India is represented on the *Comité d'honneur* by Rai Bahadur Sarat Chandra Roy of Ranchi, and on the Permanent Council by Mr. K. P. Chattopadhyay, Prof. G. S. Ghurye, Dr. B. S. Guha, Mr. J. P. Mills, Dr. A. Aiyappan and Dr. B. K. Chatterji, the last two being National Secretaries for India. The functions of these representatives are "mainly to ensure that the work of the Congress is known to all students of the subjects with which it is concerned; to bring to the notice of the Congress Bureau all projects for collaborated research in which assistance is offered or desired by their compatriots; and to take the necessary measures to ensure that the next session of the Congress (which should be in 1942) is announced to Indian anthropologists and ethnologists, and that suitable communications are made by them". The official language of the Congress is French, but communications are permitted to be in German, Italian, English and Spanish.

A. AIYAPPAN.

SCIENCE NOTES AND NEWS

Study of the Oil from the Seeds of Star-anise (Illicium; Natural order: *Magnoliaceæ*). —Messrs. J. W. Airan and S. V. Shah (Rajaram College, Kolhapur), write:

The physical and chemical constants of the fixed oil (Petrol Ether extract, yield 55 per cent. on the weight of the decorticated seeds) from the seeds of Star-anise, which is reputed to be of medicinal value (Nadkarni, *Indian Materia Medica*, 1927, pp. 463) have been determined. The oil has a reddish yellow colour and does not possess any characteristic taste. The data obtained are summarised in Table I.

TABLE I

Specific Gravity at 25° C.	0·9128
Refractive Index at 25° C.	1·4677
Acid Number	11·62
Saponification value	194 ; 195
Iodine Value	88 ; 89
Reichert-Meissl value	0·746 ; 0·758
Polenske Number	0·28
Acetyl Value	8·41 ; 8·33
Unsaponifiable matter	0·5676 %

* * *

An Absolute Determination of the Acceleration due to Gravity.—In the *Philosophical Transactions of the Royal Society*, (A), 1939, 238, 65–123, J. S. Clark has given an account of a new determination of the acceleration due to gravity at the National Physical Laboratory, 51° 25′ 14″ N. and 0° 20′ 21″ W., and 10 metres above sea-level. A reversible pendulum of light metal (Y-alloy) of an I-section and one metre in length was swung from a knife-edge in vacuum. Blocks of non-magnetic delta metal were attached to the ends of the I-section rod, two exactly similar blocks B and C being fixed on opposite sides, and two more blocks D and E attached to C at one end. The blocks B and C carry planes which are supported on the knife-edge. The pressure in the tube E inside which the pendulum oscillated was less than 5×10^{-3} mm. Three platinum resistance thermometers were used to obtain the temperatures at three different parts of the pendulum. Electrical signals were produced by means of a platinum contact piece attached to the pendulum; the closing of the contact was made to short-circuit a portion of the grid bias battery of a valve circuit. This relay operated the marker which recorded the oscillations of the pendulum on a chronograph record on which another marker recorded the oscillations of the N.P.L. quartz crystal clock. A special support made of girders was used, and the knife edges were of hardened steel. The effect of the yield of the support was determined according to the method of Schumann (1899) by means of observations on the amplitudes of two pendulums swung from the support. There were 100 divisions to a second on the chronograph record and readings could be taken correct to 0·05 of a division. By observing 12,195 vibrations the half period was found to be 1·002891$_5$ sec. The length of the pendulum was found by means of a standard end-gauge. The effects of a change of amplitude and the buoyancy, drag and viscous resistance of the residual air were found to be negligibly small. Corrections were made to allow for the changes in the effective length of the pendulum on account of (1) variation of temperature; (2) the reduced pressure (the length was found to have increased in vacuum by 0·6μ); (3) the elasticity of the support (the length increased by 1·5μ); (4) the compression of the knife-edge (the length increased by 0·5μ); (5) the elasticity of the rod (the length diminished by 0·7μ); and (6) the curvature of the knife-edges (the effect on g varied from 0·0001 to 0·001 gal.). The following is the author's estimate of the likely errors on account of the various factors affecting the determination of the periods T_1 and T_2:

Temperature	± 0·6 mgal.
Amplitude	± 0·3 mgal.
Clock Rate	± 0·3 mgal.
Interpretation of Chronograph Record	± 1·1 mgal.
Radius of knife-edges	± 0·1 mgal.
TOTAL	± 1·3 to 1·4 mgal.

The final value obtained for g at the above location was 981·1815 gal. T. S. S.

* * *

Variations in Cosmic Ray Intensity and Cosmic Ray Bursts.—The analysis of cosmic ray intensity measurements carried out on voyages on the Pacific Ocean (Piara S. Gill, *Phy. Rev.*, 1939, 55, 1151) reveals that the minimum of cosmic ray intensity near the equator averages 10·3% less than that at Vancouver (lat. 54°·8). The origin of the latitude effect

can be accounted for in terms of the minimum energy required for primary electrons to produce mesotrons capable of traversing the atmosphere. The observed atmospheric temperature variations (P. S. Gill, *Phy. Rev.*, 1939, 55, 429) support Blackett's theory that it is due to changes in elevation of the mesotron producing layer with the thermal expansion of the atmosphere. The small amplitude of sidereal time variation (A. H. Compton and P. S. Gill, *Phy. Rev.*, 1939, 55, 233A) seems to show that the rays do not come directly from outside our galaxy.

