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## SCIENCE NOTES AND NEWS

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**Leguminous Plants and Their Root-Nodule Bacteria.**—The view that a leguminous plant will symbiose with only one or closely related strains out of the many strains of the nodule-forming organisms that may exist in the soil and that the division of these organisms into several distinct (some twenty in number at present) plant-bacteria groups based upon that view, have formed the subject of a very elaborate examination and conclusions very much at variance with this view have been arrived at as the result (J. K. Wilson, *Memoir* 221, Cornell University Agr. Exp. Stn.). About 200 species of plants representing more than 70 genera, and 32 strains of the rhizobia isolated from a wide range of plants were used in the work, and each species was exposed during its growing period to each strain. After a suitable period of growth the roots were examined for nodules, the presence of which was taken as the criterion of symbiosis. It was found that a number of plants were promiscuous and will symbiose, as measured by the nodulation, with almost any strain of nodule bacteria with which their roots may come into contact. Conversely, certain strains of bacteria isolated from various different plants will symbiose with species of plants that represent a large majority of the plant-bacteria groups. Plants were also grown with their root systems divided and allowed to grow with each division in a separate soil medium with a different strain of bacteria; they symbiosed in all these different media and showed that a plant could simultaneously symbiose with several strains. It however appears from the plates which illustrate the paper that nodule formation is not equally plentiful or striking in all the different strains with which a plant can symbiose. While many plants can symbiose with several strains of rhizobia there were others which were somewhat restricted as to the number of strains they could symbiose with. Another conclusion reached is that those plants that are promiscuous will symbiose with strains that are predominantly monotrichic and predominantly multitrichic, while those which are restricted symbolise with strains that are predominantly monotrichic. A. K. Y.

**Cardamom Weevil and Its Control.**—Further work on the cardamom weevil (*Prodiots haematicus*) has been carried out by Mr. S. Jones, M.Sc., Assistant Entomologist, Central Research Institute, Trivandrum.

There are evidences of the weevil proving to be a major pest of potential danger to cardamom cultivation in S. India, specially in Travancore.

The weevil, a brown, spotted insect, lays its eggs on the rhizomes, the grubs that hatch out boring into them and later into the shoots. The external symptoms become evident only after the attack has well advanced.

A promising method of eradication of the

pest, has suggested itself and it consists of rooting out and burning the diseased clumps and picking of the adult weevils, when they appear in fairly large numbers and rest on the cardamom plants, from the second week of April, presumably for mating.

**The Lady Linlithgow Tuberculosis Sanatorium, Kasauli.**—Her Excellency the Marchioness of Linlithgow, the President of the Tuberculosis Association of India, performed the Opening Ceremony of this all-India institution on the 21st of May 1941, in the presence of a distinguished gathering. This sanatorium will have accommodation for 112 beds to begin with, which, it is hoped, in course of time will be increased to 250 beds.

In the course of her speech Her Excellency said: "It is necessary to emphasise that the greatest difficulty in the tuberculosis campaign in India is not, as generally supposed, lack of money, but the lack of a sufficient number of doctors properly trained in modern methods of diagnosis and treatment. It is a hopeless task to try and fight tuberculosis in India without having doctors who have specialised not only in diagnosis and treatment but also in the prevention of the disease and in the care and after-care of the tubercular patient. The difficulty facing us is not the lack of doctors willing to take up special training, but that there are in India too few places where all the facilities exist for the proper training of such doctors. This training requires at least nine months' residence in a fully equipped modern sanatorium, such as this one, where doctors can gain experience in the wards, in the operating theatre, the X-ray and the laboratory. Research work will also be carried out there, without which no teaching institution can be complete. By research I don't mean only bacteriological research, but research necessary with regard to the development of the disease and the various treatments.

While bacteriological research can be carried out in a comparatively small institution, the other kind of research can only be effectively carried out in a sanatorium or hospital with a large number of patients."

**Basic Steel from Scrap.**—Steel made by the acid process from 100 per cent. scrap is now being manufactured in India. It is anticipated that this will relieve the shortage of spring steel required by the Railways which had hitherto been imported.

Arrangements are also being made for the erection of open hearth furnaces for making basic steel from scrap collected from all over India.

