

## PHYTOCHEMISTRY

**S** PONSORED jointly by the Government of the Federation of Malaya and Unesco, a symposium on phytochemistry was held in the new Government chemical laboratories at Petaling Jaya, Kuala Lumpur, during December 4-8. The symposium, under the chairmanship of Prof. R. A. Robinson, was attended by sixteen overseas visitors, together with eighteen scientists representing the University, Government departments and research institutions in Malaya and Singapore.

The symposium was opened on Wednesday morning by the Hon. the Minister of Health, Mr. V. T. Sambanthan, and by the Unesco representative, Mr. Lennart Mattsson, both of whom emphasized that this was the first occasion since Malaya had achieved independence that a meeting of scientists including overseas delegates had been held in this territory and that in view of this region's dependence on plant products it was particularly appropriate that the first symposium should concern itself with phytochemistry.

Twelve original papers were presented to the symposium: "Avicennin, a new coumarin from *Zanthoxylum avicennae*", by Dr. H. R. Arthur (Hong Kong); "Constituents of *Phebalium nudum*", by Prof. L. H. Briggs (New Zealand); "Alkaloids of Apocynaceous Plants", by Dr. A. Chatterjee (India); "Preliminary Investigations on the C.N.S. Action of Indonesian *Rauwolfia* spp.", by Prof. A. J. Darman (Indonesia); "The Occurrence of some Optically Active Compounds in Anacardiaceous Exudates", by Dr. H. H. Hatt (Australia); "Testing for Anti-Arhythmic Action of New Compounds in Dogs with Ventricular Tachycardia", by Prof. A. S. Harris (United States); "Chemical Constituents of the Plants of

Coniferae and Allied Orders", by Prof. T. Kariyone (Japan); "The Isolation and Separation of Alkaloids of *Kopsia singapurensis*", by Dr. Kiang and Mr. R. D. Amarasingham (Singapore); "Recent Advances in Tea Chemistry in Japan", by Dr. Y. Sakato (Japan); "Bis-coclaurine Alkaloids from *Phaeanthus ebracteolatus*, with special reference to Phaeantharine", by Prof. A. C. Santos (Philippines); "Experimental Research on the Toxicity of Rice infected by *Penicillium citrinum*", by MM. Tran-Vy, Truong-Van-Chom and Bui-Duy-Tam (Vietnam); and "Preliminary Investigations on the Separation of Alkaloids of *Rauwolfia perakensis*", by Mr. Wan Sai Cheong and Dr. A. K. Kiang.

Surveys were presented by delegates from Australia, Hong Kong, India, Indonesia, Japan, Malaya, New Zealand, the Philippines and Vietnam describing the phytochemical work already done in their areas and outlining their future programmes. These surveys were integrated with round-table discussions of the problems associated with the collection of plants and their dispatch from field to laboratory, the chemical and biological methods used in the screening of plants for useful products and the exchange of further information between delegates on return to their own countries. The desirability of depositing specimens in recognized herbaria was stressed and the meeting expressed the opinion that in all publications from this region the herbarium number should be quoted. Unesco was asked to publish the proceedings and also to issue from its regional office in Djakarta a periodical newsletter containing items of phytochemical interest.

R. A. ROBINSON

## THE SHIRLEY INSTITUTE

**T**HE thirty-eighth annual general meeting of the British Cotton Industry Research Association was held at the Shirley Institute, Manchester, on October 10, with the chairman of the Association presiding. In his address, Mr. N. G. McCulloch said that he believed that the Institute could be of immense service to higher management in the field of operational, as well as technological, research. The chairman was also convinced that some kind of common policy among the directors of the 2,000 firms in the industry was essential if it were to be in a position to compete successfully in the European Free Trade area. He was very happy to be able to report considerable progress in the matter of the co-ordination of research with the British Rayon Research Association, and also to announce a generous offer by the British Man-made Fibres Producers' Committee which, subject to equal support being obtained from the industrial rayon users, would assist materially in financing the Association's work. Mr. J. Lindley, honorary treasurer, in reviewing the statement of accounts for the year, reported that although the new terms of the Government's grant-in-aid were potentially more generous, there would have to be a considerable increase in the industrial income, if the Association's funds were to achieve the full benefit.

Dr. D. W. Hill, director of research, then presented his report on the year's work which once again had

shown intense activity in all branches of the Institute's activities. In selecting a few of the recent developments for comment, Dr. Hill mentioned the great success of the dust hood, now re-named the Shirley pressure point system for dust extraction, in ridding the industry of byssinosis, an occupational disease of the card room for more than 100 years. The director also referred to the complete success in prolonged mill trials of the Shirley separator for hard waste breaking-up machines, a simple and inexpensive device which could be fitted to existing machines to separate out the harder waste which could then afterwards be reprocessed. The dry feed system for the automatic size box had been further developed to give precision and accuracy, and a new automatic size box was also being developed to deal with all types of continuous filament yarns. The Shirley loom for high quality fabrics, the prototype of which had been undergoing prolonged mill trials, was now working satisfactorily. The comprehensive programme of fibre blending was yielding results which were becoming rapidly available to members. Dr. Hill also made special mention of the work on flame-proofing, the new rapid ager for colloresine printing, the intensive survey of industrial mangling, and the bulked yarn programme. He pointed out further that in spite of petrol rationing, the Institute had had almost 11,500 technical transactions with its members (against 12,000 in the previous year) including 2,999

special visits, figures which, he thought, would be of interest to those who suggested that the industry was not sufficiently interested in technical advance.

