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## SCIENCE NOTES AND NEWS

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### Award of Research Degrees

The M.S. University of Baroda has awarded the Ph.D. Degree in Physics to Shri V. P. Bhatt for his thesis entitled "Study of Some Metal Crystals"; the Ph.D. degree in Mathematics to Kumari K. Savithri for her thesis entitled "Quadratic Forms over the Field of Rational Functions in One Variable over a Finite Field"; and the Ph.D. degree in Zoology to Shri N. V. Vallyathan for his thesis entitled "Studies on Certain Metabolic Adaptations in the Avian Pectoralis and the Blood".

Bombay University has awarded the Ph.D. degree in Physics to Shri Y. R. Waghmare of Physical Research Laboratory, Ahmedabad, for his thesis entitled "Theoretical Studies in the Structure of Light and Intermediate Nuclei".

### Symposium on 'Utilisation of Metallurgical Wastes'

The Director, National Metallurgical Laboratory, Jamshedpur, India, informs that a symposium on "Utilisation of Metallurgical Wastes" is being organized by the National Metallurgical Laboratory to be held early in February 1964. Intending participants may kindly write to the Dy. Director, NML, for further information.

### International Conference on Cosmic Rays

The Eighth International Conference on Cosmic Rays, under the auspices of the International Union of Pure and Applied Physics, will be held in Jaipur from the 2nd to the 14th of December, 1963, at the invitation of the Department of Atomic Energy, Government of India.

The Conference will cover the following broad fields: (i) Primary cosmic radiation, (ii) Solar particle radiation, (iii) Phenomena at energies greater than 30 GeV; (iv) Cosmic ray muon and neutrino physics.

Further information can be had from Dr. R. R. Daniel, Secretary, Organising Committee for the International Conference on Cosmic Rays (1963), Tata Institute of Fundamental Research, Colaba, Bombay-5, India.

### Symposium on Elastic-Plastic Deformation

The Eighth Congress and Symposium on Elastic-Plastic Deformation will be held from

October 10 to 12, 1963 at the University of Delhi, Delhi. Further information may be obtained from the Secretary, Prof. B. R. Seth, I.I.T., Kharagpur.

### The Institute of Physics and the Physical Society

The Institute of Physics and the Physical Society announces that its 1964 Exhibition of Scientific Instruments and Apparatus will be held in the Halls of the Royal Horticultural Society, Vincent Square, London S.W. 1, from 6 to 9 January 1964.

The 1965 Exhibition will be held in the first week of April, in The Manchester College of Science and Technology.

### Occurrence of Ostracoda in the Upper Cretaceous Rocks of South India

Shri S. P. Jain, Department of Geology, Panjab University, Chandigarh-3, writes:

A recent examination of the material from the Ariyalur stage of the South Indian Cretaceous System has revealed the presence of a rich ostracode fauna in these rocks. A total of 18 species belonging to nine genera have so far been identified. Check-list of the species found is given below:

*Bairdia trigona* (Bosquet), *B. dentifera* Veen, *B. decumana* Veen, *Bairdia* sp. 1, *Bairdia* sp. 2, *Bythocypris goddlandensis* Alexander, *B. kiritheformis* Bonnema, *Candona* sp., cf. *C. mantelli* Jones, *Asciocythere promta* (Lubimova), *Cythere multilamella* (Bosquet), *Cytherella ovoidea* (Alexander), *C. subreniformis* Jones and Hinde, *C. scotti* Alexander, *Cytherelloidea granulosa* (Jones), *Paracypris acuta* (Cornuel), *P. tenicula* Alexander, *Paracypris* sp., *Monoceratina transisleana* Bonnema.