Further, experiments are in hand for utilizing the large quantities of turnings and borings produced in shell manufacture. Previously these had always been looked upon as a waste

product, but they will now be turned into new steel.

**Industrial Research Council.**—Details are now available of the action taken by the Government of India on certain recommendations of the fifth session of the Industrial Research Council.

As the need of a clearing house of information regarding industrial research was generally felt, the Council had recommended that the Industrial Research Bureau might undertake this work and also circulate periodically information as to researches and investigations in progress in India in order to enable researchers on the same or allied subjects to exchange information. This is being arranged for under the auspices of the Board of Scientific and Industrial Research.

The recommendation of the Council that the Director of Industrial Research Bureau be requested to prepare and circulate, after consultation with Directors of Industries and others concerned, a draft questionnaire to assist in any survey of the tanning industry and to draw up and circulate an outline of a scheme on which the survey of the tanning industry should be conducted, will be referred to the Director of Scientific and Industrial Research for consideration and proposals.

The Council had also recommended further enquiries regarding utilisation of milk casein for the manufacture of plastics, investigation of the production of acetic acid, acetone and related compounds for the viscose process of artificial silk manufacture, the manufacture of synthetic resin of the bakelite type, the possibility of manufacturing formaldehyde and urea, investigation of the available sulphur-bearing deposits in India, utilisation of linseed straw for the production of cottonous flax, and the more efficient utilisation of coal. These recommendations will be borne in mind by the Research Committee of the Board of Scientific and Industrial Research. Large deposits of sulphur have already been discovered by the Geological Survey of India in Baluchistan and elsewhere.

**Archaeological Survey Reports.**—An index covering the series of annual reports of the Archaeological Survey of India from 1919 to 1929 and the first part of the reports from 1902 to 1918 has been issued. The work has been done by Mr. H. Hargreaves, formerly Director-General of Archaeology, and enables the entire material published in the reports of the Archaeological Department to be referred to with facility. An index of Part II of the reports for the years 1902 to 1916, prepared by the late Mr. G. R. Kayes, was issued some years ago.

**Andhra University — Two Events.**—The Andhra University has recently inaugurated the Natural Science Department under distinguished auspices. Without this complement the organization would be lopsided and even artificial. We hope that under the stimulating influence of the distinguished Vice-Chancellor this new academic recruit will acquire sufficient

energy in the field of teaching and research, which will place it on a level with the older branches of science. From the standpoint of exploration and investigation the Andhra Desa is sufficiently rich and varied in its biological resources which offer practically an unlimited scale of activities to the research workers. With a well regulated scheme of co-ordination among the different branches of the Department the Andhra University will be able soon to establish schools of biological teaching and research. It would be premature to discuss the organisation of departments of applied biology—but its consideration need not be unduly delayed because of the decided advantages offered by the flourishing departments of chemical technology and organic chemistry.

Another equally interesting and important institution known as Faculty Club was formally inaugurated. One of the inescapable consequences of our being men is that we have a stomach on whose shape and condition depends the peace of the world as well as the progress of knowledge. Worked in conjunction with the class room efforts and the laboratory practice we anticipate that the Club will exercise a soothing and generous influence in promoting the cheerful and healthy temperament of the University. The institution of a Faculty Club is calculated to dispel dyspepsia, melancholia, neurasthenia and other mental ailments peculiar to the teaching profession and the coming into being of common messmatism in the University Halls will inspire a new spirit of comradeship and co-operative effort among the members of the staff. Now all that the scholars have to do is to read their books and keep their bowels open to receive the blessings of this new dispensation.

#### ASTRONOMICAL NOTES

**Planets during August 1941.**—Venus will be an evening star and continues to separate slowly from the Sun; although not quite favourably placed for observation, it will be a fairly bright object in the western sky, setting about two hours after the sun. Mercury is in the morning sky for the first half of the month, but being too near the sun will not be easily visible; it passes superior conjunction on August 19. Mars rises about three hours after sunset and can be seen during the remaining portion of the night as a brilliant red star of magnitude  $-1.3$ ; it is moving rapidly eastward along the southern border of the constellation Pisces. The planet is getting nearer the earth, the apparent diameter increasing from  $15''.0$  to  $19''.4$  during the month.