As in previous years, the Institute's laboratories were open for inspection for two days with senior members of staff available for consultation. For condenser spinners the hard waste breaking-up machine was displayed. Much of the emphasis in the spinning section was on a number of simple devices for improving quality control in the mill. Much of the fundamental work on spinning has been devoted to the preliminary stage of a programme of research with the immediate emphasis on automatic regularity control at several stages of the process.

Weavers were shown a new dobby which has been incorporated in the Shirley loom. Two sizing innovations which attracted interest were the recent developments of the automatic size box, the principle of which has now found application outside textiles.

The work on raising carried out in the Finishing Department provided a display of important information on power consumption and on the effect on the rate of raising of variations in the cloth speed. The exhibition which attracted most attention from finishers, however, was the new flash-ager, for accelerating, and in some instances improving, the development of colloresine printing. Work on industrial mangles, which is almost complete, has led to the production of an improved liquid removal process, in addition to providing data from which target figures at which to aim in plant operation can be given.

Fundamental chemical work was represented by four exhibits. Infra-red spectroscopic equipment was being utilized for investigating chemically modified cellulose; the results were shown of a critical examination of the effects of cyanoethylation on cotton; the interactions of formaldehyde with cellulose and of formaldehyde with urea are being investigated and some results were illustrated which, in addition to being of considerable chemical interest, will advance the understanding of the increasingly varied resin-treatment of textiles; and the partition chromatographic techniques which have considerably advanced

knowledge of the structure of silk fibroin were demonstrated.

The Institute continues its fundamental investigations of the effect on yarn properties of blends of fibres (particularly of man-made with natural fibres) in various proportions in the yarn; work in three departments was displayed including the results of chemical treatment of various blends; another working exhibit was of the equipment for producing tailor-made synthetic filaments, the physical properties of which can be related to the chemical properties of the parent polymer.

There is a newly constituted department concerned solely with members' problems either of quality control or arising from the introduction of new fibres and processes in the mill and works. The department is staffed with physicists and chemists and textile technologists, and examples were shown of the use of spectroscopy in diagnosing biological damage, of the photochemical properties of certain new dyes and of the solution of some of the difficulties most frequently posed by members.

It is not the concern of the Institute to search for new textile products, but inevitably there are occasions when such materials are discovered during some broader research. On this occasion two such discoveries were displayed, namely, an elastic yarn made by a new process and a metallized fabric with novel optical properties. These aroused considerable interest.

Lastly, mention must be made of the continuing work on instruments for quality control which has had so great an impact on the industry in recent years, particularly since the setting-up of Shirley Developments Limited. The Company had its own display of instruments which it handles, and, in addition, there were four new instruments developed at the Institute which will shortly be handed over for exploitation.

The occasion of the annual general meeting and its two associated members' days was successful in attracting a total attendance of 800, representing 217 firms.

## INFLUENCE OF ORGANIC VAPOURS ON THE CRYSTAL HABIT OF ICE

By J. HALLETT and DR. B. J. MASON

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ICE crystals grown from the vapour, both in atmospheric and in laboratory supercooled clouds, show the following remarkable variation of habit with temperature<sup>1</sup>: 0° C. to -3° C., thin hexagonal plates; -3° C. to -8° C., needles and hollow hexagonal prisms; -8° C. to -25° C., plates; stellar dendrites around -15° C.; < -25° C., prisms.

Experiments by Shaw and Mason<sup>2</sup>, in which crystals were grown on a metal surface under conditions in which the temperature and supersaturation of the surrounding atmosphere could be varied independently, showed that the crystal habit was determined by the temperature according to the above scheme and that variation of the supersaturation produced no systematic effects. More

recent experiments<sup>3</sup> in which crystals are grown on a fibre suspended in the centre of a water-vapour diffusion chamber confirm this result. The habit of crystals growing along the length of the fibre, over which the temperature varies from 0° C. to -50° C., again changes in accordance with the above scheme with dendritic crystals being limited to the temperature-range -12° C. to -16° C. and appearing only if the supersaturation exceeds about 10 per cent. Variation of the supersaturation over very wide limits (0-300 per cent) does not induce changes as between the essential prism and plate-like habits, but such transitions may be induced by varying the temperature by only one degree centigrade.