### New Host Plant of *Celosterna scabrator* Fabr. (Order: Coleoptera)

Shri J. C. Basu Choudhuri of the Department of Entomology, Forest Research Centre, Coimbatore-2, writes:

The babul root borer, *Celosterna scabrator* Fabr. (Fam.: Cerambycidae), was first reported to be a pest on babul by the Conservator of Forests, Berar, in July 1892. Since then it has gained status as a serious insect pest and is recorded on the following host plants: Family:

Casuarinaceæ—*Casuarina equisetifolia* Linn.;  
Family: Dipterocarpaceæ—*Shorea robusta*  
Gaertn. f.; Family: Leguminosæ—*Acacia arabica*  
Willd., *A. catechu* Willd., *Cassia siamea* Lam.;  
*Pithecolobium dulce* Benth.—*Prosopis juliflora*  
D.C., *P. spicigera* Linn.; Family: Rhamnaceæ—  
*Zizyphus jujuba* Lam.; Family: Verbenaceæ—  
*Tectona grandis* Linn. fil.

During the recent insect surveys of forest insect pests in South India the insect has been found on *Eucalyptus* sp. (hybrid?) grown in Chingleput Forest Division. The nature and extent of damage caused to young eucalyptus indicate that the insect is a potential pest of eucalyptus.

For the first time the pest is recorded on *Eucalyptus* sp. (hybrid?) (Family: Myrtaceæ) in Paranur Plantation, Chingleput Range and Mayyur R.F., Chingleput Forest Division (Madras State).

#### *Trichuris discolor* (Linstow) from Goat in Orissa

Shri M. M. Patnaik, Parasitologist (Veterinary), Bhubaneswar-3, writes:

*Trichuris ovis* Abildgaard and *T. globulosa* Linstow are the two common whipworms found in the cacca of Indian goats (Deo, P. G., *Indian J. Vet. Sci.*, 1960, 30, 139-45). Literature on the occurrence of *T. discolor* Linstow, 1906, in goat is rare. It is a less common species found in goats in Orissa. Among other helminths, a total of 119 adult specimens (33 males and 86 females) of this species was encountered in the cecum and colour of a eight-year old stud-goat, autopsied at Ghatgaon, Orissa, for the first time.

#### On the Occurrence of Copper in Gomoh-Topchanchi Area (Bihar)

Shri Bharat Prasad, Geology Department, Patna University, Patna, reports the occurrence of copper minerals, in the metamorphosed basic rocks in the village Khesmi (86° 15' N : 24° 30' E). The country rocks comprise felspathic schists and older gneisses of Dharwar age. The basic rocks now represented by epidiorites occur as sills in them. The entire group has been isoclinally folded, the general strike and dip being N 110° and N 10° respectively. The latest event in this area is marked by the emplacement of a granodiorite, veins and offshoots of which occur widely distributed throughout this region. The granodiorite proper is situated a couple of miles to the north of this locality.

The epidiorites have been severely affected by this acidic intrusion. Veins of different size occur in them and invariably the contact is marked by retrograde changes and appearance of several new minerals. Among the latter are the copper minerals, chalcopyrite, arseno-pyrite and bornite. They occur as pockets, veins and lodes in these epidiorites near their contact with the acidic material.

Such an association has not been so far reported from this country and it opens a very wide field of investigation. The genesis of these ores seems to be connected with the hydro-thermal phase of the acidic intrusion in this area.

#### Vibrational Raman Intensities in Gases

Theories of vibrational intensities of Raman bands are strictly applicable to conditions in which disturbing intermolecular interactions are absent. Study of vibrational Raman intensities in gases will thus prove more useful than in liquids to test theories and derive fundamental molecular data. Until recently experimental investigations in this respect have been mostly confined to liquids because of the practical difficulties in vibration intensity measurements in gases. However, with improved techniques in sample illumination and use of multiple reflection cells it is now possible to obtain photoelectrically recorded Raman spectra for gases which are comparable in quality with those obtained from a liquid.

Such records especially in the case of spherically symmetrical molecules and for the fundamental modes of vibration enable correlation to be established between intensities and bond polarisability.

