

showed that the stars would radiate like black bodies. The calculated values for the sun's centre-limb contrast, which agreed well with the available data, seemed to substantiate this view, and the theory gave a definite set of temperatures—those of the Fowler–Milne scale—which were approximately identified with colour temperatures. The well-known work of Greaves, Davidson and Martin at Greenwich on the gradient difference between stars of spectral types B0 to B3 and stars of spectral type A0 showed a colour-temperature of 18,000° for A0-stars at a wave-length of 5000 Å. as against the Fowler–Milne value of 10,000°; and it was necessary to discard Milne's provisional assumption that the stellar absorption coefficient did not vary with wave-length.

Reference is made to the advances which attended the work of McCrea, who calculated the emergent radiation for a model star composed entirely of atomic hydrogen, and of Pannekoek, who independently repeated McCrea's investigations, taking into account the contribution of metallic atoms in the stellar atmospheres. Also dealt with is the observational progress which was made during 1934–39 through the work of Barbier, Chalonge and their collaborators at Jungfrauoch, of Kienle and his colleagues at Göttingen, and R. C. Williams at Ann Arbor. Many other matters are included in the address, and towards the end Prof. Greaves expressed his personal opinion that, though the existence of intrinsic reddening in addition to space reddening has not been absolutely established, the balance of evidence favours the view that reddening by interstellar scattering is not the only process involved. Before attempting the task of interpretation, further measures are very desirable, and in particular the study of the variation of gradient excess with wave-length from the near infra-red to the near ultra-violet

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RUBBER RESEARCH INSTITUTE OF THE DUTCH EAST INDIES

THE Rubber Research Institute of the Dutch East Indies, Buitenzorg, Java, has recommenced publication after the delay of several years caused by the Japanese occupation, and a number of its recent reports contain points of interest.

Publication No. 38 shows that rubber obtained immediately after tapping the tree is readily soluble in petroleum ether, but on standing in the light it gradually becomes insoluble, especially if stored in the form of latex. These changes naturally complicate the supposed distinction between 'sol' and 'gel' rubber.

Publication No. 39 emphasizes the important bearing which the method of preparation of rubber has upon the physical properties of the final vulcanized article, especially in respect of water absorption and tension strength in the wet state; for example, whole-latex rubbers are much stronger when dry than when wet.

A study of the nature of the naturally occurring antioxidants in rubber latex (Publication No. 54) has shown that the amino-acids have a remarkably powerful antioxidant action. The spontaneous coagulation of *Hevea* latex has frequently been believed to result from progressive lowering of pH, but it still occurs even when the pH is kept constant, and work done in Java (Publication No. 58) suggests

that the removal of magnesium ions, as a fatty soap, is the main cause of coagulation.

The vexed problem of the value of incorporating rubber powder in roadways receives a contribution in Publication No. 61, where it is shown that the durability of bituminous coatings in Java is much improved by the addition of rubber powder.

Some of those who use raw rubber have for long maintained that the 'fine hard Para', produced under primitive conditions in Brazil, is of superior quality to that produced on plantations. This controversy will presumably be revived by the report, given in Publication No. 62, that smoked sheets produced under primitive conditions in West Borneo may be of superior quality to those produced by native labour, following modern practice, in south Borneo.

The marked differences between fresh latex and old latex, some of which were commented on above, are responsible for an interesting development which is fully described in Publication No. 68. When old vulcanized latex is coagulated, a continuous coagulum is obtained; but if fresh latex is used for the vulcanizing process, and the product is then coagulated, the coagulum is not coherent and forms a powder, known as 'Mealorub', on drying. This very economical method of producing a powdered rubber will be watched with considerable interest, especially from the point of view of its use as a means of preventing the flow of road bitumens in hot weather, and as a means of binding certain types of road aggregates.

R. G. NEWTON

FORTHCOMING EVENTS

(Meetings marked with an asterisk * are open to the public)

Monday, February 28

UNIVERSITY OF LONDON (in the Physiology Theatre, University College, Gower Street, London, W.C.1), at 4.45 p.m.—Prof. C. Rimmington: "Haem Pigments in Nature".* (Further Lecture on March 7.)

INSTITUTION OF THE RUBBER INDUSTRY, MANCHESTER AND DISTRICT SECTION (at the Engineers' Club, Albert Square, Manchester), at 6.15 p.m.—Dr. L. R. G. Treloar: "Rubber Physics applied to Engineering Problems".

CHEMICAL SOCIETY, EIRE SECTION (joint meeting with the UNIVERSITY COLLEGE OF DUBLIN CHEMICAL SOCIETY and the WERNER SOCIETY, in the Department of Chemistry, University College, Dublin), at 7.45 p.m.—Prof. T. Dillon: "Researches on the Chemistry of the Algae".

CHEMICAL SOCIETY, OXFORD SECTION (joint meeting with the ROYAL INSTITUTE OF CHEMISTRY, in the Physical Chemistry Laboratory, Oxford), at 8.15 p.m.—Mr. C. S. Robinson: "Research and Productivity in Industry" (Alembic Club Lecture).

Tuesday, March 1

UNIVERSITY OF LONDON (in the Anatomy Theatre, University College, Gower Street, London, W.C.1), at 1.15 p.m.—Mr. R. B. Freeman: "The Life of Fleas".*

MANCHESTER GEOGRAPHICAL SOCIETY (at the Geographical Hall, St. Mary's Parsonage, Manchester), at 6.30 p.m.—Mr. T. Yeldham Unwin: "A Tale of Two Cities and other Places".

Wednesday, March 2

INSTITUTION OF ELECTRICAL ENGINEERS, RADIO SECTION (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Mr. E. C. Cherry: "The Analogies between the Vibrations of Elastic Membranes and the Electro-magnetic Fields in Guides and Cavities".

UNIVERSITY OF LONDON (in the Physiology Theatre, University College, Gower Street, London, W.C.1), at 5.30 p.m.—Dr. Tore Levring (Göteborg): "Submarine Daylight, Photosynthesis and Vertical Distribution of Marine Algae".* (Further Lecture on Friday, March 4.)

MANCHESTER METALLURGICAL SOCIETY (at the Engineers' Club, Albert Square, Manchester), at 6.30 p.m.—Mr. C. G. Conway: "Metallurgical Problems involved in the Manufacture of Components for Jet Engines".

Thursday, March 3

ROYAL SOCIETY (at Burlington House, Piccadilly, London, W.1), at 4.30 p.m.—Scientific Papers.

CHEMICAL SOCIETY, NORTH WALES SECTION (in the Edward Davies Chemical Laboratories, Aberystwyth), at 5 p.m.—Dr. E. A. Moelwyn-Hughes: "The Liquid State".