

## CENTENARIES

### Gill, David (1843-1914)

SIR DAVID GILL, a British astronomer, was born in Aberdeen, 12th June 1843. His inspiration to scientific studies, he owed to Clerk Maxwell while at the University of his place. He took charge of his father's business which was watch-making; but he devoted his spare time to the pursuit of science.

In 1863 his desire to provide his town with time service similar to the one at Edinburgh, led him to re-establish a disused observatory at the University and he fitted up the necessary instruments and established electric control of the important clocks of the town. This venture led him more into astronomy and with instruments made by his own hand, he soon began observations of double stars.

In 1870 he took charge of the private observatory started by Lord Lindsay. Besides fitting up, he went to Mauritius with about fifty chronometers to observe the transit of Venus in 1874. His work there is said to have inaugurated a successful method to find the sun's distance.

In 1877 he set up an observatory at the island of Ascension to measure the distance of Mars when it came exceptionally near the earth. His tenacity is shown by his managing to shift the observatory to a new place in five days' time to avoid cloud banks that obstructed. The sun's distance was again determined with a greater accuracy.

In 1897, Gill was appointed astronomer at the Cape of Good Hope. The Observatory had then only one instrument. But when he left in 1907, he left it fully equipped with modern instruments and a fully qualified staff to carry out work of the highest order. During his period of office, he measured the distances of twenty-two stars and made an era in the measurement of stellar distances. In 1889 he re-determined the sun's distance correct to one point in a thousand. Gill was also a pioneer in the application of photography to astronomy. In 1885 he began a photographic survey of the southern sky. The results published in the *Annals of the Cape Observatory* show the positions and magnitudes of about 400,000 stars. This great survey formed the basis of important investigations in the distribution of stars. Gill took part also in the triangulation of a large part of Africa.

After his retirement, Gill wrote his *History and Description of the Royal Observatory, Cape of Good Hope*, and it was published in 1913.

Gill was knighted in 1900 and was President of the Royal Astronomical Society and of the British Association for the Advancement of Science.

Gill died of pneumonia in London, 24th January 1914.

University Library,  
Madras,  
June 4, 1943.

S. R. RANGANATHAN.

## SCIENCE NOTES AND NEWS

**Conversion of Town Wastes into Agricultural Manure.**—The Government of India have recently sanctioned a grant of Rs. 1,86,000 to the Imperial Council of Agricultural Research for introducing into municipal areas an improved method of converting town wastes into good quality agricultural manure by the process of composting. A large amount of work on composting has been carried out both in this country and elsewhere; particular attention should, however, be invited to the pioneering researches of Fowler, Howard and their associates as also to the work of the various agricultural departments in the country. Investigations had been going on at the Indian Institute of Science, Bangalore, on the above subject for a number of years, under the auspices of the Imperial Council of Agricultural Research, which showed that the methods till now recommended for the composting of town wastes were defective in that (a) most of the methods involved frequent turning-over of the mass, which promoted excessive aeration and rapid loss of moisture,

and also resulted in increased smell and fly-nuisance; and (b) such turnings and aerobic conditions resulted also in heavy losses of valuable manurial constituents such as nitrogen and organic matter, to the extent of even more than half of the quantities originally present; and (c) further, such turnings meant increasing the cost of composting operations two- or three-fold, and thus rendering the manure too costly for purchase by our ryots.

As a result of detailed work on the subject carried out at the Institute by Dr. C. N. Acharya, a simple and satisfactory technique of compost-making was finally evolved, which dealt with town wastes such as *katchara* (sweepings and dust-bin refuse), night-soil, sewage and slaughter-house refuse, and converted them into good quality manure and at the same time fulfilled all the essential requirements of compost-making, such as:— (a) low cost of operations and cheapness of the product obtained; (b) completely sanitary and hygienic conditions, secured by rapid development of high temperatures above 70° C.,

which effectively destroyed fly-larvæ, pathogenic organisms, weed seeds and abnoxious constituents of town-refuse and night-soil; and (c) minimum losses of organic matter and of nitrogen.

The above process has been tested widely in the Bombay Province during the last one year, by nearly fifty municipalities in the Central and Northern Divisions, and has been adopted for routine operation by several of them, with highly successful results from the economic and sanitary points of view.

The present grant has been given by the Government of India with a view to extending the work carried out in the Bombay Province to other Provinces and States in India, and as a first step thereto undertaking the training of officers deputed from different parts of the country in the improved process of compost-making. It has been calculated that if the total urban refuse available in urban areas in this country could be converted into manure, it would ultimately be possible to supply nearly a crore of tons of good quality manure for agricultural purposes. Organic manure is of special importance in our tropical soils in improving the physical, chemical and biological properties of the soil and thus improving crop yields. If a cheap source of organic manure could be had from our town-refuse, it would go a great way to recoup the continuous drain which the towns are exerting on the surrounding agricultural area, and to stem the slow and steady deterioration that is taking place in the cropping capacity of our soils.

