

the present Kistna District of the Madras Presidency. Dr. F. H. Gravely, until recently Superintendent of the Madras Government Museum, contributes an appreciative *Foreword*, in which he sets forth in modest terms the many undoubted merits of the work. In view of the fact that he appears to have had much to do with its publication, it seems appropriate that his approval of it should perhaps be referred to at some length. Having regard to limitations of space, however, it cannot more than be adverted to. Mr. Sivarama Murthi has spent much time and labour on his work and as Dr. Gravely rightly observes, has produced something more than a mere catalogue of the sculptures lodged in the Museum. He has brought to bear his knowledge of art on his work also, while his presentation of the history of the Satavahana period lights up certain of its dark corners. He has also enriched our knowledge of social history and manners and habits of the period while the contribution he makes to the problem of the origin of the indigenous form of the Buddha image is indeed suggestive to a degree. It is true a galaxy of stars of the first magnitude in the study of Buddhism have undoubtedly shed light on the subject of these sculptures and their interpretation—such, for instance, by Burgess, Foueber, Coomaraswamy, to mention but a few. What Mr. Sivarama Murthi has

done will prove, however, of standing value both as a catalogue and a guide to the sculptures lodged in the Madras Museum and as a study of the architecture, history, culture and art of the period to which they belong. The inscriptions have been re-read and get their right place in the volume. The work, in view of the very solid study it offers of all that is known so far of the Amaravati sculptures in India or in the British Museum is a great contribution historically and linguistically. Mr. Sivarama Murthi deserves to be complimented on his splendid achievement, both as a lover of art and as a scholar anxious to do his bit to advance the study of a subject that has attracted, by virtue of the magnificence of the art with which it is associated such world-wide interest. The monograph, we should add, is illustrated by a number of drawings by the author and enriched by as many as five appendices devoted to relevant special topics. The general Index also deserves mention. This is altogether a volume that is bound to further research in India in many fields than one. As such it is likely to attract wide attention in archaeological and art circles the world over, despite the devastating war, in which we are glad it has been found possible to issue it.

C. HAYAVADANA RAO.

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## SCIENCE NOTES AND NEWS

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**Treatment of Malaria: A Proved Substitute for Quinine.**—In a country like India, where malaria takes such a large toll of life, as well as the energy and efficiency of the population, any shortage in the supply of quinine is naturally viewed with apprehension by the medical profession and public health authorities. Thus, it is good news indeed, to learn that a really effective substitute for quinine is being locally produced and that there is such sufficiency of raw materials as to enable the manufacturers to distribute no less than 14,000,000 tablets this year. The name is Laverain and it is manufactured from quinoidine the non-crystallizable alkaloids of cinchona bark.

Laverain is not new in the treatment of malaria, having been thoroughly tried for a number of years with most effective results. It has the advantages of being somewhat cheaper than quinine and of not producing certain of the undesirable after-effects, notably deafness. Under clinical tests there have been positively no cases of relapse. The news of the manufacture of Laverain on a bulk scale is welcome.

**Manure from Town Wastes.**—The training course for Biochemists deputed by different Provinces and States in India in the improved process of preparing compost manure from town-wastes developed at Bangalore, was formally inaugurated at the Indian Institute of Science, Bangalore, on 4th August 1943. It

may be recalled that the Government of India recently sanctioned a sum of nearly Rs. 2½ lakhs for a programme of large-scale preparation of compost manure from town-wastes, the scheme to be worked under the auspices of the Imperial Council of Agricultural Research. Dr. C. N. Acharya, Chief Biochemist, is in charge of the training scheme.

**"Bubblefil".**—A new rayon yarn called "bubblefil" has been developed by E. I. du Pont de Nemours and Company, Wilmington, Del., to replace kapok. According to the *Cordage World* of March 1943, Du Pont is turning out the "bubblefil" cellulose experimentally at the rate of about 200 pounds daily. The new material has buoyant and resilient qualities, making it a potential military substitute for kapok and sponge rubber, the entire supply at present going to the armed services for life rafts, aviators' cushions and possibly other uses.

The supply of kapok has been restricted by the War Production Board to military orders for life buoys, life preservers and jackets, sleeping bags, pontoon bridges, insulation padding for airplanes and a few other specified uses.

**New Hydro-Electric Scheme for Madras and Orissa.**—Preliminary investigations and surveys for developing hydro-electric power by utilising the Duduna falls of the Machkund river (a tributary of the River Sabari which



in turn empties into the River Godavari) are in progress.

The scheme area is on the boundary line between the Madras and Orissa Provinces, it is located at about  $18^{\circ} 30'$  N. Lat., and when developed will serve both these provinces.