The latitude effect for very large cosmic ray bursts is found to be about 30% (W. P. Jesse and P. S. Gill, *Phy. Rev.*, 1939, 55, 583). This result leads M. S. Vallarta (*Phy. Rev.*, 1939, 55, 583) to suggest that the primary particles responsible for large bursts may carry a multiple of the electronic charge in addition to possessing a large mass. The value of 10^{-4} for the creation probability of a burst by a mesotron of about 2×10^{10} ev. energy in a thickness of 12 cm. of lead (reported by P. S. Gill and M. Schein at the symposium on cosmic rays at the University of Chicago at the end of June of this year) leads to a cross-section per nuclear particle of about 2×10^{-30} cm.^{2} comparable to that estimated by Euler and Heisenberg for nuclear explosions. C. K. S.

* * *

A Contribution to Perkin's Reaction.—Gunther Lock and Erwin Bayer (*Ber.*, 1939, 72, 1064) have added further data on the effect of substituents on the yields of cinnamic acid by Perkin's reaction. Mesityl-aldehyde gave 0·5 per cent. and dinitro-mesityl-aldehyde 60 per cent. yields of the corresponding cinnamic acids prepared under the same conditions. Polynitrobenzaldehydes react so energetically that complete decomposition occurs. The effect of different halogens in the *para*-position which reduces the yield, the effect of molecular weight in homologous derivatives and of the methoxyl group have been determined. The effect of some of these conditions on Knovenagel's method of preparing cinnamic acid have also been studied and the authors conclude that though recently Knovenagel's method is more usually employed for cinnamic acid, Perkin's method generally gives higher yields.

* * *

Addition of Maleic-Acid-Anhydride to Terpene Hydrocarbons.—Diels and Alder, Dupont have already shown that maleic acid anhydride combines easily and rapidly with terpene hydrocarbons having conjugated double bonds as α-terpinine and phellandrenes forming hydrated substituted phthalic acid anhydrides. It was suggested that it can become a standard method of examination. Kurt Hultzch (*Ber.*, 1939, 72, 1173) has however found that terpenes without conjugated double bonds also give crystalline addition compounds when the components in 1:1 proportion are heated. Thus products from limonene, carenes and terpinolene have been carefully prepared and studied. Naves drew attention sometime ago that some primary and secondary alcohols as cyclohexanol, benzyl alcohol react with maleic anhydride.

* * *

The problem of replacing with metal the celluloid used for film negative has at long last been solved (according to the *Deutsche Bergwerkszeitung*, No. 165, July 1939) and a demonstration of the "Metal film" was held at Berlin last month before experts and representatives of the Press.

The metal films shown at the demonstration were of two kinds; an iron strip coated with aluminium, 0·05 mm. thick; and pure aluminium strips of 0·08 mm. thickness. The metal films are thus appreciably thinner than the celluloid films and in the case of the aluminium film actually lighter; the iron film is only slightly heavier weighing about 1 g. more than the celluloid film for every metre length of standard size.

The chief advantages of the metal film are, non-inflammability, freedom from crumpling and creasing of the light-sensitive material often experienced in celluloid films, and the greater reflecting power of the metal surface.

While the new metal films can be projected on the standard "Talkie" equipment with minor adaptations, it is not expected that the celluloid film will be replaced by metal in the near future. But, for time-exposures in microphotography, for educational films subject to frequent handling, and for film archives, the metal film is specially suited. A particular advantage offered for archives is that *both* sides of the film can be used thus economising expense and space.

The metal film was developed by Semenitz under the auspices of *Amt fur Technik*, Berlin.

EMMENNAR.

* * *

Fauna of Dal Lake, Kashmir: Leeches.—M. L. Bhatia has reported on a collection of leeches taken in the Dal Lake, Kashmir (*Bull. Dept. Zool. Punjab Univ.*, Vol. II, 1–17) and finds from forms in the collection, one which is a new species of Theromyzon, called *T. mathaii*. The four forms described fall under two families. *Glossiphonia complanata*, *Theromyzon mathaii* and *Hemiclepsis marginata* belong to Glossiphonidæ and *Erpobdella octoculata* belongs to Erpobdellidæ. Detailed descriptions of the four species are given. In addition egg capsules of *Erpobdella octoculata* never before recorded from Indian forms have been described.

