

## CENTENARIES

## Galilei, Galileo (1564-1642)

GALILEO GALILEI, a famous Italian astronomer, was born at Pisa, February 15, 1564. He was admitted to the school of medicine of the University of Pisa in his 19th year. However he took more interest in mathematics and while studying Archimedes he wrote his paper *Hydrostatic balance*, which secured for him the lectureship in mathematics in his own university in 1589. It was about this time that he gave the celebrated demonstration from the leaning tower of Pisa. In 1592 he became professor of mathematics in the University of Padua, first for a short time and eventually for life. His popularity soon became so great that a hall with a thousand seats was found inadequate for his audience.

In 1609 he constructed his first telescope with a magnifying power of three. In a few months, he constructed one which magnified thirty times. With its aid, he made a series of observations such as (1) the mountains and caves of the moon, (2) forty stars in the Pleiades, (3) the discs of planets, (4) the satellites of Jupiter, (5) Saturn's ring, (6) the phases of Venus, (7) Sun spots, and (8) the rotation of the Sun.

In 1612 he published his *Treatise on floating bodies*. In 1632 he brought out his *Dialogues on the Ptolemaic and Copernican systems*.

Twice he had to face inquisition, first in 1614

and again in 1634 on the charge that he evaded by the publication of his *Dialogues* his promise in 1614 not to support the Copernican theory. This book was proscribed and he was condemned to prison and was ordered to recite once a week the seven penitential psalms! Even to obtain this sentence, Galileo had to abjure, on the Gospels, his belief in the Copernican theory. It is reported that, rising from his knees after his solemn abjuration, he whispered to a friend "It moves for all that."

In 1636 Galileo discovered the diurnal libration of the lunar disc; shortly thereafter he became blind. In 1641 he was just developing the idea of using pendulum in clocks.

Galileo's works were published in thirteen volumes at Milan in 1811. A more complete edition came out at Florence in sixteen volumes in 1858. A national edition was published at Florence in twenty volumes in 1890 *et seq.* A second issue of this edition was commenced in 1929 and completed in 1938.

Galileo had begun a continuation of his *Dialogues* and was occupied with a study of the force of percussion, when he was attacked with fever and palpitation of the heart which, after two months of suffering, terminated fatally January 8, 1642, one year before Newton was born.

S. R. RANGANATHAN.

University Library,  
Madras.

## SCIENCE NOTES AND NEWS

**Neanderthal Man and His Culture in Central Asia.**—Information reaches us through American journals of important anthropological and archæological discoveries made by Russian scientists in Southwestern Uzbekistan, not far from the Soviet-Afghan frontier. The excavations were conducted by A. P. Okladnikov under the auspices of the Historical Institute of Material Culture, Leningrad, and the Uzbekistan Committee for the Preservation and Study of Monuments of Material Culture, Tashkent. At the foot of some of the hills of the Guissar Mountain Range there are numerous grottos and caves made by stream action. Mousterian caves were discovered among them in 1938-39, with the characteristic stone and bone implements. The fragmentary skeleton of a child of seven or eight years of age was found in association with the implements. Reconstruction of the skull at the Anthropological Institute in Moscow revealed typical Neanderthaloid features, such as the absence of canine fossæ, prominent teeth, lack of chin, low cranial vault, strongly sloping forehead, pronounced brow-ridges, etc. Among the associated fossii relics were bones of the Siberian goat, leopard and the wild horse. There were also

signs of a large bon-fire having been made in connection with some ritual.

The Neanderthal man of Uzbekistan must have been a keen hunter, for the wild goat is a very elusive animal, and in the leopard he would have found a competitor.

To us in India, the discovery of Neanderthal man not far from our frontiers is not without significance. There is every probability that representatives of the Neanderthaloid stock lived in N. India, and a careful survey of caves and rock-shelters in the glaciated regions is now well worth attempting.

A. AIYAPPAN.

**Coin Accessions in the Madras Museum.**—The composition of the hoards coming into the Museum annually from treasure trove in the province required study before dispersal by distribution to other institutions or by sale, as little progress had been made in establishing the affiliations and the chronology of coins associated in hoards. So, the hoards that came in during the decennium were analysed and studied with respect to their composition and they were not dispersed till some definite results had been attained. The chronology and

