(4) To train teachers in Horticulture etc.,

(5) To supervise the working of the school garden etc.,

(6) To conduct school garden shows,

S. RAMACHANDRA AIYAR.

Sugarcane crop, its past, present and future in relation to Noyyal valley.

(*Continued from page 274 of November Issue.*)

Milling and boiling Jaggery. About 30 years ago, the ryots were making use of a wooden mill for crushing cane. By this a large portion of the juice was being left unextracted in the megass. But in about 1880 an iron mill was said to be introduced at the initiative of the Government. The ryots soon came to realise the advantages of the iron mill. Now the iron mill is in general use for crushing and the wooden mill of the past cannot be had even for having a look at. The hearth now used for boiling jaggery is defective in some points, owing to which the ryot has to spend extra on fuel for boiling juice. The only changes that are now desirable in the furnace are (1) to provide a grate under the furnace for allowing the ash to pass through, lest it should collect and smother the fire. (2) To provide an ash chamber immediately below the grate to receive the ash, which can be taken off through a tunnel or vent in the ash chamber. The latter vent will also serve to set up a continuous draft of air to the fire.

Small quantities of lime are added to juice to neutralise its acidity. But enough attention is not paid for removing the scum. Their contention is that scum gives jaggery a colour which consumers prefer. The daily outturn from an iron mill and a pan is about 500 lbs. or 2 pothies, got in 5 boilings of 4 maunds each. The milling of canes from an acre of land takes about 15 to 20 days when the working hours are more than 16 to 18 hours per day. The milling and boiling is a very tedious and hard work. Often the canes cut the previous evening are delayed milling for some cause or other, such as want of labour, or cattle and

this is attended with loss of sugar. This iron mill itself does not extract as much juice from canes as power driven mills. With a view to demonstrate to ryots, how more economically and speedily the milling and boiling of jaggery can be made, the Department of Industries have installed a power driven crushing mill at Singanallur at a cost of Rs. 10,000. The mill actually crushes $1\frac{1}{3}$ tons of cane in one hour or 16 tons of cane in a working day of 12 hours which is equal to the produce from half an acre under Singanallur conditions. What would take 15 or 20 days to mill under the native method, would be finished in 2 days by this power driven crushing mill. The crushing station is also provided with 3 sets of pans placed over furnaces so constructed that the maximum of heat is utilised and the wastage of heat is reduced to a minimum. Here therefore the trash and megass are absolutely enough for boiling jaggery and the extra fuel need not be bought. During the 3 to $3\frac{1}{2}$ months which form the milling season the plant can crush, if daily worked, the produce from 50 to 60 acres. The ryots who are nearest to the crushing station and such of them as have the advantage of a road or a cart track avail themselves of the benefits of this plant. But the larger number of cane fields are situated out of the way where there is neither road nor cart track. Carrying canes by head-loads would not be worth the ryot's while to do. So it is only a few who are benefited by this installation. The ryots are charged Rs. 3 per pothi of jaggery produced here. In actual working, the outturn of jaggery per day is 9 pothies or one ton equivalent to about 9 tons of cane. But the crushing plant is capable of crushing 16 tons of canes if worked without the least interruption in a day of 12 hours. The receipts per day of crushing station are Rs. 27 at Rs. 3 per pothi on 9 pothies ; and the daily expenses during the season are Rs. 11 (for labour and oil). So the total balance at the end of milling season will be Rs. 16×105 days=1680 rupees. The station has to be closed for the remaining part of the year for want of work. The receipts are therefore just or hardly sufficient to meet the interest on capital, depreciation in machinery, and other expenses of the station. But the demonstrational value of the installation is great. The one or two things that struck me on a visit to this station are :—

(1) That the charge of Rs. 3 per pothi of jaggery produced should be reduced to Rs. 2 for 2 or 3 years until the ryots became accustomed to the change from their traditional method of milling.

(2) The sets of boiling pans to be raised from 3 to 5 as the crushing plant is capable of crushing more cane than the three sets of pans can deal with.

(3) The ryots must be instructed to form an understanding between them as to the time for cutting and carting canes to the station, as otherwise, there will either be too much or too little of cane delivered in the same day.

