Dr.

F. R. Bharucha has been given further grant by the Bombay Pinjrapole to continue his work on the improvements in grasslands. He is a member of a Committee of the Botany Section of the Science Congress to consider the formation of the Society of Phyto-sociology and Geo-botany.

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Professor F. T. Brooks, F.R.S., Head of the Department of Botany, Cambridge University, has been appointed a Special Reader of the University of Calcutta.

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Dr. R. S. Thakur has been appointed officer-in-charge of the Industrial Survey of Central Provinces and Berar. He has also been appointed a member of the Industrial Survey Committee and also its *Secretary*. Mr. J. C. Kumarrappa, B.A., F.S.A.A., who is the organiser and Secretary of the All-India Village Industries Association, Wardha, is the Chairman of the Committee.

#### Announcements

The Fifth International Congress for the Unity of Science at Harvard University.—The Fifth International Congress for the Unity of Science will be held at Harvard University from September 5 to 10, 1939.

The theme of the Congress is "The Logic of Science"; interest will centre upon the relation of the concepts, laws and methods of the various sciences. Attention will be devoted to general problems connected with the unification of science, and in particular, with the logic of the physical sciences, the relation of the physical and biological sciences and the relation of the biological and socio-humanistic sciences. There will also be a number of special sessions and symposia connected with special problems and fields.

Professor P. W. Bridgman is the Chairman and Dr. W. V. Quine is the Secretary of the Committee of Arrangements at Harvard University. The Congress is sponsored by the International Committee of the Congress for the Unity of Science, by the International Institute for the Unity of Science, and, in America, by the American Association for the Advancement of Science, the Philosophy of Science Association, the Association for Symbolic Logic and the American Philosophical Association.

A series of twenty monographs entitled "Foundations of the Unity of Science" (and constituting the first two volumes of the "International Encyclopedia of Unified Science"), is now being issued by the University of Chicago Press. It helps to provide a background for the Congress. Three monographs have already appeared, and it is hoped that all the twenty will be in print by the time of the opening of the Congress.

Further information regarding the Congress can be had from Professor C. W. Morris, University of Chicago, Chicago, Illinois.—(*Science*, 1938, 88, 519.)

10th International Congress of Military Medicine and Pharmacy.—The organisers of the Congress have since issued an illustrated book-

let regarding the Congress, giving the history of the Congress since its first meeting in Brussels (1921), the programme of the meeting, general information to delegates, and short accounts on Washington, the headquarters of the Congress, the Army Medical Centre, the Naval Medical Centre and the Medical Field Service School. The questions to be discussed at the Congress are (1) The organization and function of the Medical Services in Colonial Expeditions, (2) Probable casualties in War and methods of calculation, (3) Practical procedures for Anaesthesia and Analgesia in War Surgery, (4) Organization and function of the Military Chemo-Pharmaceutical Service, (5) Emergency treatment and primary apparatus for fractures of the jaws in War, (6) Technical specialization of administrative officers in the medical service, and (7) Oxygen therapy and its practical use with troops on active service.

University of Bombay.—Applications are invited for the post of *Reader in Chemical Engineering* in the Department of Chemical Technology in the scale of Rs. 400-30-550.

Six typewritten copies of the application, made on the prescribed form, together with six copies of certificates, should be forwarded so as to reach the Registrar, University of Bombay, on or before the 1st March 1939.

The name of Mr. Gouripati Chatterjee has been inadvertently omitted in the list of the New Year (1939) awards announced in the previous number of *Current Science* (January 1939, 8, 42). Mr. Chatterjee is the recipient of the *Rai Bahadur* title.

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We acknowledge with thanks, receipt of the following:—

- "Agricultural Gazette of New South Wales," Vol. 50, No. 1.
- "Monthly Bulletin of Agricultural Science and Practice," Vol. 29, No. 12.
- "Journal of Agricultural Research," Vol. 57, Nos. 10-11.
- "The Philippine Agriculturist," Vol. 27, No. 8.
- "Biological Reviews," Vol. 14, No. 1.
- "Communication from the Boyce Thomson Institute," Vol. 10, No. 1.
- "Journal of the Institute of Brewing," Vol. 44, No. 12, and Index to Vol. 44; & Vol. 45, No. 1.
- "Journal of Chemical Physics," Vol. 6, No. 12.
- "Berichte der Deutschen Chemischen Gesellschaft," Vol. 71, No. 12, and Index; Vol. 72, No. 1.
- "Chemical Age," Vol. 39, Nos. 1017-18; Vol. 40, Nos. 1019-21.
- "Chemical Products," Vol. I, Nos. 2 and 3.
- "Experiment Station Record," Vol. 79, No. 6.
- "Transactions of the Faraday Society," Vol. 34, No. 213.
- "Indian Forest Records" (New Series), Vol. 1, No. 7.
- "Forschungen und Fortschritte," Vol. 15, Nos. 1-3.
- "Geological, Mining and Metallurgical Institute of India," Vol. 34, No. 3.
- "Bulletin of the University of Illinois," Vol. 35, Nos. 101 and 102.

"Communications from the Kamerlingh, Onnes Laboratory of the University of Leiden," Nos. 248-50.

"Bulletin of the Health Organisation of the League of Nations," Vol. 7, Nos. 4 and 5.

"Bulletin of the American Meteorological Society, Vol. 19, Nos. 8 and 9.

"Reviews of Applied Mycology," Vol. 18, No. 1.

"American Museum of Natural History," Vol. 43, No. 1.