the geographical distribution of the different varieties of *panams* have benefited most by this measure of caution; it is now possible to say, with some approach to accuracy, which varieties occur where and when,—which is indeed a great advance considering how ignorant we are about them. The issue of the so-called 'Rajaraja' type of copper seems to have persisted even after the rise of the *Setupatis*. Certain *varahas* attributed to Krishnadevaraya have to be reassigned as they are found in association with the *varahas* issued by Haidar. The gradualness with which the *varahas* of the East India Companies displaced the various Vijayanagara issues is brought out strikingly, and the efforts of the Companies to improve on the quality of the metal are obvious. From the extent of the wear of the various issues that made up two hoards of Roman gold aurei it was possible to determine the rate at which gold coins became worn in the course of circulation. A new class of die-struck *puranas* came from the vicinity of Jaggayyapetta which seems to mark the transition from the well-known class of punch-marked *puranas* to the much later *varahas* which bear a symbol in the middle and four more along the periphery. A large hoard of silver coins found in the Ramnad District having contained about 125 coins, it was possible to piece various bits of the legends together and to settle that the issue was that of Ravivarman Kulasekhara (c. 1316 A.D.), perhaps the most famous of the Kerala rulers of mediæval times.

T. G. A.

**The Effect of Organic Dye Ions on the Electrokinetic Potential.**—Jordan (*Trans. Faraday Soc.*, 1941, 37, 441) has determined the electric moment of the double layer at the glass-water interface in the presence of five dyestuffs by the streaming potential method. The streaming potential is found to change with time initially attaining a steady state slowly. The rate of flow of the solution was also found to decrease on continuous streaming. The results are interpreted on the basis of the aggregation of the dye at the surface of glass. There is a close correlation between this effect and micelle formation in solution.

K. S. G. D.

**Artificial Regeneration of Dry Fuel Forests.**—Mr. A. L. Griffith's work on the technique of regenerating the dry fuel crops in the scrub jungles of Madras has already been noticed in *Current Science* (1940, 9, 436). In a recent number of *Indian Forest Records* (New series, 4, *Sylviculture*, No. 4, Delhi, 1941), Mr. Griffith summarises the data of some 222 "small scale" experiments on which his recommendations are based. These experiments are comprehensive in their scope and were designed to provide answers to the questions: how to plant (sow, transplant or stump-plant)? When to plant (the effect of the season in which the seeds are sown, etc.)? What is the best size and age of stumps for planting? And what effect the burning and "working" of the soil has on the resultant crop? The author confirms his

earlier conclusions which generally favour direct sowing in late June or early July after the site has been burnt and worked; soil working after germination, while recommended in all cases is considered to be absolutely essential in the case of backward crops. As for stump planting, the experiments indicate that two-year-old stumps planted late in September or early October give optimum results. Thus, Mr. Griffith's work extending over a period of seven years provide the experimental background to an admittedly difficult problem. It is interesting to record that the solutions suggested by the author have evoked considerable interest in the lay press also, the public at long last appreciating the role which these humble scrub jungles do play in providing fire and charcoal for the community. The widespread use of charcoal in internal combustion engines is ultimately directly coupled with the regeneration of the dry forests and this is one more reason for welcoming the lead which Mr. Griffith has given to the solution of regenerating dry fuel forests.

**Colourisation of Vegetable Ghee.**—The oil-soluble vegetable dye "Kamala" (from *Mallostus philippinensis*) which is available in India and is non-injurious, is suggested by the Forest Research Institute, Dehra Dun, for distinctive colouring of vegetable ghee (hydrogenated fat).

For colouring Vanaspati ghee, to distinguish it from genuine ghee, the Punjab Government recently passed legislation that vanaspati be coloured deep orange and that aniline dye (orange D) be used for the purpose. Besides this dye being unavailable in India, objections to the use of aniline were that its consumption had toxic and cumulative effects.

It was, therefore, proposed by the Institute to the Agricultural Marketing Adviser to the Government of India that Vanaspati ghee may be coloured with the oil-soluble vegetable dye "Kamala" which is stated to be non-injurious in small doses. It is not yet fully established if this vegetable dye has any cumulative effect on the human system and arrangements are being made to have this part of the problem investigated.

**The Golgi Apparatus in Protozoa.**—Since 1924 when Nassanow announced that the contractile vacuole in Protozoa possessed, in association with it, a substance which reduced osmium tetroxide, and homologised it with the Golgi apparatus of the metazoan cell, many important memoirs on the Golgi apparatus of the Protozoa have appeared, but the position still remains obscure regarding the homology and function of the Golgi apparatus in these lowly organised animals. Much of the recent work on this subject has been done in Prof. J. B. Gatenby's laboratories at Dublin and two recent memoirs on the subject, one by Gatenby himself (*Proc. Roy. Irish Acad.*, 46, Sec. B, 161) and the other by J. D. Smyth (*Proc. Roy. Irish Acad.*, 46, Sec. B, 189) help in clarifying the issues. Working on a number of protozoans belonging to various groups, both the authors come to very similar conclusions regarding the

disposition and possible homology of the Golgi apparatus. In many protozoans the wall of the contractile vacuole reduces osmium tetroxide. In *Chilomonas*, this wall divides into two when the cell divides and is distributed between the daughter cells. But in a few cases, the original contractile vacuole and cortex remain in one daughter cell while the other cell develops these structures independently.