* * *

Corpuscles in Blood of Invertebrates.—The variety of cellular elements found in the blood of invertebrates is more abundant than that in vertebrates. But the blood cells of the former are more primitive than those of the latter. Moreover, a transformation of one cell into another is possible in case of adult healthy invertebrates and in many points the hæmolymph cells of invertebrates are similar to the embryonic blood cells of vertebrates. These are some of the conclusions that T. Ohuye (*Sci. Rep. Tohoku. Imp. University*, Dec. 1938, 13, No. 3, 359) draws from an examination of the blood fluid of 44 species of Invertebrates and Protochordates, belonging to

practically all the phyla. He does not find any fundamental difference between the erythrocytes of vertebrates and those of invertebrates. The granular inclusions found in both erythrocytes as well as leucocytes appear to be similar in their chemical reactions and probably the Erythrocytes are modified leucocytes. The lymphocyte (hyaline colourless variety of leucocytes) which is probably the simplest leucocyte, is capable according to the author, of a varied differentiation dependent on environmental factors and is probably the progenitor of all other elements found in the invertebrate body fluid. Granular leucocytes with polymorphic nuclei are however, rare in invertebrates.

* * *

African Palms as Useful Plants.—An exhaustive account of the occurrence, nativity, distribution and economic uses of the more important African Palms has recently appeared (Barret, *Der Tropenpflanzer*, 1939, 42, 185).

As compared with the Indo-Malayan region, Africa is said to be very poor in palms but it is characterised by a number of endemic genera. Of these *Jubœopsis caffra* is very interesting on account of its close affinity to the cocoanut palm. The Oil Palm (*Elaeis guineensis*), is the most important of the African Palms and apart from its oil, is the chief source of toddy for the natives; the fruit flesh is also eaten. The cultivated forms are very widely distributed while the true wild forms are found only in deep inland forests. Cocoanut (*Cocos nucifera*), date (*Phœnix dactylifera*) and palmyra (*Borassus œthiopium*) are other well-known palms found in abundance. The African palmyra differs from the Indian forms in having a prominent swelling at the top portion.

Of the various other palms, *Raffia*, so called on account of the fronds, with its 30 species, forms the richest genus. They are gigantic palms with pinnatifid leaves. The fronds which individually measure about 20 meters are responsible for their gigantic appearance, the stem itself not being particularly high. The well-known *Raffia* bast, obtained from *R. Ruffia*, is employed in making mats, floor carpets, wall screens, curtains, bags, cases for cigars and cigarettes, hats, etc. Very thin fibres are used for making clothes. Large sacks are manufactured for packing coffee and sugar. This palm is very easy to cultivate and is extraordinarily quick growing; in four years the plant attains an astonishing size.

The cabbage palm, apart from its well-known use as an edible delicacy, is also used by the natives for extraction of oil; the palm-wine is obtained from the seeds. The sweet fruits of the flabellate palms, *Hyphœne*, are highly valued by the natives. The *Rattan* is poorly represented in the African forests. The pigmy palm, *Chamœrops humilis* is found wild. Its finely divided petiole gives the export article, *Crin d'Afrique*. The vegetable horse-hair from the petiole, used for stuffing pillows, etc., is immune from the attack of insects.

There are references in this interesting article to many other palms, the numerous uses to which they are put by the African natives, and their industrial possibilities.

The only important work dealing with Indian Palms appeared in 1926 (E. Blatter, *Palms of British India and Ceylon*, Oxford University Press), but this work needs to be brought up to date. It would be a move in the right direction if the Botanical Gardens in India undertake the task of collecting and growing the world palms, in view of their economic importance.

N. KRISHNASWAMY.

* * *

The Solubility of Cements.—The solubility of cement is one of the factors affecting the deterioration of dams. An investigation has been carried out at the Building Research Station (*Research Technical Paper* No. 26, 1939, H.M. Stationery Office, London, 6*d*.) on methods for comparing the relative resistance of cements to leaching when soft waters percolate through concrete. The investigation is described in this publication and the results show that a relatively simple test, developed originally in Sweden, is adequate for practical purposes.

* * *

The Detection of the Carbon Bisulphide Vapour.—Leaflet No. 6 in the series issued by the *Department of Scientific and Industrial Research* on methods for the detection of toxic gases in industry deals with carbon bisulphide vapour (published by H.M. Stationery Office, 3*d*. net). The situations where this vapour may occur in dangerous concentrations include works where the following are manufactured:—artificial silk (viscose), chemicals, coal gas, vulcanized and "dipped" rubber goods, and tar distillation products.

In high concentrations it may cause delirium, coma, and death from respiratory failure. The better known effects, however, are those of a severe chronic poisoning of the nervous system with a great variety of symptoms, varying in degree from slight fatigue and giddiness to serious mental derangement, blindness, and paralysis.

It is stated that the permissible concentration of carbon bisulphide vapour in the atmosphere of work-rooms should be kept well below one part in 30,000 of air, and preferably not above one part in 100,000.

The standard method adopted for the detection of low concentrations of carbon bisulphide vapour in industry depends upon its interaction with diethylamine and copper acetate, to produce a coloured compound, copper diethyldithiocarbamate.

A series of standard colours is first made up by the addition of small quantities of the reagents to dilute alcoholic solutions of carbon bisulphide of known strength. Samples of the air under test are then drawn, by means of a handpump of definite capacity, through a bubbler of alcohol containing the reagents, and the mixture allowed to stand. The colour developed is compared with the series of standards, and from the number of pump strokes made and of the colour obtained, the concentration is estimated by reference to a table.

