

The Fifth Congress of the International Society of Sugarcane Technologists.

The Meetings and Excursions.

THE above Congress met at Brisbane in Australia from the 27th August to 3rd September, 1935—the meetings being divided into various sections such as Agriculture, Breeding and Sugarcane Varieties, Methods of Field Experimentation, Sugarcane diseases and various aspects of the factory. The Congress was well represented, the members who answered the roll call hailing from all the important sugarcane countries of the world—Hawaii, Louisiana, Porto Rico, West Indies, Cuba, United States of America, Peru, South Africa, British India, Java and others.

The State Government of Queensland, the Commonwealth Government of Australia and the various sugar interests in Australia, all combined to make the delegates feel quite at home in that interesting country. At the end of the Congress meetings at Brisbane a special train took the delegates into the various plantations and sugar factories. This tour which lasted almost a fortnight was very interesting as bringing the delegates into close contact with a Sugar Industry which has certain very interesting features to the visitor from abroad.

THE SWEETEST CANES IN THE WORLD.

Australia is adjacent to New Guinea which is believed to have been the home of at least one race of the sugarcane in cultivation and the dominant cane in cultivation in Australia to-day is Badila—one of the original types found in New Guinea. The breeding of new canes from seed has been in progress in Australia for some time and has resulted in types suited to special conditions; but in the best cane lands Badila still holds its own. This cane has been tried in various parts of India, but it has shown its usefulness only in one locality in South India—in the factory plantations at Nellikuppam.

Australia also grows the sweetest cane in the world and the sugar recoveries are higher than in most other countries due chiefly to the quality of raw material. The general trend of opinion at the Congress indicated the set of climatic conditions in Australia as the chief factor contributing to this superior quality. It was found that the same variety showed better juice quality in Australia than elsewhere. The Coimbatore cane—Co.290—which is proving useful in Australia chiefly on account of its marked

resistance to the diseases common in Australia, shows better juice quality in Australia than in India.

CROP GROWN WITH 100% WHITE LABOUR.

But perhaps the greatest interest of the Australian industry to the visiting delegates lay in its being run on a "White Australia" policy and the adjustments arising out of it. At present only white labour is employed in the sugar factories and plantations. The standard of living in Australia is said to be higher than in most other countries and the white labourer in the sugar plantations in Australia is entitled by law to receive as wages 16 shillings (Australian) per day, which is almost equivalent to about half a month's wage in Java and India.

This has led to a marked development in labour-saving machinery and this was prominently brought to the notice of the delegates during the itinerary after the Congress meetings. From the time of planting—which itself is done by machinery—right to the harvest the machine does all the field operations including weeding after cultivation, application of fertilizers, etc. As to harvesting machinery, though one was demonstrated in one of the largest plantations, the mechanization of this part of the operation has not yet been a complete success.

A WELL-PLANNED INDUSTRY.

The whole industry in Australia is run on a thoroughly planned basis, which naturally involves control at various stages either by Government or Pseudo-official bodies like the Sugarcane Prices Board set up by Statute. The area from which the factory is to derive its supplies, the wages to be paid to the labourer, the working hours for labour—including a factory holiday on Sunday—the price to be paid to the cane and the rate at which sugar is to be sold in the country, are all fixed.

AUSTRALIAN SUGAR WELL PROTECTED.

It was certainly most interesting to learn that whereas the price of sugar per lb. in Australia was 4d., the same Australian sugar sold in the London markets fetched only about 1½d. Though Australia loses about £6 to 8 (Australian) on every ton of sugar exported, ample justification for maintaining the industry is found (i) in finding employment for the Australian white population and that too at a high standard of

living, (ii) in populating the rather vulnerable North Queensland, and (iii) in supplying the country with home-grown sugar.

The profits of the industry appeared to be better distributed than in most other countries and one marked feature was the fair number of factories owned by the growers themselves on a co-operative basis.

DIFFERENT STRAINS OF THE SAME DISEASE.

On the scientific side, discussions at the Congress brought out many points of interest. The papers presented indicated almost unmistakably the possible presence of different biological strains or pathogenic types of one and the same disease. This has an important bearing on the transport of new canes from one place to another and on the methods of disease-resistance trials.

USE OF *Saccharum Robustum* AS PARENT.

Saccharum officinarum when crossed with *Saccharum spontaneum* (male parent) doubles its chromosome on the mother side. No such doubling takes place when *S. officinarum* is crossed with *S. robustum*. This opens up a new line of work in Sugarcane Breeding so far at least as the tropical sugar world is concerned. Sugarcane breeding has gained greatly by the use of *S. spontaneum* as one of the parents. The use of *S. robustum* has not yet been exploited and there are

indications from Hawaii that for Hawaii, at any rate, the use of *S. robustum* is likely to be useful. The delegates—including Dr. Brandes, the discoverer of *S. robustum*—saw in one of the Breeding Stations in Australia certain promising seedlings obtained from the mating with *S. robustum*.

MANY DISEASES KEPT UNDER FULL CONTROL

Similar interesting facts emerged from the discussions in the other Sections as well. But one fact which impressed the Congress as a whole was the very successful manner in which the various cane diseases had been controlled in Australia by suitable organization of control measures and growing resistant types. So efficiently has this been done that, though in the first circular it was mentioned that pathologists would have an opportunity to see many diseases, in the actual visits to the plantations it was difficult to get good specimens of the same.

The Congress was fortunate in having the presence of such a distinguished sugar-man as Dr. C. A. Browne, who was specially honoured by the Congress at its full session. The next Congress is to be in Louisiana in 1938 under the General Chairmanship of Dr. E. W. Brandes, the well-known head of the Bureau of Plant Introductions, United States of America.

The Shape and Size of the Earth.*

THE fundamental problem of geodesy is the accurate determination of the form of the Earth or the deviations of the actual geoid from the international ellipsoid and also study the dynamic causes that bring about a change in this form, the guiding principle being the principle of isostasy.

The problem of the determination of the form of the earth resolves into the following :—

(1) Observation of the mean levels of the sea; therefore a study of the tides in the oceans at different places.

(2) Observation of the surface inequalities. This involves levellings to determine the height, etc., by means of spirit levels and telescopes.

(3) Determination of distances on the earth in different directions. This is done by a system of triangulations by means of

chains of standard lengths made of invar to determine the distance of two stations along what is called a straight *base line*. A precision theodolite enables the position of a third station to be observed from the first two by noting from each the angular separation of the two other stations. This is extended through a large number of stations to those hundreds and thousands of miles distant. By assuming a mean form of the geoid the longitude and latitude (geophysical) could be measured with respect to a standard station, chosen centrally.

(4) Determination of the astronomical latitude by observation of the azimuths of two stars one on either side of the zenith, or vertical or plumb line, at the place of observation by means of telescopes.

(5) Determination of the astronomical longitude by observing the local time by the transit of stars over the meridian and simultaneously getting by means of accurately adjusted chronometers or time signals times

* The Survey of India, Geodetic Department, 1934.