But the fact of greatest importance that has emerged from these studies is that the osmiophilic material is not always associated with the contractile vacuole but may occur scattered in the cytoplasm and it is this position that is more primitive and more typical. This is shown by the fact that the accumulation of the osmiophilic material around the contractile vacuole is by no means necessary for the functioning of the vacuole. For, in primitive forms like *Amœba*, *Nebela* and *Arcella*, the osmiophilic cortex is not present.

The present position appears to be that the osmiophilic material alone represents the Golgi apparatus and its association with the contractile vacuole is secondary; the two parts must have arisen independently in the evolution of the cell. Regarding the function of the Golgi apparatus in the Protozoa, its association with the contractile vacuole would seem to suggest, at least in those forms where this association exists, a possible relationship with the function of the latter structure. It is now known that the contractile vacuole is osmoregulatory (Zolger, Wolff, Yocom), but the precise relationship, if any, has still to be determined as the evidence now available is conflicting. Further work is needed before any conclusive views can be developed regarding the function of the Golgi apparatus in the Protozoa.

**Decapod Larvae from Madras Plankton.**—In a publication issued from the Madras Museum (1941), Mr. M. K. Menon has given a systematic account of the larvæ of a number of species belonging to the important families Penaeidæ, Sergestidæ, Hippolytidæ, Alpheidæ and Palæmonidæ of the sub-order Natantia, and Callinassidæ and Porcellanidæ of the sub-order Reptantia under the order Decapoda. Full descriptions of the available stages are given.

**Smut Diseases of Wheat** are found to cause considerable damage to wheat crop in India, and extensive work has been carried out with good success in combating the disease. The loose smut of wheat caused by *Ustilago Tritici* (Pers.) Rostrup, and *Urocystis Tritici* Koernicke, popularly called the flag smut of wheat are widely distributed in Punjab and United Provinces. *Urocystis Tritici* has a wider distribution extending up to Baluchistan and South Afghanistan. The loose smut of wheat is ovaricolous and the disease is internally seed-borne. Consequently hot water treatment usually adopted for disinfecting the seeds before sowing is not only not practicable but also causes injury to the seeds impairing the viability. The flag smut of wheat is foliicolous and damage is caused only when it appears in

epidemic proportions. Seeds harvested from affected plants are found to possess non-viable seeds.

The only effective method of controlling the devastating effects of these two smuts is the breeding of smut-resistant varieties. Comprehensive work carried out in the Mycological Section of the Imperial Agricultural Research Institute (B. B. Mundukur and B. P. Pal, *Ind. J. Agri. Sci.*, 11, 675) indicates very promising results. Varieties of wheat including Imperial Pusa 114, 120 and 165, are immune to loose smut, whereas IP. 4 and 111 showed high resistance to flag smut. It has been noticed that varieties of wheat resistant to the loose smut are susceptible to the flag smut. But varieties like *Sword*, *Igachikugo*, *Dundee* and others show a very high degree of resistance to both the smuts. It is well to remember that in selecting a good variety of wheat, importance is attached not only to smut resistance, but also to the economic importance of the particular variety. M. J. T.

**Grape Cultivation in India.**—With a view to giving in brief the important features of the survey of marketing of grapes in India, the Agricultural Marketing Adviser has published an abridged version of the main report which is expected to be of special interest to fruit-growers and merchants, schools, colleges and agricultural and other institutions connected with rural development work.

The survey holds out the prospect of India trebling the area under grapes thus adding nearly Rs. 70 lakhs to the agricultural income as at present derived from that crop. It is surprising, says the report, that the area and quantity produced in India are so small, particularly as the yield per acre obtained surpasses that in most other grape-growing countries of the world.

In the propagation of vines it is considered desirable that there should be a system of registration of approved nurseries, some of which at present sell stocks which are not genuine. Very little work has been done in classifying existing varieties and in evolving new varieties and types of grapes likely to be more profitable than those under cultivation. It is suggested that at least one or two experimental stations in grape-growing areas might undertake this work.