The main source of manure at present available for agricultural purposes is farm-yard manure, but the method of preparation adopted by the farmers in most areas of India is defective in that (a) the valuable urine fraction of cattle-excreta, which is rich in nitrogen, is almost completely lost; and (b) under the present arrangement of storage in big-sized round or square pits, the manure gets rapidly dried in the summer and washed by rain in monsoon time, involving in both cases loss of nitrogen and defective decomposition. Dr. Acharya has also developed an improved technique for the preparation of farm-manure by agriculturists, in which long trenches are used, which are filled up in portions from one end and plastered over with earth.

If the above improved methods for dealing with town and farm-wastes respectively, could be propagated widely in this country, it is felt that crop yields could be increased to such a level that the food problem would be automatically solved.

**Lateral Eccentricity in a New Species of *Pachydiscus* from the Trichinopoly Cretaceous.** Mr. G. Rukmangada Rao, Andhra University, Gunjur, writes:—Lateral eccentricity of the shell has been previously observed in the Nautiloidea from the Cretaceous rocks of Trichinopoly. It is not infrequent in this order from these rocks. I have observed lateral eccentricity in a species of *Pachydiscus*, an ammonite from the Ariyalur group. By virtue of its recognition for the first time in the ammonoidea from these rocks and the differences

this species has with the associated species, it has been isolated as a new species of *Pachydiscus* and called *Pachydiscus eccentricensis*. The type specimen is preserved in the Department of Geology, Benares Hindu University.

**Soil Erosion in India.**—Soil erosion, resulting from the neglect or destruction of the plant cover of hillsides, threatens to lay waste large areas in India, particularly in the foothills of the north and in parts of Central India. Not only would land in the hills be rendered useless for agriculture and growing timber but flood disasters in the plains would become more frequent and of greater magnitude, while irrigation supplies in the dry season would be reduced.

A note in Bulletin No. 37 of the Central Board of Irrigation stresses the need for a central co-ordinating authority to check erosion, pointing out that it is in the upper reaches of catchment areas, possibly lying within the territories of several States, where preventive measures are required and that with so many interests co-operation in a common policy is essential. The Board of Forestry has suggested the division of India into 13 units, each representing the catchments of a river or group of rivers and placed under a special officer to work in co-operation with the Forest, Agricultural and Irrigation Departments. With the willing co-operation of the Provinces and States concerned, large-scale measures can be organised to remove the threat of mass devastation and undo some of the evil caused by past neglect.

**U.K.-U.S.A. Steel Mission.**—Members of the U.K.-U.S.A. Steel Mission arrived in New Delhi this afternoon (June 4) for consultations with the Government of India. After a stay of about three days in New Delhi they will proceed to Calcutta for discussions with the Director-General, Munitions Production, and the Iron and Steel Controller.

The Members of the Mission are:—Sir John Duncanson, British Controller of Iron and Steel Supplies; Mr. Norman Anderson of the British Steel Control; Mr. A. E. Emerson, President of the American Rolling Mill Company; and Captain A. H. Gaal, a Metallurgist from the U.S.A.

The Mission has already visited the U.S.A. and Australia, and will proceed to South Africa after a short stay in India.

The purpose of their tour is to secure increased co-ordination of the Allied resources of steel supplies with the needs of all the Allied countries, and to discuss other more detailed problems concerning steel supplies in each country.

**Cardboard from Coconut Fibre.**—A new enterprise for manufacturing cardboard from coconut fibre in Ceylon has, it is reported, proved highly successful. The scheme was developed by Mr. S. R. K. Menon, an Indian Chemist, with the financial assistance of the Coconut Board of Ceylon. After certain preliminary experiments a pilot plant was established in Colombo and it is now able to turn out cardboard of high quality with a polished

surface. Proposal for manufacturing the material on a commercial scale is likely to be considered shortly by the Coconut Board. The new product is called 'Coconite'.

**Lady Tata Memorial Trust.**—The Trustees of the Lady Tata Memorial Trust announce the Awards of the following Scholarships and Grants for the year 1943-44.

**I. International Awards for research in diseases of the blood with special reference to Leucaemias.**

1. **PROF. L. DOLJANSKI** of Jerusalem: To continue studies on (1) Leukotic cells and agent of fowl leukosis *in vitro*; (2) The X-ray susceptibility of leukotic agent; (3) The cell affinities of oncogenic viruses and the mutual relationship between Rous Sarcoma agent and agent of fowl leukosis. (Grant of £400, *Second Year's Award*.)

