It is a general complaint from most of the ryots and asamies that they do not get the same weight of kappas or lint as weighed by them in their villages. Generally one or two dadiams of kappas becomes short per borah or per naga of 18 maunds or 318 lbs. taken to the market for sale, because the weighment is not done properly by the buyers' weigher who will have some underhand dealings wtth the dallalidars through whom the buyer gets the kappas carts. But this is very difficult to prove.

Regarding the fixing of rates:—The market rate is only nominal but neither the ryots nor the asami ever gets the real market rate for his stuff delivered to the buyer. The buyer simply announces in the market and assures the seller with a false promise that he would pay him the exact market rate of the day and asks him to take the carts into his compound but as soon as the carts are unloaded in his compound for passing he will fix for one or two borahs out of 8 or 10 borahs the so called real market rate of the day and refuses to purchase other borahs at the same rate with some plea or other and begins to dodge and asks the dalladidar to take back the other borahs. Afterwards the dalladidar informs the party whether he is willing to part with the kappas at the rates asked by the buyers. If the party takes back the refused borahs into the compound of another buyer he will either ask at a much reduced rate or put unusual marks and allowances. Therefore the position of the ryot is very precarious and is left to the mercy of the dallalidar and the buyer, as he has no choice of his own over his stock when once the stock is entrusted to a dallalidar.

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*WORK ON RICE IMPROVEMENT IN THE TANJORE DELTA.

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Before dealing with the subject of Rice Improvement in the Tanjore-delta, I propose to give briefly the salient points relating to work on crop-improvement in general. It is a commonly recognised fact that the agricultural prosperity of a country is

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dependent upon the magnitude of its crop-production. The growing of better crops, the reaping of heavier harvests, and the realisation of better returns, are objects that are ardently desired by all agriculturists. There are over a million acres under rice cultivation in the Tanjore delta area and if it should be possible to increase the output of rice from this area, it would undoubtedly be a material contribution to the welfare of the country. A recognition of the following facts is a necessary preliminary to work on increasing the productivity of any crop.

It is a truism to say that no two individuals are quite alike, and this saying holds good with regards to plants as well. A close examination of a large number of individuals discloses the fact that there is a very large range of variation occurring among them. There are minor differences distinguishing one individual from another, and there are also what may be called racial differences separating one class or race of individuals from another class or race. A recognition of this fact is of great importance in work on plant-selection.

It would be futile, nay ridiculous, to think of converting a pigmy into a giant by carefully regulated nutrition. 'Nature' is something entirely different from 'nurture,' although the two factors co-exist in actual life. The yield of paddy plant is determined by the interaction of two factors namely, heredity and environment. The environment may be favourable or unfavourable to the expression of a hereditary factor, but the factor must be there before it can be made to show itself. All paddy plants are not of the same yielding-capacity, and it would be absurd to imagine that a very high yield could be produced by manuring alone: and that is rightly so, because the capacity to assimilate nutrition and build it up into paddy-grains is something quite different from the supply of nutrition alone. It is a well-recognised fact that different varieties or races of paddy possess different yielding-capacities. It should therefore be possible to get at the best yielders by judicious selection.

If we look at a paddy-crop growing on a ryot's field, we notice that some plants are tall and good-looking, some short and low-yielding, some sickly and producing very little grain. From the plant-breeder's point of view these seemingly different kinds

represent distinct varieties. This mixture of good, bad and indifferent plants is the chief cause of deterioration of the ryot's paddy. If the ryot had taken care to select the very best plants in his fields, and used the produce of such plants for the next sowing his crop would certainly be better. Two charts are placed before you all in the exhibition which make my point absolutely clear.* We received a sample of *'kuruvai-seed'* from an ordinary ryot in the neighbourhood, and when we looked at it closely in the laboratory, the so-called kuruvai paddy which was supposed to be one variety with the ryot, really consisted of six different kinds of paddy and two different colours of rice. Some of the varieties are positively unmarketable, being either black in colour or slender and fragile or with awns. The rice too being a mixture of red and white rice is graded as a low class of commercial product, and consequently the financial return to the cultivator is poor indeed. You may ask what the remedy is, to solve this problem? We do not propose to teach the ryot the details of scientific work. The State or the Government gladly undertakes the trouble and expense of such work. We examine very carefully a sample of the mixed-paddy grown by the ryot, separate it into its constituent pure-races by singleplant-selection, try these varieties one against the other with regard to yielding-capacity and finally isolate the very best strain, multiply it on a large scale, and recommend the new seed to ryots for adoption. We do not wish the ryot to give any preferential treatment to this seed, but we only ask him to grow it in place of the mixed seed which he had been growing formerly. These processes lead to the evolution of an improved strain of paddy by pure-line-selection. This method can be relied on with certainty to produce good results. It stands to reason that once we fix upon an extremely good race of plants and keep it pure, it will certainly go on producing its like. It takes usually as many as six years before an improved strain of paddy can be produced by this process. I invite every enlightened mirasdar present here to look at the diagrams and miniature-models illustrating every stage in pure-line selection work. Varieties of paddies grown in various parts of the country are collected and grown here to give us an idea of their relative yielding-power under local conditions. This again affords us material for further selection-work. There is yet another more interesting and absorbing line of work for effecting crop-improvement. This method is known as 'hybridisation' or