**Meteorological Department, Burma.**—Soon after the separation of Burma from India in 1936, an organisation for meteorological work was set up in that country, modelled on the lines adopted by the Meteorological Department of the Government of India. The first report now issued by the Director deals with a period of four years (1937-41) and contains much information of interest regarding the various activities of the department and the arrangements that are available for an efficient weather service for the country. The initial stage is usually the most difficult one, and thanks to the generous help of the India Meteorological Department, it was possible to plan the organization of the service on a scale large enough to cope up with the

responsible duties of the issue of weather forecasts for the use of shipping in Burma waters and for the purposes of aviation over a large tract of country. The main features of the organization are given in the opening chapter together with a brief historical sketch, and Chapters II to IV contain an account of the work done in connection with marine and aviation meteorology and of the arrangements for storm warning, etc. In the fifth chapter there is a detailed description of the work of the Headquarters office at Rangoon, where the administrative and forecasting duties are carried out. The Department maintains two auxiliary centres at the airports at Mingledon and Akyab, four pilot balloon observatories and twenty-nine second class meteorological stations. There are besides 240 raingauge stations co-operating in the rainfall registration of the country. The department has to its credit a record of much useful and substantial work carried out during the period of four years since its foundation.

T. P. B.

**Central Revenues, Control Laboratory:** (Report of the Chief Chemist, 1939-40).—The most important event recorded in the Report is the transfer of the Control Laboratory to a new building of modern design in New Delhi, fitted with the latest equipment. It is gratifying to note that research work and advisory work for other Government Departments are included in the functions of the Control Laboratory. Among the more important investigations carried out are a scheme submitted to the Central Board of Revenue for carrying out experiments on the industrial use of Gypsum from Khewra, and work on the production of Crystal salt from the East Lake bitterns area at Sambhar. The total number of samples tested during the year was 88,787 as against 65,946 in 1938-39, and 44,937 in 1937-38. It would be seen that the number has doubled within the course of two years. On the whole, the Report is a record of solid and useful, though not spectacular, work.

**Indian Forest Ranger College, Dehra Dun.**—The progress report of the College for 1940-41 discloses that 35 students were in their second year of training during the year. Of these, all except one were probationers of either Provincial Governments or Indian States; one came from Nepal. Seven students secured the Honours certificates while higher standard certificates were awarded to 28 students. The health, discipline and work of the students were satisfactory. The Director's report says that the Government of India have reviewed the present practice of admitting batches of students once in two years and have decided to make admissions hereafter annually so as to have overlapping classes. The expenditure on the College during the year was Rs. 44,918 and was more than covered by the Revenue of Rs. 50,030 (consisting mainly of the training fees from the students amounting to Rs. 48,750). While there is no question of the high standard of the training at Dehra Dun, this comparatively high cost per student has

been one of the grounds on which some foresters advocate the development of regional forestry instruction centres in India.

**Indian Central Cotton Committee.**—At the meeting of the Indian Central Cotton Committee held on the 24th January 1942, the following resolution moved by Sir Purshotamdas Thakurdas was unanimously carried:—

"In view of the necessity and urgency of avoiding any further glutting of the Indian cotton market with short and fair staple cotton hereafter, the buyers of which have been cut off from the Indian market owing to the present hostilities which may run for a period which cannot be estimated at present, the Indian Central Cotton Committee requests the Government of India to urge all Provincial Governments and States in India, especially those in areas where short and fair staple cotton is being grown, to reduce the existing acreage under such cotton forthwith by at least 50 per cent. As alternative to short and fair staple cotton, such other crops may be encouraged as may suit the conditions of each area, preference being given to food grains, adequate stocks and reserves of which will continue to be a matter of vital national importance for a number of years to come. To stimulate and accelerate such change Provincial Governments and States should be urged to subsidise the same by such means as may be most effective according to local conditions in each Province and State, including the supply of free or cheap seeds and the provision of funds and facilities for the sinking of new and the repair of old wells. The Committee requests every Provincial and State Government concerned to notify the public regarding the action taken by them as early as possible not later than 1st March next."

At the half-yearly meeting held, which concluded its deliberations on the 24th January, several questions of interest to the cotton industry received attention. A sub-committee was appointed to consider the uses to which Indian short staple cotton can be put. The sub-committee which will function in collaboration with the Mill-owners' Association, will consider what work should be taken up immediately and, in particular, will examine the various suggestions made in respect of the use of the short staple cotton for the manufacture of blankets, for mixing for purposes of spinning, for lining of irrigation channels and as regards chemical finishes to cloth made from short staple cotton; the sub-committee will also examine the Cotton Diversion Programme of the U.S.A. and see how far similar methods can be adopted in this country.

The Committee sanctioned a scheme for studying the nutritional values of American type of cotton seed as cattle food. The investigation will be carried out under the guidance of the Director of Agriculture, Punjab.