Concentrations down to 1 part in 120,000 can be estimated in this manner with 20 strokes, or less, of the pump.

Any traces of hydrogen sulphide in the atmosphere will also produce a colour with the reagent. These can, however, be removed (if not more than 1 part in 10,000) by drawing the air sample first through a filter-paper impregnated with lead acetate.

Full instructions for carrying out the tests are contained in the leaflet.

* * *

University of California Publications.—One of the recent numbers of the *Bulletins of the Geological Department, University of California* (Vol. 24, No. 8) contains a valuable paper by V. L. Vanderhoof on the Miocene Sirenian *Desmostylus*. After a thorough examination of the fossil remains of this form, the author has shown that this animal is undoubtedly a member of the Sirenia, and that *Cornwallius* must be considered to be ancestral to *Desmostylus*. The stratigraphic range of *Desmostylus* appears to be limited to the upper middle Miocene and lower upper Miocene while *Cornwallius* is confined to upper Oligocene. There is a complete Bibliography at the end, bearing on this subject and the paper is illustrated with numerous photographs and sketches.

Another of the *Bulletins* (Vol. 24, No. 9) is devoted to the study of Mount St. Helens, a recent Cascade Volcano, by Jean Verhoogen. After giving a brief account of the general geology of the region, the author proceeds to record a detailed description of the deposits due to the volcanic activity, including a petrographic account of the lavas and their chemical composition—from which he shows that Mount St. Helens contrasts with the other Cascade volcanoes hitherto described. The paper is well illustrated.

* * *

Scientific Expedition to Central Pacific.—Plans for the most extensive scientific survey yet undertaken of the vast island-studded Central and South Pacific Ocean, with a view to solving by geophysical methods some of the fundamental geological problems of the Pacific, have been announced by Dr. Gilbert Grosvenor, President of the National Geographic Society. The Expedition, which will start in September, will be in the field for a year and will be conducted by the National Geographic Society and the University of Virginia with the cooperation of the United States Coast Guard.

Arrangements for the scientific expedition, which will be made on a Coast Guard Cutter, have been reached in consultation with President Roosevelt, Secretary Hull and Under-Secretary Welles, Secretary Morgenthau and Rear-Admiral Russel R. Waesche, Commandant of the Coast Guard, who are particularly interested in the contributions to navigation, both by water and air, that will be made by the magnetic studies which are a part of the expedition's schedule. Concurrently with the carrying on of the scientific work, the Coast Guard will make a survey of the present and future needs for navigational aids and radio facilities to assist marine and air commerce.

The Expedition will be led by Professor Wilbur A. Nelson, Head of the School of Geology of the University of Virginia; the Expedition's personnel will include geophysicists, a geographer, a cartographer and a photographer provided by the National Geographic Society; experts on gravity from the U.S. Coast and Geodetic Survey; specialists on magnetism from the Department of Terrestrial Magnetism of the Carnegie Institute of Washington; and a naturalist from the Smithsonian Institution who will specialize in marine biology. The National Broadcasting Company will send radio engineers with the Expedition to investigate radio phenomena, and will arrange a number of broadcasts by members of the scientific party from remote islands.

The geophysicists will set up stations on the various islands and from them will make gravity and magnetic determinations. At the same time the geology and structure of the islands will be studied. Although a number of magnetic determinations were made in the area a decade and more ago, no gravity work has been carried on there; and never before has there been an opportunity to tie together magnetic, gravity, and geologic observations in this important region of the Pacific. The simultaneous findings in the three fields will make it possible to reach scientific conclusions that could not be deduced from the same information collected singly in any of the fields. The expedition will set up major bases on twenty or more islands; from each major base from 10 to 50 other islands will be examined.

The Expedition also will be supplied with charts showing the accurately located "epicenters" of earthquakes that have occurred in the Pacific over many years—that is, the locations directly above the points of origin of the earth waves. The scientists will correlate this information with that which their instruments reveal.

The area, 4½ million square miles in extent, which will be covered by the Expedition lies in general south of the Hawaiian Islands, east of Australia and New Guinea and north-east of New Zealand.

* * *

A Windmill Generator for Charging Batteries.—A small windmill-generator for charging a six-volt storage battery is described in *National Research Publication* No. 813. (Copies obtainable from the *National Research Council*, Ottawa, Canada. Price 25 cents.) An automobile-type generator with high-duty armature and standard cut-out, a strong mast, and a windmill blade are the main items in the unit. The first two of these may easily be obtained ready for use.

The blade may be fashioned from a piece of British Columbia spruce, white pine, maple, or yellow birch measuring at least 5′ 6″ × 1′ 6″ × 6″. Detailed instructions for making the blade are supplemented by two charts that should make the job a comparatively easy one.

It is stated in the publication that if the bearings and commutator of the generator are relatively free from friction this unit should begin charging at a wind velocity of eight miles per hour.