D. A. Long and E. L. Thomas using these improved techniques have measured the vibrational Raman intensities for the  $\nu_1(a_1)$  modes of  $CD_4$ ,  $CF_4$ ,  $SiF_4$ ,  $SF_6$ ,  $SeF_6$  and  $TeF_6$  all in the gaseous state and at pressures 1-2 atm. and compared them with the  $\nu_1(a_1)$  of  $CH_4$  obtained under identical conditions. Relative bond polarizability values have been obtained for these molecules.—(*Trans. Farad. Soc.*, 1963, 59, 1024.)

#### Hypothesis of Earth's Behaviour

While the well-known principle of isostatic adjustment allows vertical displacements of continents, the question arises whether they can be moved about in horizontal directions by the rifting of the ocean floor in some places and its compression and overriding at others.

There are three evidences to show that great horizontal displacements of the earth's crust have occurred: (1) measurements of rock magnetism suggest that continents have moved independently relative to the poles; (2) well-known faults are known to have undergone horizontal displacements of tens or even hundreds of miles at different geological times; (3) oceanic islands tend to increase in age with distance from mid-ocean ridges.

According to Prof. J. T. Wilson, if parts of the crust have been shifted horizontally relative to other parts, it must have stretched or rifted along some lines and compressed or overridden along others. If they have done so then the likely places are the mid-ocean ridges. Therefore, Prof. Wilson suggests that "submarine ridges provide a second precise method of fitting continents together in addition to that used by Wegener and Du Toit".

From the study of submarine ridges two generalizations can be made: First, where a mid-ocean ridge lies half-way between two continents, they were once in contact. Secondly, the ends of lateral ridges and the fit of shore lines may be used to reassemble them in the positions in which they once lay.

Prof. Wilson applies these generalizations to the case of Gondwanaland and says that to create the Indian Ocean by rifting required the separation of four continents, Africa, India, Australia and Antarctica, and that in addition to the three known median ridges there should be a fourth extending north-easterly between India and Australia. If it does exist it will no doubt be discovered during the International Indian Ocean Expeditions.—(*Nature*, 1963, 198, 925.)

### The Lachrymatory Factor in Onion

Although it is generally known that the lachrymatory factor (LF) in onion is a sulphur-containing compound, the exact nature of the compound has not been well established. One method of approach to characterize the LF will be to assume that it is enzymically formed from a non-volatile and essentially stable precursor when onion is cut or crushed, and attempt at isolating this precursor. C. G.

Spare and A. I. Virtanen have reported the results of their experiments in *Acta Chemica Scandinavica* (1963, 17, 641). The precursor has been found as (+)-S-(prop-1-enyl)-L-cysteine sulfoxide. An enzyme preparation of onion splits it into the lachrymatory factor, pyruvic acid, and ammonia. The LF is very unstable. In mass-spectral studies of the enzymic cleavage of the lachrymatory precursor no mass number higher than 90 could be detected. These studies indicate that the LF is propenylsulphenic acid. It is spontaneously degraded to propionaldehyde from which some 2-methyl-2-pentenal is formed. In mild alkaline solution the precursor of the LF is cyclized to cycloalliin.

### Statement on Meteorological Rockets

The region between 30 and 100 km. is known to be the seat of many phenomena that are related to the rest of the atmosphere and it is a link between the part of the atmosphere that is most sensitive to solar changes and the lower atmosphere.

Meteorological rocket systems now being developed offer the opportunity to bring this entire region under observation. Already meteorologists have learned about some significant features of the upper atmosphere, such as the following: (a) The flow and the thermal structure in the upper stratosphere (30-50 km.), the mesosphere (50-80 mm.), and lower ionosphere appear to be at least as complex as those noted on synoptic charts for the lower regions. There are moving disturbances and at certain times there are dramatic and violent changes in the flow that appear to start at the higher levels and progress downward. One such phenomenon, known as "stratospheric sudden warming", occurring in the late winter or early spring, has been observed on a number of occasions.

(b) A well-pronounced semi-annual variation of the wind and horizontal temperature gradient has been deduced from meteor trail observations at 80 to 100 km., suggesting that in some respects the lower ionosphere is coupled with the regions above, where a similar semi-annual effect has been observed from satellite drag measurements.

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