**Indian Ecological Society.**—The First Annual General Meeting of the Indian Ecological Society was held at Baroda on 4th January 1942, with Prof. S. P. Agharkar, the President of the Society, in the Chair.

The following were elected Office-bearers of the Society for the year 1942:—

*President:* Prof. S. P. Agharkar; *Vice-Presidents:* Dr. N. L. Bor and Dr. S. L. Hora; *Hon. Secretary and Treasurer:* Dr. F. R. Bharucha; *Members of the Executive Council:* Mr. P. W. Davis, Mr. E. A. Garland, Prof. P. W. Gideon, Dr. R. Misra, Dr. L. A. Ramdas and Dr. T. S. Sabnis.

The meeting terminated with an address by the President on "The Present Position of Ecological Work in India".

**Royal Asiatic Society of Bengal:** Dr. C. S. Fox, Director, Geological Survey of India, was elected President of the Society for the year 1942, at the meeting of the Society held on the 2nd February 1942.

The Joy Govind Law Gold Medal of the ROYAL ASIATIC SOCIETY OF BENGAL has been awarded to Dr. K. N. Bahl, D.Phil., D.Sc., F.R.A.S.B., Professor and Head of the Department of Zoology, Lucknow University, for "conspicuously important researches in Zoology in Asia".

**University of Calcutta.—**

Dr. K. S. Krishnan, D.Sc., F.R.S., has been appointed to the Adharchandra Mookerjee Lecture-ship for the year 1941. He will deliver a course of lectures on "The Physics of Metals".

The Sir Devaprasad Sarvadhikari Medal for the year 1941 has been awarded to Sir C. V. Raman, Kt., M.A., Ph.D., D.Sc., LL.D., F.R.S., Nobel Laureate, who has signified his acceptance of the same with thanks.

**Mysore University.—**Mr. E. G. MacAlpine, Director of Public Instruction in Mysore, has been appointed Acting Vice-Chancellor of the Mysore University *vice* Mr. N. S. Subba Rao, M.A., Bar-at-Law, on leave prior to retirement.

**Delhi University.—**H. E. the Chancellor of the Delhi University has been pleased to appoint the Hon. Mr. N. R. Sarkar to be the Pro-Chancellor of that University for a period of three years with effect from January 31, 1942.

**Andhra University.—**The Government of India have, on the recommendation of the Indian Medical Council, given recognition to the M.D. and M.S. Degrees of the Andhra University.

**Bombay University.—**The Registrar of the Bombay University announces that all Examinations of the Bombay University will be held this year *as usual* and that rumours that they are to be postponed are unfounded.

**Diploma in Military Studies.—**The Senate of the Bombay University has approved the programme to institute a Diploma in Military Studies to be awarded to such persons as have obtained the certificates 'A' and 'B' issued by the Military authorities and have undergone the prescribed course and have passed the qualifying examination for the Diploma. This will enable the University to start the course as soon as conditions permit.

The Government of Bombay have appointed a Committee, with the Rt.-Hon. M. R. Jayakar

as Chairman, to investigate and report on the question of a University for Maharashtra.

**Lucknow University.—**The Faculty of Science agreed to the principle of imparting instruction in Science subjects through the medium of the language of the province and appointed a Committee to make proper recommendations. The Committee consisted of the following:

Dr. B. Sahni, F.R.S., *Convener*; Dr. Gorakh Prasad (Allahabad University); Dr. M. R. Siddiqi (Osmania University); Dr. K. N. Bahl (Lucknow University); Dr. S. H. Zaheer (Lucknow University); Dr. S. N. Shukla (Lucknow University); Dr. S. K. Pande (Lucknow University); Dr. K. N. Mathur (Lucknow University); Dr. A. N. Singh (Lucknow University).

It is understood that the recommendations of the Committee are the following: (1) The principle of imparting instruction in the University in the language of the province be accepted. (2) The medium of instruction and examinations should be Hindustani, which signifies the spoken language of the province supplemented by words taken from Sanskrit, Persian, English and other languages. (3) The script for all scientific work written or published should be Roman, supplemented by new letters and signs wherever necessary. (4) The language of books should be left to the discretion of individual authors. (5) The B.Sc. students appearing in the examinations in 1944 may be permitted to answer questions either in English or in Hindustani written in Roman script at their choice. (6) Teachers are permitted to deliver lectures to the B.Sc. class in Hindustani. (7) The medium of instruction for B.Sc. classes from 1944-45 session shall be Hindustani.

Individual teachers may be permitted in special cases by the Executive Council of the University to deliver lectures in English.