Saturn rises at about midnight and Jupiter an hour later; and both can be conveniently observed near the meridian a little before sunrise. Jupiter is increasing in brightness, its stellar magnitude at the end of the month being  $-1.8$  (a fifth of a magnitude brighter than Sirius). Saturn also is getting brighter and the ring system continues to widen. The planet will be in quadrature with the Sun on August 21. Uranus is in Taurus and three to four degrees to the northeast of Saturn.

Neptune is in the evening sky and is situated very near (about half a degree north) the star  $\beta$  Virginis—magnitude 3.8. A close conjunction of the planet with Venus will take place on the evening of August 18, which will be helpful to observers with small telescopes, in locating Neptune.

**The Perseids.**—One of the most interesting of the meteoric showers is that known as the Perseids whose maximum display may be expected to occur about August 12. The radiant point is in the constellation Perseus and the position is given by R.A.  $3^h 8^m$  and Declination  $57^\circ$  N. (four degrees to the north of the bright star  $\gamma$  Persei). The duration of the shower is about 25 days and the average number of meteors that can be seen per hour is 50.

T. P. B.

**MAGNETIC NOTES**

The month of May, 1941, was magnetically more active than the preceding month. There were 5 quiet days, 22 days of slight disturbance and 4 of moderate disturbance as against 9 quiet, 20 slightly disturbed and 2 moderately disturbed days during May 1940. The characters of individual days are given in the following table:—

Quiet days	Disturbed days	
	Slight	Moderate
2, 19, 26, 28 & 29	1, 3-5, 7-16, 18, 20, 22, 23, 25, 27, 30 & 31	6, 17, 21 & 24

The most quiet day in May 1941, was the 19th and the most disturbed, the 21st. One

moderate storm was recorded during the month as in May, 1940. The mean character figure for the month was 0.97 as against 0.77 for May 1940.

The month of June 1941, was more active magnetically than any of the preceding months in the year. There were 22 slightly disturbed and 8 moderately disturbed days as against 9 quiet days, 19 days of slight disturbance and one day each of moderate and great disturbance in June 1940. The most disturbed day in the month was the 13th when a magnetic storm of moderate intensity was recorded. The least disturbed day in the month was the 16th. There were no quiet days in the month. The characters for individual days are given below:

Quiet	Disturbed days	
	Slight	Moderate
..	1-8, 11, 12, 16-26 & 28.	9, 10, 13-15, 27, 29 & 30.

Three magnetic storms of moderate intensity were recorded during the month as against one of great intensity in June 1940. The mean character figure for June 1941 was 1.27 as against 0.77 for June 1940.

**SEISMOLOGICAL NOTES**

During the month of June 1941, one very great, three moderate and three slight earthquake shocks were recorded by the Colaba seismographs as against one moderate and one slight shock recorded during the same month in 1940. Details for June 1941, 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
June 1941—		H.	M.	(Miles)		(Miles)	
24	Moderate	14	58	3430	$38^\circ.7$ N., $18^\circ.8$ E., in the Ionian Sea		} After shocks of the very great shock of 26th.
26	Very Great	17	22	1470	In the neighbourhood of the Nicobar Islands		
27	Slight	13	03	1450			
27	Moderate	14	02	1490			
28	Slight	00	34	1520			
28	Slight	23	25	1520			
30	Moderate	23	54	1420	$13^\circ.5$ N., $93^\circ.7$ E., In the neighbourhood of the North Andaman		

ANNOUNCEMENTS

**Indian Science Congress Association** (*Twenty-ninth Session*).—The General Secretaries of the Indian Science Congress Association, Professor S. K. Mitra and Principal P. Parija, have released the following information in connection with the Twenty-ninth Session of the Indian Science Congress to be held from the 2nd to the 8th January 1942:

The Session was originally proposed to be held at Dacca, but the University of Dacca, under whose auspices the Session was to have been held, having recently decided otherwise, the Congress Session will be held at Baroda in response to the kind invitation of His Highness the Maharaja Saheb. Principal K. G. Naik of Baroda College has been requested by the Baroda Government to start with the necessary arrangements.

Mr. D. N. Wadia, M.A., B.Sc., F.G.S., F.R.G.S., F.R.A.S.B., F.N.I., Mineralogist, Ceylon Government, Colombo, will be the President.