The area of the basin above the falls is about 860 sq. miles and the mean annual rainfall in the basin is 55 inches. The country is at an altitude above 2,600 M.S.L. and is covered by forest varying in density from thick woods at higher altitudes to scrub jungle in the lower reaches. For the purpose of design in the absence of reliable data the mean annual run off is taken as about 25'.

The natural minimum continuous run off in the stream at the site of scheme is about 100 cusecs and with a storage reservoir of 16,000 Mcft. at Jalaput, seventeen miles higher up the river, continuous power draft of 840 cusecs is possible. The gross head available is about 850' and it lies between contours 2,550' and 1,600' M.S.L. Thus a continuous power of about 48,000 K.W. is possible.

Preliminary estimates show that the scheme is likely to cost about Rs. 2.25 crores and would be remunerative.

The survey and preliminary designs would be finished before 1944 and would be kept ready for execution as soon as the war is over.

**The Imperial Institute, London.**—Extensive facilities are available at the Imperial Institute, London, for the rapid supply of technical information relating to the trade, occurrence and utilization throughout the world of all kinds of raw materials, but the scope of the intelligence service is not so well known as it should be. The Institute's staff includes tropical agriculturists, chemists, chemical technologists, economic botanists, economic geologists, mining engineers, mineralogists and statisticians, and, when required, the Institute seeks the advice of members of its fifteen consultative committees. Further help is also afforded by numerous trade contacts. The Institute also has an extensive reference library and a technical index covering most of the relevant trade and scientific publications issued during the past thirty years. The Institute can deal with inquiries relating to sources of supply of, and other information relating to, raw materials and semi-manufactured products whether of animal, plant or mineral origin in all countries, cultivation of crops and the soil and conditions under which they have to be grown, methods employed in mining, smelting and dressing minerals for the market, and so on. Analysis and testing of samples of raw materials is undertaken in the laboratories of the Institute. Inquiries should be made in the first instance to the Intelligence Section of the Plant and Animal Products Department or of the Mineral Resources Department, according to the nature of the subject concerned. No charge is made for services to departments of the United Kingdom Government or other Governments of the Empire contributing to the general funds of the Institute unless a particular inquiry involves a volume of work so great that it cannot be undertaken by the existing staff.

**The Institute of Chemistry.**—*Nature* reports that His Majesty the King has been pleased to command that the Institute of Chemistry shall henceforth be known as "The Royal Institute of Chemistry of Great Britain and Ireland".

**Indian Chemical Industries.**—"In India, a chemical industry based on petroleum, sugar and calcium carbide might prove to be far more economical than one based upon coal tar. Development on these lines will necessarily involve much fundamental research and may appear to be speculative at the present time, but it seems to be more likely to lead to success than one based on older and well-established methods. It would certainly be profitable for the younger chemists now being trained in India to devote some of their energy and skill to a consideration of these problems. A further large field for research is to be found in the development of India's reserves of cellulose. In Sweden the exigencies of war have emphasised how very valuable a raw material this is. In the post-war years, we may anticipate that India will lead in this and in other fields of technical research."—(*Nature*, 1943, 151, 412.)

**Indo-China Cultural Study Scheme.**—A Selection Board consisting of Sir Maurice Gwyer, former Chief Justice of India, and Mr. John Sargent, Educational Commissioner with the Government of India, has selected ten Indian students who will proceed to China for research work at Chinese Universities under the Indo-China Cultural Study Scheme. A batch of ten Chinese students is expected in India by the end of this month for a similar object.

**Research Schemes.**—The Government of Madras have sanctioned the following schemes: Research on Insects Occurring in Stored Oil Seeds (particularly groundnuts), at a cost of Rs. 4,300 for one year (Rs. 3,225 has been granted by the Imperial Council of Agricultural Research); Research on Pests and Diseases of Groundnuts, costing Rs. 10,907 for two years (the Imperial Council's contribution being Rs. 8,181); and Research on the Storage of Groundnuts, at a cost of Rs. 1,24,040 for three years (the Imperial Council's contribution being Rs. 62,000).

**Seven Lakhs for Research.**—At a recent meeting of the Bombay University Senate it was announced that Sir Homi Mehta had donated Rs. 7 lakhs to the University to be utilised for research in chemistry in connection with the Technological Department of the University.

**Nagpur University.**—Sir Mirza M. Ismail, Prime Minister of Jaipur, in the course of his Convocation Address to the University of Nagpur, said: "With victory and peace will come a new era for our country, an era of perfect freedom, with such industrial opportunity as she has never known before. The graduates of to-day will spend their lives in a totally new world with social, economic and political problems of a complexity corresponding to their



richness in opportunity. It is for our university men to solve these problems, in patient thought, and in really unselfish and patriotic world.