Information has been received from Professor Henry S. Sigerist, Director of the Institute of the History of Medicine of the John Hopkins University, Baltimore, and the Secretary of American Association of the History of Medicine, that Dr. D. V. Subba Reddy, Department of Physiology, Andhra Medical College, Vizagapatam, India, has been elected as a *Corresponding Member* of the American Association of the History of Medicine.

**Science and the World of To-day.—**Since the publication of the article under this title in *Current Science* (Vol. 11, No. 1, pp. 1-3), we have received a copy of the address delivered by Sir T. S. Venkatraman in opening the Science and Arts Exhibition at the Victoria College, Palghat, in October 1941. That Sir T. S. Venkatraman is in substantial agreement with the views contained in the article will become clear from the perusal of the following excerpts:—

"The steadily increasing control which man has been able to obtain over the elements like water and air and various forces of Nature is obvious ...

"It is unfortunate that the advances on the destructive side have been equally great ...

"These opposite results from sets of activities both called 'Scientific' unerringly point to the main case of this disharmony and its solution ...

"If now science appears to have failed mankind and given us a disjointed world, this has largely resulted from two defects of present-day science and its activities, viz., (1) the lack of harmony between the different sciences and (2) the neglect of what may be called the 'spiritual' side of man and of the great 'humanities'. ... To my mind the glaring defect in present-day advance has been its specialisation and resultant narrowness of vision ignoring the allied sciences. The other defect has been the neglect of the study of man as a human being. We have made extensive studies of man as a machine, but not of man as a spiritual entity. ...

"The terrible war now in progress and its repercussions indicate that the future of the world—if there is a future at all—lies in the establishment of greater harmonies between different sciences, between different nations and last but not least, attention to the spiritual values of man. The day-to-day science of to-day is but a step and preparation towards the development of a 'higher, deeper and more harmonious scale'. Its defects include its narrow-mindedness and its over-emphasis on material values. It is to be hoped that events now taking place all over the world will enable man to realize his defects, enlarge his scientific outlook and establish a brotherhood which alone can bring us 'Peace, Contentment and Happiness. ..."

**Sigcol Glassware.**—We have received a copy of the new Catalogue of "Sigcol" glassware, dated November 1941, handed over to us by their distributors, MESSRS. ADAIR, DUTT & Co., LTD. It has a brief but attractive introduction and contains a list of some 54 items. The enterprise of Messrs. Scientific Indian Glass Co., Ltd., in introducing a glass suitable for the scientific requirements of the country is now commonly known by nearly every scientist all over India. It is a pleasure to note that several attractive additions have been made and an important contribution is in adding a glass the physical and chemical properties of which correspond to those of other well-known brands of heat resisting glass having a very low coefficient of expansion. We are sure this will attract the attention of all concerned. For convenience of the users, rubber corks to fit the several types of glassware, have been added. A copy is available on request from the distributors.

#### ASTRONOMICAL NOTES

The Sun will be at the vernal equinox on March 21 at 11<sup>h</sup> 30<sup>m</sup> I.S.T.

**Eclipses.**—An eclipse of the Moon, visible generally throughout India, will occur on March 3, the circumstances of which are as follows:

	h	m	
Moon enters umbra	4	1	a.m. I.S.T.
Middle of Eclipse	5	52	,, ,,
Moon leaves umbra	7	42	,, ,,

The magnitude of the eclipse will be 1.567 (taking the Moon's diameter to be equal to 1.0).

On March 16, there will occur a partial eclipse of the Sun; but the phenomenon will not be visible in this country.

**Planets during March 1942.**—Both Mercury and Venus will be morning stars; the former reaches greatest western elongation from the Sun (27° 21' W) on March 8, when it will be visible near the eastern horizon for over an hour before sunrise. Venus will attain greatest brilliancy on March 9, the stellar magnitude at the time being -4.3. The four major planets Mars, Jupiter, Saturn and Uranus (all in the constellation Taurus) can be seen in the western sky in the early part of the night. Jupiter will be in quadrature with the Sun on March 3.

T. P. B.

#### MAGNETIC NOTES

The month of January 1942, was much less disturbed than the preceding month. There were 14 quiet days, 16 days of slight disturbance and one of moderate disturbance during January 1942, as against 9 quiet days, 20 days of slight disturbance and 2 of moderate disturbance during January 1941. The day of the largest disturbance during January 1942, was the 17th and the quietest day was the 21st.

The characteristics of individual days was as follows:

Quiet days	Disturbed days	
	Slight	Moderate
1, 7, 10, 11, 13, 20, 21, 23-26, 30, 31	2-6, 8, 9, 12, 14-16, 19, 22, 27-29	2

During the month no magnetic storms were recorded while one moderate storm was recorded during January 1941. The mean character figure for the month is 0.58 as against 0.77 for January 1941.