*not reproduced here.

'crossing;—a method which holds out very great promise of future possibilites. Every mirasdar knows that if he wants to improve his breed of cattle, he should set about it by the crossing of local types with superior foreign breeds. He fully recognises for instance that it is impossible to raise the milk-yield of his cow above a certain limit, by feeding it with any amount of nutritious cattle-fodder. The same fact holds good in regard to plants as well. Among paddy plants, as has been already pointed out, there are numerous varieties, the plants of each variety exhibiting definite characters. One variety is late and heavy-yielding. It may be asked how one variety of paddy may be crossed with another. It would be unnecessary for me to go into the details of this process which has been demonstrated clearly this morning to all the visitors who went round the farm. There is a variety of paddy cultivated largely in the Tanjore-delta which all of you, mirasdars, will be familiar with. This is the Korangu-samba paddy which gives a very good yield in years in which it is free from the attack of fungal disease (paddy-blast); but should the paddy be attacked by the disease it is very badly affected and most of the grains get chaffy and sowers have to reap with regret a harvest of chaff. Another strain of paddy called Kichili-samba (G.E.B.24) appears to be rather resistant to the disease but in grain size aod other qualifications it does not offer an absolute alternative to korangu-samba. To combine these two desirable characters of heavy-yield and disease-resistance found in 'Korangu-samba and Kichili-samba respectively, a cross is made between the two types. When the progeny of the cross is examined, we may get true breeding plants which are disease-resistant and high-yielding. It may thus be possible to produce a new type of 'Korangu-samba' which will be able to resist the disease. Work of this kind is laborious and and slow, and it takes a long time (about ten years) before definite results are achieved.

Having so far, dealt with facts relating to scientific work, let me now briefly tell you what exactly has been done so far at the Paddy Breeding Station here to improve the paddy-crops of the Tanjore delta. This station was started in 1922 with the intention of increasing the output of paddy in the million acres of paddy-fields in the Tanjore delta. The soil at Aduturai is fairly representative of the delta-soil, and improved strains of paddy reared on the station can be expected with certainty to do well anywhere in

the delta-tract. As a result of several years of work, seven improved strains of paddy have been distributed to the ryots, and encouraging reports have been received from places where they been tried.

These strains are.—

(i) Aduturai No. 1 (Red sirumani).

This crop takes about six months from sowing to harvest, and the seed issued from the station gives an increased yield of 16% over the ryots' sample of the same variety.

(ii) Aduturai No. 2 (white sirumani).

This is again an improved variety of white sirumani paddy, and it gives an increased yield of 10% over the ryots' seed of the same variety.

(iii) Aduturai No. 3 is a selected strain from 'Kuruvai' taking only about 90 days to mature.

(iv) Aduturai No. 4 is another improved 'kuruvai' variety giving 12% increase over the ryots' seed.

(v) Aduturai No. 5 is a selected Nellore-samba paddy which gives an increase of 25% (or 3 marakkals per kalam) over the unselected variety.

(vi) Aduturai Nos. 6 and 7 are selected ottadan varieties which give a 13% increase over the unselected ryots' crop.

May I conclude this paper with an earnest appeal to all of you, mirasdars, present here, to co-operate wholeheartedly with one another in growing, multiplying, and distributing to your less enlightened neighbours, seed paddy of improved strains issued from Aduturai, so that in the fullness of time your purses will grow long with increased profits, and the Agricultural Department may have the satisfaction of looking back with sincere pleasure on an era of useful service to the country.