(4) Management of crushing station should be in the hands of the the Agricultural Department rather than the Department of Industries. The manager of the crushing station must be in close touch and sympathy with the ryots, to ensure the success of the station.

Conclusion. The future of the sugarcane crop in any particular locality is inseparably bound up with India's future as a sugar-producing country. The influx of cheap sugars from other countries has given a set back to the sugarcane cultivation in the whole of India. Even when the stimulus given to sugar production in some countries by bounties be withdrawn, which is bound to come to pass sooner or later, the cost of production will be the main genuine factor in the sugar market. Those who have worked out the question say that the cost of production of sugar in India is double of what it is in Java and other cane producing countries. The question of reducing the cost of production becomes therefore a question of the first and primary importance. This, I expect can be done in the following ways:—

(1) By adoption of a more intensive cultivation (Deep tillage and more thorough after-cultivation).

(2) Better manuring. Application of more manure given in a larger number of dressings. Green manuring must form part of the preliminary manuring.

(3) Economy in cost of cultivation :—

(*a*) Use of tops for sets instead of cuttings from whole canes.

(*b*) Use of wire netting in place of thorny fence.

(4) By avoiding wastage of sugar by deterioration as the result of delay between cutting and milling of canes or between milling and boiling. Adoption of power driven crushing mills on a co-operative basis is a point worth considering.

(5) Use of up to date furnaces by which maximum quantity of heat is utilised.

(6) Extension of sugarcane cultivation. This will take place by itself when cane growing becomes more paying.

(7) By importing or evolving new varieties of canes suitable to different localities and capable of giving more sugar per acre. With this object in view a cane breeding station has recently been opened which promises to do a great deal to the future sugar production in India.

All the above ways, severally and jointly may contribute to reduce the cost of production of the raw material. Then there is the demand in India for 600,000 tons of sugar which is now imported. To meet this demand sugar has to be manufactured in India. The one great hinderance to the realisation of central sugar factories is the cultivation of cane in small areas scattered over a tract. The deterioration of cane in the course of carriage from long distances to the factory will result in loss. To avoid this, Mr. George Martineau suggests in page 303 of International Sugar Journal Vol. XIII, 1911, the use of 'Fryer's Concretor' the trial of which he thinks to be the most likely line of policy to bring about practical results. He says that "canes cannot be carried long distances especially in tropical climates, but Fryer's concrete can go anywhere." He describes the concretor to be a very simple inexpensive and easily worked contrivance by which the cane juice can be converted into solid mass, this concrete will be just like jaggery only clean instead of dirty, brighter yellow instead of black and

as sweet and pure as honey; that the process of manufacture would be very simple without any elaborate arrangements of evaporation and vacuum pans, and the result would be exactly suited to the exigencies of Indian conditions; that the working of the Fryer's concretor can be done by a few intelligent men competent to work the few necessary bits of machinery. That the concrete produced will be a purer substitute for jaggery both for native consumption or factory purposes. This 'Concretor' is therefore worth a trial. If it should serve all the purposes better than jaggery then it would be worth having. Then a central factory will be able to deal with all cane within easy reach and obtain the so called "Concrete" from long distances. The one obstacle in the way of sugar factories will be successfully met with if this concrete could be done with small expense and trouble.

The sugarcane cultivation is at present threatened and is on the decrease for reasons already given. It seems to me quite possible to resuscitate the sugarcane cultivation by the ways detailed above.

It also appears to me the goal will be sooner reached if the cheap sugars are stopped by import duties until India has made sufficient advance in sugar production methods and if experimental factories or subsidized factories are opened in more suitable localities as a beginning.

M. MANGESA RAO.

Correspondence.

To

THE EDITOR,

JOURNAL OF THE

MADRAS AGRICULTURAL STUDENTS' UNION,

COIMBATORE.

SIR,

Your correspondent, "a member" accuses me of holding the *western* idea that it is better to spend too fast than too slow. I regret I did not make myself clearer. I endeavoured in my original contribution to emphasize the fact that the Union was not at