* * *

The Indian Lac Research Institute, Ranchi.—The *Annual Report* of the Institute for the financial year 1938–39 constitutes an impressive

record of substantial progress. Fundamental work on lac which is one of our economically important products, has been sadly lacking in this country; it is a matter of extreme gratification to observe that fundamental work on the constitution of lac has now been earnestly taken up under the direction of its present director. In the past, investigations in this field were conducted mostly in the laboratories of Europe and America and we have no doubt that should the same rate of progress be maintained the centre of research in this field will soon shift to Ranchi.

Researches on the modification of lac resins with a view to improve its properties have yielded results of technical interest. Experiments on the extraction of kiri, the dewaxing of shellac, the washing of seed lac and the production of lac-oil varnish, have been fruitful and suggestive. Shellac has been shown to be capable of being modified for rapid moulding and a scheme of co-operative research with bakelite-moulding firms has been inaugurated.

The activities of the Institute have been demonstrated before an assembly of about 80 manufacturers who wish to adopt improved methods of manufacture. This is a fine example of what should be done by other institutions in the country which claim to prosecute industrial research. We wish to warmly congratulate the Director of the Institute on the substantial contributions which he and his colleagues have made to the Indian Lac Industry and we hope that the Indian Lac Cess Committee will secure the continued services of its present Director, under whose auspices the Institute will have an illustrious and useful career.

* * *

Haffkine Institute, Bombay.—The report of the Haffkine Institute for the year 1938 which has just reached us, portrays the activities of the Institute in several useful directions, particularly in the production of prophylactic vaccines and in the diagnostic work for the hospitals. The fulfilment of these two routine but vitally important duties claimed the major portion of the resources of the Institute both in funds and personnel.

Nevertheless, Lt.-Col. S. S. Sokhey, the Director, has been able to maintain and expand the research activities of the Institute; this is largely due to the generous aid of the Indian Research Fund Association which provided both funds and personnel for the prosecution of important lines of investigation. For plague and pharmacological researches, the Association contributed about Rs. 50,000. Two voluntary workers and a Lady Tata Memorial Scholar have participated in the research activities of the Institute.

There has been a long-overdue and welcome addition of a department of medical entomology to the Institute which is to undertake investigations on the rôle of insects in the spread of disease.

During the year the Institute collaborated with the Public Health Department in an enquiry into the outbreak of typhoid in the City of Bombay, which has yielded results of great importance to the public health of the province. The value of such collaborative efforts is undoubted; there are several public health problems which need immediate investigation; but unless the staff of the Institute which is inadequate, is strengthened by a field unit, such problems vitally important as they are, cannot be tackled. It is hoped that there will be more of such collaborative effort in future.

* * *

Agra Central Observatory.—An important change will be effected in the activities of the Agra Observatory with the shifting of the Observatory from Agra to Delhi and the opening of a Forecasting Centre in Delhi decided upon by the Government of India.

The Aerological Observatory at Agra was established in 1914 purely as a research centre.

The rapid development of upper air organisation since 1924 has resulted in considerable expansion of the Observatory's work. The application of upper air wind data to aviation has grown and in such a way as to surround the original functions of the Agra Observatory with an overgrowing mass of other duties particularly of organising and running a large number of pilot balloon observatories in the interests of the ever-increasing need for aviation. The decision of the Government of India to establish a forecasting centre at Delhi has provided a suitable opportunity for the consolidation and expansion of the activities of the upper air observatory. After the shift of the upper air observatory from Agra to Delhi, it will come in closer touch with aviation interests and will have access to upper air charts as used in day-to-day forecasting.

Agra controls a network of 34 stations over India and the Persian Gulf, which let off pilot balloons filled with hydrogen, twice or thrice a day. Information about the direction and velocity of the winds in the upper air, which is of great value for weather forecasting and so important for aviation, is obtained by following the course of these balloons.

The Observatory trains the staff for outstations and supplies balloons, cylinders of compressed hydrogen and all other equipment necessary for their maintenance. The daily observations from the pilot balloon observatories are telegraphed to the various forecasting centres which issue weather forecasts for aircraft, shipping and the general public. The observations taken at the stations along the regular air routes are wirelessed to planes in flight and the aerodromes. At the pilot balloon stations the data collected are scrutinised and computed in various forms suitable for publication for the benefit of the aviation and other interests and of meteorological research.

* * *

Indian Central Cotton Committee.—The half-yearly meeting of the Commitee was held in Bombay on the 3rd and 4th August, Mr. P. M. Kharegat presiding. The Commitee reviewed the annual progress reports and progammes of work of the various schemes financed by it. Among the more important schemes which were provisionally extended are: The Punjab Botanical Scheme (1 year), The Punjab Physiological Scheme (3 years), The Punjab Cotton Jassid Investigation Scheme (3 years), The Bengal Comilla Cotton Scheme (2 years), The

Hyderabad Bollworm Clean-up Scheme (1½ years) and the Surat Seed Distribution and Extension Scheme (3 years). The schemes for the improvement and development of cotton in Cutch State, for co-ordination of research work in black-headed cricket in Sind and Baluchistan, and for the improvement of cotton crop in the Kaira District (North Gujerat) were sanctioned.