Application forms for Ordinary and Sessional Membership for the Congress may be obtained from the Office of the Association, 92, Upper Circular Road, Calcutta.

Papers proposed to be read should be forwarded to the General Secretary together with three copies of abstracts so as to reach him not later than September 15, 1941.

The enrolment of the *Ordinary Members* will be closed after the 15th of July 1941. Only *Sessional Members* will be enrolled after that date.

Intending members are requested to send their subscriptions to the Treasurer, Indian Science Congress Association, 92, Upper Circular Road, Calcutta.

**Flora of the Punjab Plains.**—Since the publication of the note in *Current Science* (May 1941), Dr. Sabnis, the author of the pamphlet has informed us, that he proposes to issue further contributions on the Flora of the Punjab Plains and the Associated Hill regions to include the remaining natural orders. The publication that has appeared is to be regarded as the first in the series.

We acknowledge with thanks the receipt of the following:—

"Journal of the Royal Society of Arts," Vol. 89, Nos. 4580, 4583 and 4585.

"Journal of Agricultural Research," Vol. 61, No. 12 and Vol. 62, Nos. 1-3.

"Indian Journal of Agricultural Science," Vol. 11, Pt. II.

"The Nagpur Agricultural College Magazine," Vol. 15, No. 4.

"Journal of Chemical Physics," Vol. 9, No. 5.

"Chemical Products and Chemical News," Vol. 4, Nos. 5-6.

"Experiment Station Record," Vol. 84, Nos. 4 and 5.

"Allahabad Farmer," Vol. 15, No. 3.

"Transactions of the Faraday Society," Vol. 37, Pt. 3.

"Indian Farming," Vol. 2, No. 6.

"Genetics," Vol. 26, No. 3.

"Review of Applied Mycology," Vol. 20, Parts 3-4.

"The Mathematics Student," Vol. 8, No. 4, and Vol. 9, No. 1.

"The Bulletin of the American Meteorological Society," Vol. 22, Nos. 3-4.

"Journal of the Indian Mathematical Society," Vol. 5, No. 1.

"The Indian Medical Gazette," Vol. 76, No. 6.

"Journal of Nutrition," Vol. 20, Nos. 3 and 5.

"Journal of the American Museum of Natural History," Vol. 47, No. 4.

"Nature," Vol. 147, Nos. 3719, 3725, 3728, 3729 and 3730.

"Journal of Research" (National Bureau of Standards), Vol. 26, No. 4.

"Canadian Journal of Research," Vol. 18, No. 12 and Vol. 19, No. 3.

"Sky," Vol. 5, No. 7.

"Science and Culture," Vol. 7, No. 1.

"The Indian Trade Journal," Vol. 141, Nos. 1825-28.

BOOKS

"Recent Advances in Sex and Reproductive Physiology," by J. M. Robson. (Messrs. J. A. Churchill, Ltd.), 1940. Pp. xii + 329. Price 15sh. net.

"The Birth and Death of the Sun," by George Gamov. (Macmillan & Co.), 1941. Pp. xiv + 232. Price 12sh. 6d. net.

"The Bombay Karnataka"—A Geographical Survey, by B. S. Sheshgiri. 1941. Pp. i + 208. Price Rs. 2.

"The Air and Its Mysteries," by C. M. Botley. (The Scientific Book Club, London), 1940. Pp. 1 + 266. Price 2sh. 6d.

"The Annual Review of Physiology," edited by James Murray Luck. (The American Physiological Society and Annual Reviews Inc.), 1941. Pp. viii + 784. Price \$5.00.

"The Social Life of Animals," by W. C. Allee. (The Scientific Book Club, London), 1941. Pp. xiv + 261. Price 2sh. 6d.

"General Bacteriology," by D. B. Swingle. (Chapman & Hall, London), 1941. Pp. xii + 313. Price 16sh.

"Aircraft Engines," Vol. II, by A. W. Judge. (Chapman & Hall, London), 1941. Pp. viii + 446. Price 30sh.

"Electrodynamics," by Leigh Page and Norman Iisley Adams (Jr.). (Chapman & Hall, London), 1941. Pp. xii + 506.