M. R. RANGASWAMI.

#### SEISMOLOGICAL NOTES

During the month of January 1942, three moderate and three slight earthquake shocks were recorded by the Colaba seismographs as against five moderate and six slight ones recorded during the same month in 1941. Details for January 1942 are given in the following table:

Date	Intensity of the shock	Time of origin I. S. T.		Epicentral distance from Bombay	Co-ordinates of the epicentre (tentative)	Depth of focus	Remarks
		H.	M.				
January 1942				(Miles)		(Miles)	
18	Slight	22	7	1580			
24	Slight	2	59	3610			
27	Moderate	18	59	5030		80	
29	Slight	14	56	5430			
30	Moderate	17	42	1950	Epicentre in the neighbourhood of north-west Sumatra		
31	Moderate	23	0	2110		110	

### ANNOUNCEMENTS

Lady Tata Memorial Trust.—Scientific Research Scholarships, 1942-43.

1. Applications are invited for six Scientific Research Scholarships of the value of Rs. 150 per month each for the year 1942-43.

2. The Scholarships are open to men and women, and will be tenable for a period of twelve months commencing from the 1st July 1942. Any or all the Scholarships may be extended for a further period of twelve months, within the discretion of the Trustees. All old scholars who desire renewal should re-apply.

3. Applicants, who must be of Indian nationality, must be Graduates in Medicine or Science of a recognised University. They must undertake to work whole-time and will be debarred from private practice. In the duration of the period of his scholarship or award the recipient of the benefit shall devote himself to the work before him to the entire satisfaction of the Trustees, who reserve the right to withhold payment on the recommendation of the Advisory Committee.

4. The subject of scientific investigation which they may select must have a bearing directly or indirectly on the alleviation of human suffering from disease.

5. Applications must be forwarded through the Director of a recognised Research Institute or Laboratory where the candidate proposes to work and must be accompanied by a letter from the Director stating that he has critically examined the details of the proposed Research, that he approves of the general plan and that he is willing, as far as possible, to guide and direct the investigation and give laboratory facilities.

6. Applications must be addressed to the Secretary, The Lady Tata Memorial Trust, Bombay House, Bruce Street, Fort, Bombay, so as to reach him *not later than 15th March 1942.*

Central Sales Branch of the Imperial Agricultural Bureaux.—The following press notice

has been received:—Specialists in the various branches of agricultural research and teaching will be interested in a new development in the organization of the Imperial Agricultural Bureaux. Some time ago it was decided that, for the sake of increased efficiency and economy, all work connected with subscriptions, sales, and distribution of the journals and other publications of the majority of the Bureaux should now be centred in one office. For this purpose, a Central Sales Branch has been organized, with its offices at the Agricultural Research Building, Penglais, Aberystwyth. In future all correspondence dealing with sales and distribution should, with the exceptions noted below, be so addressed. Correspondence on all other matters must still be addressed to the Deputy Director of the Bureau in question.

The only publications not dealt with by the Central Sales Branch are those of the Imperial Institute of Entomology (The Assistant Director, Imperial Institute of Entomology, 41 Queen's Gate, London, S.W.7) and the Imperial Mycological Institute (Director, Imperial Mycological Institute, Perry Lane, Kew, Surrey), and *Nutrition Abstracts and Reviews* (Secretary, Imperial Bureau of Animal Nutrition, Rowett Institute, Bucksburn, Aberdeen).

### Manufacture of Internal Combustion Engines.

—The Government of India have set up an Exploratory Committee consisting of Mr. J. C. Mahindra (Chairman), Prof. A. Viswanath, Mr. P. F. S. Warren, Dr. M. Ishaq, Mr. J. E. Syrett and Mr. B. D. Basil, to examine the production of components or complete internal combustion engines offering prospects of immediate development with particular reference to war demands and the future development of an internal combustion industry in India.

Suggestions on the manufacture of internal combustion engines, specially by those who have been investigating the problem, may be communicated to the Secretary, Exploratory

Committee on Internal Combustion Engines,  
Clive Street, Calcutta.

Certain Aspects of Pure and Applied Photochemistry.—The following paragraphs relating to the summary of Prof. Qureshi's address (*vide* Supplement, *Current Science*, January 1942, p. 32) have been inadvertently omitted:—

The greatest achievement of applied photochemistry is the modern art of photography. The recent advances have been mainly the discovery of sensitisers for the infra-red and the discovery of de-sensitisers. The effect of these developments is remarkable. Formerly, plates had to be exposed in sufficiently strong light and developed in the dark. Now, it is possible to expose the plate in the dark and develop it in strong light. On the theoretical side, the mechanism of latent image formation has been satisfactorily interpreted by Gurney and Mott. Their theory gives a satisfactory explanation of several phenomena such as high intensity and low intensity reciprocity failure, Herschel effect and the recent work on the latent image formation at low temperatures.