The Committee noted that its proposals for the establishment of a pilot plant for the manufacture of chemical cotton at a cost not exceeding Rs. 50,000 had been sanctioned by the Government of India.

The recognition by the *Bureau International Pour La Standardisation Des Fibres Artificielles* of the Technological Laboratory of the Committee as a neutral Testing House for India to test artificial silk yarns was noted.

* * *

Abundance of Hilsa Crop in 1939.—At the ordinary monthly meeting of the *Royal Asiatic Society of Bengal*, held on the 7th August, Dr. S. L. Hora communicated a note relating to his observations on the abundance of Hilsa crop this year. "Sir K. G. Gupta and later writers on the fisheries of Bengal were generally of the opinion that *Hilsa* is becoming scarce and recommended the establishment of hatching stations to introduce artificial propagation for replenishing the rivers of Bengal. Further, it is still fresh in our memory that the *Hilsa* crop was very poor in 1937 and 1938. Its great abundance in 1939, therefore, has come as a pleasant surprise to the fish-eating population of Bengal and consequently this fact has received considerable attention in the public press." In explaining the probable causes for this unexpected increase in the yield of the fishery for this year, Dr. S. L. Hora gave a brief account of the life-history and the periodic rise and fall in the annual yield of the *Hilsa* fishery.

* * *

Syntomosphyrum indicum.—Information is now available regarding the spread of this chalcid which was introduced into Australia in order to check the fruit fly menace (*Curr. Sci.*, 1938, 7, 302).

In the latter half of the year 1935, Mr. W. B. Gurney, B.Sc., Entomologist of the Department of Agriculture, Sydney, New South Wales, visited India and for some months carried out investigations to recover parasites of fruit flies which might possibly be of value if introduced into New South Wales to attack fruit fly there. Several species of wasp parasites of the genus *Opius* (*Braconidæ*) were developed and batches of parasitised Indian fruit fly pupæ were despatched to Australia. Some adults of these Braconid wasps developed on arrival in Sydney, but failed to oviposit and develop in the laboratory in local fruit fly maggots (*Chætodacus*) in fruit presented to them.

In November, 1935, batches of living adult parasitised chalcid wasps (*Syntomosphyrum indicum*) developed from Indian fruit flies (*Chætodacus*), were sent to Sydney, N.S.W., by air mail. Unfortunately, they arrived at a time when no fruit fly maggots were obtainable to expose to these living parasites, and they died out without progeny. However, Mr. Gurney arranged for the Government Entomologists at Bangalore and also at Coimbatore to forward further batches, if obtainable.

In October, 1937, through the courtesy of the Entomologist at Bangalore, a batch of fruit fly pupæ was sent from Bangalore. From these a few of the chalcid wasp parasite *Syntomosphyrum indicum* were hatched in the quarantine insectary of the Department of Agriculture, Sydney. The Entomological Branch here was able to obtain numerous fruit fly maggots and developed increasing numbers of this introduced parasite in the Insectary until, over a period of 5 months, *viz.*, December 1937 to April 1938 some 260,000 living specimens of this introduced parasite were developed and liberated in New South Wales and Queensland and Fiji.

Since that date the aim has been to endeavour to recover in the field living specimens of this parasite during the summer season, *viz.*, from October 1938 till May 1939. So far, however, not a single parasite has been recovered to indicate that this parasite has become established here. Fruit fly maggots and pupæ will be collected throughout the next summer season 1939–40, in a further endeavour to prove whether even a few of the parasites succeeded in surviving in certain of the warmer districts of New South Wales or Queensland. It was always felt that, as these are tropical parasites they might be unable to face the winter conditions of N.S.W., but there was more hope that they might succeed in establishing themselves in the northern sub-tropical areas of N.S.W., or in the tropical parts of Queensland. Fiji also having a tropical climate, the parasite may succeed in establishing itself there.

It will be seen, therefore, that though a very successful development of this parasite was made in the laboratory, and a very big field liberation made, yet, until actual recoveries are made in the field, no claim whatever for success in establishing this parasite or in estimating any results of its presence can be made.

* * *

The Syndicate of the University of Bombay have awarded the **Moos Gold Medal** for the year 1938–39 to Dr. N. C. Chatterjee, Entomologist at the Forest Research Institute and College, Dehra Dun, for his D.Sc. thesis in Zoology. Dr. Chatterjee took the A.I.I.Sc. diploma in 1935 and D.Sc. in 1938. He is a graduate of the Allahabad University and is the first candidate to achieve this distinction in Zoology from the Bombay University.

* * *

Lucknow University.—Messrs. A. Ramachandra Rao and K. Jacob who have been working under Prof. B. Sahni, F.R.S., have submitted their theses which have been approved by the examiners for the D.Sc. Degree of the Lucknow University. The work of these two authors has been warmly commended by the examiners.