"This country can become one of the most powerful and influential in the world, if only she uses her resources and energies aright. I think the great danger is that we may spend much of our force in conflict with each other. Whatever form our free Constitution is to take, we—especially we who have, in a university, been trained in a certain self-discipline of thought, feeling and behaviour—should, undoubtedly, be leaders in moderation, mutual understanding, and respect, and in a new and practical policy of political and social compromise."

**Industrialisation of Travancore.**—Sir C. P. Ramaswami Ayyar, the Dewan, presiding at the session of the Sri Chitra Council, dwelt on the major activities of the nation-building departments. Under industries, he described the immense potentialities of the ship-building industry. The Government had under consideration the development of coastal shipping, and had enlisted the assistance of all-India export businessmen actually engaged in coastal shipping service. Part of the scheme was to co-ordinate back-water traffic with the coastal service. This led to the need to develop a ship-building industry. He then mentioned other major industries largely connected with the production of food and clothing, specially the chemical and fertiliser industries. He drew attention to the natural advantages the country possessed by way of raw materials and the by-products of existing industries. A heavy chemical industry would soon be started.

### MAGNETIC NOTES

Magnetic conditions during July 1943 were slightly more disturbed than in the previous month. There were 8 quiet days and 23 days of slight disturbance as against 14 quiet days, 16 days of slight disturbance and one of moderate disturbance during July of last year.

The quietest day during July 1943 was the 14th and the day of largest disturbance was the 5th.

The individual days during the month were classified as shown below:—

Quiet days	Disturbed days
	Slight
1, 2, 14, 20, 23, 24, 28, 29	3-13, 15-19, 21, 22, 25-27, 30, 31

No magnetic storm occurred during the month of July in the years 1942 and 1943.

The mean character figure for the month of July 1943 was 0.74 as against 0.58 for July of last year.

M. V. SIVARAMAKRISHNAN.

### SEISMOLOGICAL NOTES

Among the earthquake shocks recorded by the seismographs in the Colaba Observatory, Bombay, during the month of July 1943, there were two of moderate and one of slight intensities. The details for those shocks are given in the following table:—

Date	Intensity of shock	Time of origin (I.S.T.)	Epiceutral distance from Bombay	Co-ordinates of epicentre (tentative)	Depth of focus
		H. M.	(Miles)		(Miles)
15	Slight	18 22	1840	Lat. 7° 5 S., Long. 113° E., near Java.	60
23	Moderate	21 23	3200		
29	Moderate	09 32	8060		

We acknowledge with thanks the receipt of the following:—

"Journal of the Royal Society of Arts," Vol. 91, Nos. 4637, 4638 and 4640.

"Journal of Agricultural Research," Vol. 66, No. 4.

"Agricultural Gazette of New South Wales," Vol. 54, Pt. 5.

"Indian Journal of Agricultural Science," Vol. 13, Pt. 2.

"Biological Reviews," Vol. 18, No. 2.

"Journal of the Indian Botanical Society," Vol. 22, Nos. 2, 3 and 4.

"Journal of the Indian Chemical Society," Vol. 20, No. 6.

"Journal of Chemical Physics," Vol. 11, Nos. 3-4.

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

"Indian Farming," Vol. 4, No. 4.

"Transactions of the Faraday Society," Vol. 39, Pt. 6.

### BOOKS

*An Introduction to Pure Solid Geometry.* By G. S. Mahajani. (Mr. Vithal Hari Barve, Aryabhushan Press, Poona), 1943. Pp. iii + 104. Price Rs. 3.

*The Cathode Ray Oscillograph in Industry.* By W. Wilson. (Chapman and Hall, Ltd., London), 1943. Pp. xii + 150. Price 12sh. 6d.

*Spectrophotometry in Medicine.* By Ludwig Heilmeyer. (Adam Hilger Ltd., London), 1943. Pp. xiv + 280. Price 30sh., postage 9d.

*Electrical Precipitation of Flue Dust in Power Stations.* (Technical Report Reference Z/T55). By D. V. Onslow. (The British Electrical and Allied Industries Research Association, London), 1941. Pp. 27. Price 19.

*Proposed Purchasing Specifications for Pure Lac for Electrical Insulating Purposes* (Technical Report No. A/S49). (The British Electrical and Allied Industries Research Association, London), 1938. Pp. 14 + 2. Price 1/6d.

*An Introduction to Historical Plant Geography.* By E. V. Wulff. (Waltham, Mass: The Chronica Botanica Co.; Calcutta: Macmillan & Co., Ltd.), 1942. Pp. xv + 223. Price \$4.75.