Photohalogenation is of considerable theoretical and practical importance. The technical applications have been covered by a number of patents; but only a few have been exploited commercially. Lieser and Ziffer and Snelling have worked out the details for the production of methyl chloride from methane. Geiger and Gibbs and Ellis have described processes for chlorinating the side chain in aromatic compounds. The use of sulphuryl chloride as a chlorinating agent in photohalogenation has been described by Kharash and Brown.

Photopolymerisation again presents a field which may be expected to yield valuable results from the theoretical as well as the practical point of view. The photopolymerisation of acetylene, ethylene, vinyl esters, styrene, isoprene and butadiene has been studied. Several rubber-like products have been isolated.

Photochemical reduction of carbon dioxide has attracted a lot of attention on account of its fundamental importance in the photosynthesis by plants. The earlier attempts to reduce carbon dioxide in aqueous solution by light were made by Usher and Priestley and by Moore and Webster. Baly and co-workers as well as Dhar and co-workers have reported positive results regarding the photo-reduction. But the work of Spoehr, Bauer and Rebmann, Bauer and Büchi, Porter and Ramsperger, Burk, Qureshi and Mohamad, Bell and Scheile has shown that the photo-reduction of carbon-dioxide does not occur under the conditions employed by the former authors.

K. S. G. D.

Indian and Eastern Chemist.—We are informed that owing to unexpected circumstances the Proprietors of this Journal, Messrs. Leonard Hill, Ltd., of London, have decided to dis-

continue its publication in India, although the Bengal Pharmaceutical Association offered to take over, finance and conduct the Journal as its own official organ.

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We acknowledge with thanks receipt of the following:—

"Journal of the Royal Society of Arts," Vol. 89, Nos. 4597, 4599, 4600.

"Journal of Agricultural Research," Vol. 63, Nos. 9-10.

"Agricultural Gazette of New South Wales," Vol. 52, Part 12.

"Indian Journal of Agricultural Science," Vol. XI, No. 6.

"Annals of Biochemistry and Experimental Medicine," Vol. 1, No. 3.

"Biochemical Journal," Vol. 35, No. 7.

"Biological Reviews," Vol. 16, No. 4.

"Journal of the Indian Botanical Society," Vol. 21, Nos. 1 and 2.

"Journal of the Indian Chemical Society," Vol. 18, No. 10.

"Chemical Products," Vol. 4, Nos. 11-12.

"Experiment Station Record," Vol. 85, No. 6.

"Indian Forester," Vol. 68, No. 2.

"Transactions of the Faraday Society," Vol. 37, Nos. 10 and 11.

"Indian Farming," Vol. 3, No. 1.

"Review of Applied Mycology," Vol. 20, Part 10.

"Indian Medical Gazette," Vol. 76, No. 11.

"Mysore University Journal," Vol. 2, Pt. 11.

"Nature," Vol. 148, Nos. 3753, 3754, 3756, 3758-60.

"Indian Journal of Physics," Vol. 15, Part 5.

"Journal of Research" (National Bureau of Standards), Vol. 27, No. 5.

"Canadian Journal of Research," Vol. 19, No. 10.

"Science," Vol. 94, Nos. 2448-49.

"Science and Culture," Vol. 7, Nos. 7-8.

"Spolia Zeylanica," Vol. 23, Part 1.

"Indian Trade Journal," Vol. 144, Nos. 1856-59.

"Indian Journal of Veterinary Science and Animal Husbandry," Vol. 11, Pt. 4.

#### BOOKS

"Ramalinga Reddy Sastyabdapurti Commemoration Volume," Pt. I—Sciences. (Andhra University, Waltair), 1941. Pp. 234.

"Experimental Physical Chemistry," by W. G. Palmer. (Cambridge University Press, London), 1941. Pp. xi + 321. Price 12s. 6d.

"Animal Life, in Story and Picture with Special Reference to Ceylon," by J. R. Bhatt, Maradana, Colombo, Ceylon, 1941. Pp. iii + 253. Rs. 3.

"Sir Shanti Swarup Bhatnagar Commemoration Volume," edited by V. S. Puri and P. L. Kapur. (Indian Chemical Society, Lahore Branch, Lahore), 1941. Pp. vi + 112. Price Rs. 2-8-0 or 5s.