Mr. A. Ramachandra Rao's thesis comprised several papers (some published and others unpublished) on the Jurassic Flora of India. (1) The anatomy and affinities of *Taeniopteris spatulata* McClelland. (2) Two petrified strobili from the Rajmahal Hills, Behar. (3) Notes on the anatomy of some silicified ferns from the Cretaceous of Germany. (4) On a collection of

Jurassic plants from the Rajmahal Hills, Behar. (Jointly with Prof. B. Sahni.) (5) *Rajmahalia paradoxa* gen. et sp. nov., and other Jurassic plants from the Rajmahal Hills. (Jointly with Prof. B. Sahni.) (6) Further observations on *Rajmahalia paradoxa*. (Jointly with Prof. B. Sahni.)

Mr. Jacob's thesis comprised five papers (two published and three unpublished) nearly all of them dealing with the Jurassic Flora of India and Ceylon. The full titles of the papers are as follows: (1) Fossil plants from Sakrigalighat in the Rajmahal Hills. (2) On the structure and affinities of *Tinpaharia*, a new Genus of petrified ferns from the Rajmahal Hills. (3) Jurassic Plants from Tabbowa. (4) On *Protocyathea rajmahalense* sp. nov., A Cyatheaceous Tree-fern, with notes on the geological distribution of the Cyatheaceæ. (5) Fossil Algæ from Waziristan.

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Dr. Wilbur A. Sawyer, Director of the International Health Division at the Rockefeller Foundation, has been awarded the Leon Bernard Foundation Prize by the Health Committee of the League of Nations at its meeting held on May 1, 1939. The Committee "wished to pay a tribute to the valuable work done by Dr. Sawyer in combating yellow fever, and in the sphere of medico-social protection, which has benefited the populations of a large number of countries".

The prize consists of a Bronze Medal bearing the effigy of Leon Bernard and a sum of 1,000 Swiss francs. This is the first award made by the Foundation.

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The Growth, Properties, and Structures of Wood.—The inherent variability of timber is an important obstacle to its most effective utilization. A recent report (*Forest Products Research Special Report No.* 5, 1939, H.M. Stationery Office, London, 9*d*.) reviews the present position of knowledge of the anatomical structure of wood, and of the physico-chemical composition of the cell walls, in relation to growth conditions on the one hand and physical and mechanical properties on the other, summarizing the conclusions reached during recent investigations carried out at the Forest Products Research Laboratory. The relative importance of the features determining the properties of wood is discussed from a practical standpoint, and indications are given of the influence of growth conditions on the physico-chemical composition of the wood substance.

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At a meeting of its executive committee held on Friday, the 18th August 1939, the **Association of Technologists, Bangalore,** formed *three* sub-committees: (1) to complete a list of Scientific Instruments and apparatus available in the various laboratories and other institutions in Bangalore; (2) to draw up a list of Scientific Journals and periodicals available in the various libraries and institutions in Bangalore; and (3) to report on the design and construction of laboratories specially suitable for Indian conditions.

* * *

The Finch Electron Diffraction Camera.—The technique of the study of surface structure of single crystals and polycrystalline specimens by electron diffraction methods has reached a high degree of perfection, thanks to the work of Professor Finch and his collaborators. The electron diffraction camera often yields far-reaching results which cannot be envisaged either by microscopic study or by X-ray diffraction methods. The microscope reveals only the coarse structure of the surface of a specimen; X-rays on the other hand give us information about the internal structure of a specimen; but an electron beam, of the same wave-length as the X-rays usually employed, has extremely low penetrating power so that it can be used for the study of the fine structure of surfaces. The three methods, *viz.*, microscopy, X-ray diffraction and electron diffraction, used in conjunction should, therefore, yield all available information about the internal and surface structures of any specimen. While microscopes and X-ray equipments for such work are readily available on the market it is comparatively more difficult to get an electron diffraction camera incorporating all the refinements such as those introduced by Professor Finch. **Messrs. W. Edwards & Co.,** are to be congratulated in having supplied this long-felt need. Their electron diffraction camera, of the Finch type, illustrated in their special folder, is a well-designed complete unit. One can foresee a time when this apparatus will be as common as a microscope in research and technical laboratories.

S. R. S.

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Announcements :

Imperial Dairy Institute, Bangalore.—Students will be admitted this year for the Indian Dairy Diploma course. The course commences in November and is of 2 years' duration. The course includes technical and practical training in dairy and animal husbandry subjects, management of dairy farms, co-operative milk unions, etc.

The Institute also arranges for a post-graduate course (15 months) for agricultural and veterinary graduates and for officers working in the allied Government departments who are desirous of obtaining post-graduate and advanced research experience in animal husbandry.

A well-equipped bacteriological and chemical laboratory is attached to the Institute.

National Centre for Distribution of Biological Products.—The *Biochemical Standardization Laboratory,* All-India Institute of Hygiene and Public Health, Calcutta, has been constituted a 'National Centre' for the distribution of standard preparations of biological products to those who ask for them. If laboratories intimate their requirements, the Centre will import and supply the appropriate standards.