2. **DR. JACOB FURTH**, of American nationality, Cornell University Medical College, New York: To continue the work in progress upon the Leucaemias like diseases of fowls and their relation to neoplasms and to determine the nature of viruses producing leucaemias and associated neoplasms lymphomatosis, myelomatosis, endothelioma, sacromas, etc., etc. (Grant of £300, *Ninth Year's Award*.)

3. **DR. P. A. GORER**, Guys Hospital, London: To continue the studies in the genetics of mouse Leucaemia. (Grant of £70, *Fourth Year's Award*.)

4. **DR. A. H. T. ROBB-SMITH**, Nuffield Reader in Pathology and Morbid Anatomy, Oxford University: To continue the aid to the establishment of a "Lymphnode Registry" in the School of Pathology at Oxford to aim at better classification and follow up of human cases showing progressive hyperplasias and neoplasms of the lymphoreticular tissues including cases of the leucaemias, lymphadenoma, lympho sacroma, etc. (Grant of £350, *Fourth Year's Award*.)

5. **DR. WERNER JACOBSON**, Part-time Sir Hailey Stewart Fellowship at the Strangeways Research Laboratory, Cambridge: To continue the study of making a histo-chemical study of the argentaffine cells of the gut epithelium, with a view to determining whether they are the source of the intrinsic factory of castle, and hence their bearing on the problem of pernicious anaemia and other blood diseases. (Grant of £300, *Sixth Year's Award*.)

6. **DR. SYBIL WILLIAMS**, Cambridge: To assist in the work of Dr. Werner Jacobson. (Grant £400. *Third Year's Award*.)

**II. Indian Scholarships of Rs. 150 per month each for one year from 1st July 1943 for scientific investigations having a bearing on the alleviation of human suffering:—**

1. **MISS MARY SAMUEL**, B.A., M.Sc.: To continue the research work on the effect of fat-soluble vitamins on the histology and cytology of the female gonad, under Prof. R. Gopala Aiyar, Director, University Zoological Laboratory, Madras. (*Second Year's Award*.)

2. **MISS BEATRIZ DE MENEZES BRAGANCA**, M.Sc.: To continue the work on Dietary factors in relation to Hæmopoiesis, under Prof.

B. C. Guha, D.Sc. (Lond.), Ph.D., Head of the Department of Applied Chemistry, University College of Science, 92, Upper Circular Road, Calcutta. (*Second Year's Award*.)

3. **MR. M. V. LAKSHMINARAYANA RAO**, M.Sc.: To continue the research work on Insulin, Carbohydrate metabolism and the cure of Diabetes, under Dr. V. Subrahmanyam, D.Sc., F.I.C., Professor of Bio-Chemistry, Indian Institute of Science, Bangalore. (*Second Year's Award*.)

4. **MISS B. S. ALAMELA**, B.A., M.Sc.: To work on Synthesis and Biological Study of Sulphanilamide Derivatives, under Lt.-Col. S. S. Sokhey, M.D., I.M.S., Director, Haffkine Institute, Parel, Bombay. (*First Year's Award*.)

5. **MR. AROBINDA ROY**, M.Sc.: To carry out investigations on (a) The absorption rate of different edible oils used in India and the effect of Vitamins A and D and hydrogenation; (b) The metabolism of fat in some pathological conditions, namely, in experimental anaemia and diabetes and diphtheria toxæmia; (c) The determination of different components of the phospholipides in human blood in some pathological conditions, under Dr. B. B. Sarkar, D.Sc., F.R.S.E., Head of the Department of Physiology, University College of Science, 92, Upper Circular Road, Calcutta. (*First Year's Award*.)

6. **MISS VIOLET DESOUZA**, M.Sc.: To carry on investigation of a few promising strains of yeasts and their hybrids as sources of the Vitamin B complex, under Sir Jnan Chandra Ghosh, Kt., D.Sc., F.N.I., Head of the Department of General Chemistry and Director, Indian Institute of Science, Bangalore. (*First Year's Award*.)

**University of Ceylon.**—Under a new statute recently made by the University Court the following are now added to the degrees which the University may confer: Bachelor of Dental Surgery (B.D.S.) and Master of Dental Surgery (M.D.S.). It may be noted that these degrees are not conferred by many of the Indian Universities.

The University Senate has, it is learned, recommended the creation of four professorial chairs in Oriental Faculties for Sinhalese, Tamil, Pali and Sanskrit. It is possible that the Chair for Sanskrit may be filled from India.

A convocation of the University is to be held this month for the purpose of conferring degrees gained in recent examinations.

