

minary findings lend convincing support to the time-honoured belief in the efficacy of palm juice as a health giving tonic. It is to be expected that the researches now under way may lead to an entirely new approach to the problem of the economic utilisation of the juice.

There is one aspect of this problem which merits elucidation in some detail. Palm juice as a raw material for the manufacture of cane sugar offers many exceptional advantages. First, the expensive crushing machinery which is an essential part of every cane sugar manufacturing enterprise, can be eliminated in the case of a factory devoted to the manufacture of sugar from palms. Palm juice is the result of just "tapping" which of course is a highly skilled operation. Secondly, since the juice is comparatively free from chlorophyllous and other pigments, the process of clarification is considerably simplified. Thirdly, the juice is considered to be free from sucrose inverting enzymes, which minimise the formation of molasses. Fourthly, the annual cost of cultivation attending the raising of sugarcane crops is entirely eliminated. To-day, palms constitute a free and generous gift of Nature; they flourish without any attention in some of the most inhospitable and barren soils and continue to yield the saccharine juice for 60-70 years. With a little attention and care the useful life of the palm could perhaps be extended and the yield of juice augmented. These are problems for the

future when the palm will come to be recognised as the sugar yielding perennial.

It is interesting to recall that as early as 1901, a company (The Khandwa Sugar Manufacturing Co.) was organised in the Central Provinces to promote the production of palm sugar. The causes which led to the failure of the enterprise are obscure and it would be interesting and instructive to investigate them. Exact data are not available on the question of the yield of the juice per tree per season. It is roughly estimated that a single palm, if well developed, might yield sufficient juice to make a maund of sugar which, at the current rate, would cost about Rs. 35. If a hundred palms can be optimally stocked in an acre of land, the annual gross revenue per acre would amount to a surprising figure of Rs. 3,500. These data have to be checked but they serve to emphasise the potentially remunerative aspects of the enterprise. A conservative estimate of the number of palms in the country puts the figure at 4 crores; this potential source of natural wealth should be exploited. We would strongly urge the Provincial and State Governments interested in this perennial crop, to constitute a Central Advisory Board to devise ways and means by which this important source of raw material could be economically capitalised in support of Prohibition and the services of the present trade organisation mobilised on modern lines without creating unemployment in its ranks.

### DUTY OF SCIENTISTS TO THE STATE

ADDRESSING the members of the Gymkhana of the Indian Institute of Science, during his visit to the Institute on 21st August 1948 His Excellency Sri. Rajagopalachari referred to the immensity and the urgency of the problems of rehabilitation and reconstruction confronting Independent India. He said, "Without the help of science, our leaders will not be able to do much for the country. That is why the Prime Minister continually and, if I may say so, wistfully looks up to the help of science so that we could be enabled to do something for the people in spite of all our difficulties. I want you to realise your responsibilities. You are not simply here studying for a career. That might have been so before. Now you are studying in order to help the Government."

Proceeding, His Excellency declared, "I do not think that anywhere in India they have an Institute of this character and, if I may say so, of this size also. It has grown very big, it has grown very important. You have in your hands all science so to say and it is for you therefore to realise this fact that the leaders

in the Government of India are looking up to you. You must therefore study things with that realisation of your importance. If you do that, I am sure that in the course of the next 12 years the work of the Government will have been made much easier than it is now and they can get men to help them in all directions."

Concluding, His Excellency said, "Do not ask, what will be my salary and allowance. Your salary is service to the country, your allowance will be the smiles of the Government when you do well. If you realise this and find joy in it, I am sure that everything will be satisfactory. When you make an experiment in the laboratory, when you find the results successful and you are able to put them down on paper, you feel joyed apart from what you can get in rupees, annas and pies. Your studies as a whole are like experiments in the laboratory devoted for the service of the country and it must be a joy to you, indeed, if you have succeeded in your experiments."