"Nature," Vol. 142, No. 3609; and Vol. 143, Nos. 3610-12, and Index to Vol. 142.

"Journal of Nutrition," Vol. 16, No. 6; and Vol. 17, No. 1.

"Research and Progress," Vol. 5, No. 1.

"Sky," Vol. 3, No. 3.

"Canadian Journal of Research," Vol. 16, No. 11.

"Journal of the Royal Society of Arts," Vol. 87, Nos. 4492-96.

"Science Progress," Vol. 33, No. 131.

"Indian Journal of Veterinary Science and Animal Husbandry," Vol. 7, Part IV.

"Proceedings of the Royal Academy of Netherlands, Amsterdam," Vol. 61, Nos. 7 and 8.

#### Catalogues

"Recent Books and New Editions of Standard Works on Chemistry," Messrs. Chapman & Hall, Ltd., London.

"Monthly List of Books on Natural History and Science," January 1939. Messrs. Wheldon & Wesley, Ltd., London.

## ACADEMIES AND SOCIETIES

### Indian Academy of Sciences:

January 1939. SECTION A.—S. RANGASWAMI AND T. R. SESHADRI: *Fixation of the Aromatic Double Bonds in the Chromones*. S. RANGASWAMI AND T. R. SESHADRI: *7-Hydroxy-chromone-8-aldehydes and their conversion into chromono-7:8-a-Pyrones*. G. V. L. NARASIMHA MURTI AND T. R. SESHADRI: *The Behaviour of Organic Solids on the Surface of Water*.—The influences of the various groups — COOH, >C=O, NH<sub>2</sub>, etc., in a substance on its behaviour on the water surface are discussed. B. R. SETH: *An Application of the Theory of Finite Strain*. S. CHOWLA: *A Remark on g(n)*. P. SURYAPRAKASA RAO, V. D. NAGESWARA SASTRI AND T. R. SESHADRI: *Reactivity of the Double Bond in Coumarins and Related Unsaturated Carbonyl Compounds. Part VII. Action of Mercuric Acetate on Hydroxy and 4-Methyl Coumarins*. S. S. PILLAI: *On Waring's Problem with Powers of Primes*. S. RAMACHANDRA RAO AND A. S. NARAYANASWAMI: *Diamagnetism of Some Organic Liquid Mixtures*.—Mixtures of polar liquids have been studied. The derivations from additivity in the case of magnetic susceptibility is much less than in the case of density and refractive index. R. VAIDYANATHASWAMI: *On Continuous Functions of a Real Variable*. S. DUTT: *Chemical Examination of the Essential Oil of Ocimum sanctum Linn.*—The essential oil of Tulsi contains over 71% eugenol and 20% eugenol methyl ether, with 3% of carvacrol. B. N. SINGH AND N. K. ANANTHA RAO: *A Photo-Electric Nephelometer for Chemical Analysis*.—The intensity of scattered light from an illuminated column of turbid medium is measured by comparison with the light scattered from a standard of turbidity (frosted glass). S. S. BHATNAGAR, M. B. NEVGI AND G. L. OHRI: *The Diamagnetic susceptibilities of Mercury in Various States of combination*.—It is curious to note that the susceptibility constants from the inorganic compounds are different from those derived from organic compounds. The latter closely correspond to those which are obtained for liquid mercury.

January 1939. SECTION B.—B. SAINI: *The Relation of the Glossopteris Flora with the Gondwana Glaciation*. C. VIRIKKI: *On the occurrence of similar spores in a lower Gondwana Glacial Tillite from Australia and in Lower Gondwana Shales in India*. S. N. DAS GUPTA AND G. S. VERMA: *Studies in the Diseases of Mangifera indica Linn. I. Preliminary Observations on the Necrosis of the Mango Fruit with special reference to the external symptoms of the disease*. G. N. RANGASWAMI AYYANGAR AND D. S. RAJABHOOSHANAM: *A Preliminary Analysis of the Panicle Structure in Sorghum—the Great Millet*. S. B. KAUSIK: *A Cytological Study of Scævola lobelia Linn*. KAILASH CHANDRA MISRA: *A Contribution to the Embryology of the Verbenaceæ*. R. GOPALA AYYAR: *On the Nephridia of Prionospio cirrifera Wren*.

### Botanical Society of Bengal:

January 21, 1939.—ROY BASUDEB: *Pollination Studies in prunus*.—These studies carried out at the John Innes Horticultural Institution, Merton, London, reveal (1) In the self-incompatible Cherry, "Noir-de-Schmidt", treatment of the styles with the growth-promoting substances (phenyl acetic acid, naphthol acetic acid and indol acetic acid) has no effect on pollen tube growth. (2) In the self-incompatible plums "Coes Golden Drop", when self-pollinated, the pollen tubes are arrested in the styler tissue. (3) In compatible and partially compatible pollinations in some plum varieties, it was found that in addition to pollen tubes which travel the full length of the style and effect fertilisation, tubes also occur which are arrested in the styler tissue indicating two pollen genotypes. (4) In *Prunus divaricata* (diploid) pollinated with *Prunus domestica* (hexaploid), 6 per cent. of fruits set and in the reciprocal pollination 15 per cent. of fruits reached maturity. (5) The rate of growth of a diploid pollen tube in a hexaploid style is more rapid than that of hexaploid pollen tube in a diploid style.

### Meteorological Office Colloquium, Poona:

January 27, 1939.—MR. M. P. VAN ROOY: *Meteorological Organisation in South Africa*.