Standards have been established for many products by the Biological Standardization Committee of the League of Nations, and the actual "standard preparation" of each kind is maintained and issued to research and manufacturing laboratories by specified Institutes, such as the

National Institute for Medical Research, Hampstead (under the Medical Research Council) and the State Serum Institute, Copenhagen. For convenience of distribution of the "standards" to those that require them, it has been found advisable to form "National Centres" in countries where biological products are manufactured. These centres receive duplicates of each standard at intervals and issue them to working laboratories for the control of their preparations.

The following are the standards which will be available at the Laboratory:—

Insulin;
Pituitary (Posterior lobe) Standard Powder;
Oestrus-producing Hormones (i) Hydroxy-Ketonic form, (ii) Mono-benzoate of Di-hydroxy form;
Male Hormone (Androsterone);
Corpus Luteum Hormone (Progesterone);
Neoarsphenamine;
Sulphersphenamine;
Ouabain or Strophanthin;
British Standard Tinct. Strophanthus;
Standard Digitalis Powder;
Adrenaline and Scillaren Standards; and also
Chorionic Gonadotrophin (from pregnancy urine).

Messrs. **The Cambridge University Press**, London, announce that the following are among their forthcoming publications. Sir Arthur Eddington: *The Philosophy of Physical Science*; Prof. R. A. Millikan: *Cosmic Rays;* Dr. A. S. Eve: *Lord Rutherford*; Prof. August Krogh: *Osmotic Regulation in Aquatic Animals.*

Forestry Abstracts.—The Imperial Forestry Bureau issues a quarterly journal entitled *Forestry Abstracts.* This will provide a survey in English of the current literature of forestry from all parts of the world. Each issue will normally include special reviews of the literature of particular subjects, notes on annual reports, and abstracts classified by subject. In the abstracts the aim is to epitomize the contents of each paper so as to enable the reader to judge of its value as a contribution to knowledge. In addition to papers in English, French and German, attention will be directed to those published in the less familiar languages.

The first number appeared in June 1939. *Forestry Abstracts* will appear quarterly in September, December, March and June, four numbers constituting a volume. Indexes will be provided annually.

The annual subscription will be:—For residents of the countries of the British Commonwealth and the Anglo-Egyptian Sudan who send their subscriptions direct to the Bureau, 20*sh.* and for all other subscribers, 25*sh.*

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We acknowledge with thanks, receipt of the following:—

"Journal of Agricultural Research," Vol. 58, Nos. 10–11.

"Agricultural Gazette of New South Wales," Vol. 50, No. 7.

"The Philippine Agriculturist," Vol. 28, No. 2.

"Indian Journal of Agricultural Science," Vol. 9, Pt. 3.

"L'Agricultura Coloniale," Vol. 33, Nos. 2–3 and 6.

"Allahabad Farmer," Vol. 13, No. 3.

"Biochemical Journal," Vol. 33, No. 6.

"Berichte der deutschen chemischen gesellschaft," Vol. 72, No. 7.

"Contributions from the Boyce Thompson Institute," Vol. 10, No. 3.

"Journal of Chemical Physics," Vol. 7, No. 7.

"Chemical Age," Vol. 41, Nos. 1045–1047.

"Journal de chimie physique," Vol. 36, Nos. 4–5.

"Russian Journal of General Chemistry," Vol. 9, Nos. 4–9.

"Chemical Products," Vol. 2, No. 3.

"Comptes Rendus," (DOKLADY), Vol. 23, Nos. 1–7.

"Experiment Station Record," Vol. 80, No. 6 and Index to Vol. 79.

"Indian Forester," Vol. 65, No. 8.

"Forschungen und Fortschritte," Vol. 15, Nos. 19–21.

"Transactions of the Faraday Society," Vol. 35, No. 219.

"Genetics," Vol. 24, Nos. 3–4.

"Bulletin of the Health Organisation (League of Nations)," Vol. 8, Nos. 1–2.

"Transactions of the Mining, Geological and Metallurgical Institute of India," Vol. 35, Pt. 2.

"Review of Applied Mycology," Vol. 18, No. 6.

"Calcutta Medical Journal," Vol. 36, No. 1.

"The Mathematics Student," Vol. 6, No. 4.

"Bulletin of the American Meteorological Society," Vol. 20, No. 5.

"Indian Medical Gazette," Vol. 74, No. 7.

"Indian Journal of Medical Research," Vol. 27, No. 1.

"Nature," Vol. 143, No. 3634; Vol. 144, Nos. 3635–3638 and Index to Vol. 143.

"Journal of Nutrition," Vol. 18, No. 1.

"Canadian Journal of Research," Vol. 17, No. 5.

"Journal of Research (National Bureau of Standards)," Vol. 22, Nos. 1–2.

"Sky," Vol. 3, No. 9.

"Science Progress," Vol. 34, No. 133.

"Indian Trade Journal," Vol. 134, Nos. 1725–1729.

Catalogues:

"Scientific and Technical Books, June 1939" (Edward Arnold & Co). "The Cambridge Bulletin," No. 84 (Summer 1939).