**Indian Mathematical Society: Conference at Annamalainagar.**—The authorities of the Annamalai University have invited the Indian Mathematical Society to hold its next conference at Annamalainagar about the end of December, 1943, and the Society has accepted the invitation. It is also proposed to hold, in connection with the Conference a mathematical exhibition intended to illustrate the richness and variety of the subject and the wide range of its applicability to life situations. Suggestions regarding suitable items, as well as charts, models, instruments and other exhibits will be gladly received and exhibits on loan duly acknowledged and returned at the end of the Conference. It is also proposed to have a "book section" for exhibiting books on

mathematics. All correspondence relating to the Conference, and all papers to be read at the session may kindly be sent (with two short abstracts of each paper) to Dr. A. Narasinga Rao, Annamalainagar P.O., South India. It is hoped that, in spite of the difficult conditions under which the Conference and exhibition are held the enthusiasm and co-operation of members will make the venture a great success.

**The Travancore University.**—We are glad to announce that Dr. C. S. Venkateswaran, M.A., B.Sc., has been appointed as Professor of Physics in the Travancore University. He will be placed in charge of the organisation of the newly started M.Sc. courses and will guide other post-graduate researches. Dr. Venkateswaran has been working in the Indian Institute of Science for the past ten years under the inspiring guidance of Sir C. V. Raman and has contributed several important papers on Raman Effect, Molecular Scattering of Light, X-Rays and other allied topics.

#### SEISMOLOGICAL NOTES

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

Date	Intensity of shock	Time of origin I.S.T	Epicentral distance from Bombay	Depth of focus	Remarks
		H. M.	(Miles)	(Miles)	
2	Moderate	22 48	9820	..	..
3	Great	08 29	3470		..
26	Great	05 38	3930	100	Epicentral region near the Philippine Islands.

#### MAGNETIC NOTES

Magnetic conditions during May 1943 were slightly less disturbed than in the previous month. There were 13 quiet days and 18 days of slight disturbance as against 15 quiet days, 15 days of slight disturbance and one of moderate disturbance during May 1942.

The quietest day during May 1943 was the 9th and the day of largest disturbance was the 13th.

The individual days during the month were classified as shown below.

Quiet days	Disturbed days	
	Slight	Moderate
5-10, 20, 22, 23, 26, 29-31.	1-4, 11-19, 21, 24, 25, 27, 28.	Nil.

No magnetic storms occurred during the months of May in the years 1942 and 1943.

The mean character figure for the month of May 1943 was 0.58 as against 0.55 for May of last year. M. V. SIVARAMAKRISHNAN.

We acknowledge with thanks the receipt of the following:—

"Journal of Agricultural Research," Vol. 65, Nos. 7-10; and Vol. 66, Nos. 1 and 3.

"Agricultural Gazette of New South Wales," Vol. 54, Pts. 3 and 4.

"Indian Journal of Agricultural Science," Vol. 13, Pt. 1.

"Journal of the Indian Chemical Society," Vol. 20, Nos. 3 and 4.

"The Quarterly Journal of the Geological, Mining and Metallurgical Society of India," Vol. 15, No. 2.

"Bulletin of the Indian Jute Committee," Vol. 6, No. 2.

"The Review of Applied Mycology," Vol. 22, Pt. 2.

"Bulletin of the American Meteorological Society," Vol. 23, No. 7.

"Journal of Nutrition," Vol. 24, Nos. 4 and 5; Vol. 25, No. 1.

"Indian Trade Journal," Vol. 149, Nos. 1925-27.

#### BOOKS

*The Genetics of the Mouse.* By Hans Grüneberg. (Cambridge University Press, Bentley House, London), 1943. Pp. xii + 412. Price 30sh.

*Intermediate Practical Physics.* By Vissa Appa Rao. [Andhra University, Waltair, (Guntur)], 1942. Pp. viii + 337. Price Rs. 4.

*Physics and Philosophy.* By Sir James Jeans. (Cambridge University Press, London), 1942. Pp. vii + 222. Price 8sh. 6d.

*Elementary Physical Chemistry.* By M. Randall and L. E. Young. (Randall and Sons, California), 1942. Pp. xiv + 455. Price \$4.50.

*Forest Tree Seed, of the North Temperate Regions, with special reference to North America.* By H. I. Baldwin. (Waltham, Mass.: The Chronica Botanica Co.; Calcutta: Macmillan & Co., Ltd.), 1942. Pp. xvi + 240. Price \$4.75.

## ERRATA

Vol. 12, No. 5

Page 146, para 3, line 7: For 36 commutator segments read 18 commutator segments.

Page 155, columns 1 and 2; and page 156, column 2: For " $Y = ae^{-bS}$ " read " $Y = ae^{-bs}$ ".

Page 157, Note entitled "Inclined Extinction in the Hypersthenes of Charnockites", Fig. 1, tilt zone 212-232 to be cozoal with zone 101-11.