

Deducting a maximum expenditure of Rs. 100/- per year over a watchman and Rs. 40/- per year towards manuring, weeding etc., the net saving to the Municipality will be Rs. 1,300/- in a year from the budget allotment towards the purchase of fodder for conservancy cattle. Other Municipalities or Unions or Panchayat Boards who have similar facilities may with advantage copy the action taken by the Vellore Town Municipality.

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AGRICULTURE UNDER THE FASCISTS

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I have much pleasure in accepting the invitation of the Madras Agricultural Students' Union, to speak this evening about the many things I have seen in Europe, particularly in Italy, under the new regime. I had the advantage of going to Italy with a request sent by the Madras Government to the Government of Italy, to give me official facilities for seeing the work there, both by way of agricultural research and by way of other agricultural organisation; and the Italian Government were extremely kind, and showed me great courtesy and consideration in giving me full facilities for seeing the work that was being done there. Italy, I have visited thrice—I was there in 1922 before Signor Mussolini became head of the Government; I was there again in 1927, and the present was my third visit—and, every time I found an enormous change had very emphatically shown itself in the spirit of Agricultural Research in Italy.

The general level of research work in Italy, and even in Europe, is about the same as that obtains in India. In fact, except in Russia, the quality of research work done at Coimbatore is second to none. The great difficulty in India, has however been, that in spite of the large accumulation of results of research work, we are not making headway actually in the application of those results. I wanted to see whether in Italy, which approximates somewhat to the conditions of India, people having small holdings can adopt the results of scientific work in practice and if this had been successful I wanted to study the methodology of how this was being done and I may say, that I did get indeed a few ideas.

What was called the wheat campaign was started in Italy in the year 1925 by Signor Mussolini and it went on for five years. It was

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started under the chairmanship of Mussolini with representatives of various agricultural federations, which has branches all over the country. The campaign was successful to the extent of raising the average yield of wheat by something like one-third,—not only that, it also increased the area under cultivation. There are now a million acres of wheat in Italy, and wheat costing about six crores of rupees, is now produced in the country itself and not imported as before. That, you would admit, is an appreciable result, and I doubt whether in India we will ever be able to achieve such results. I therefore wanted to study the methodology behind this wheat campaign and see how they were able to spread results of scientific research, to an extent that we in India have not been able to do.

In order to increase the production of wheat in the country, not only sustained efforts were made to raise the yield of wheat per acre, but land considered previously as unfit for agriculture, was reclaimed. Round about Rome, there was and had been, large areas of swampy land, which several centuries of Italian Government have tried to reclaim without any success. The Fascist Government tackled this problem with all vigour, applying to it, what they call, the principle of 'Integral action' (i. e.) studying the problem in all possible aspects and taking measures to deal with them all. The principle which the Italian Government recognised was, that land reclaimed on a large scale, was of value not only to the individual cultivator, but was of value to the nation as well. In Italy, the problem after the war was the large number of discharged soldiers for whom suitable work could not be found. These wanted to settle on land but there was no land available. Therefore a land-reclaiming society consisting of ex-soldiers, called '*Opera Nazionale*' was formed towards which the state contributed 7 crores, and $1\frac{1}{2}$ crores were raised by public subscription throughout the country. This society bought land and reclaimed it with the help of the state, which contributed 87 % of the cost. The state also paid 25 to $37\frac{1}{2}$ % towards the cost of agricultural improvements or advanced loans for such purposes at an interest of $2\frac{1}{2}$ %. From the second year onwards the state recovered half the produce of the land, from which advances were deducted. For four years, the Commissariate of Internal Immigration paid from Rs. 400 to 800 a year for the maintenance of the cultivator, and after four years, the cultivators were offered purchase of land in 15 years' instalments. In this way, an area of $2\frac{1}{2}$ million acres has been reclaimed in Italy during the last few years at a cost of 600 million rupees, and, about 15 million acres are still proposed to be reclaimed. I had the good fortune to visit two of the reclaimed areas. The hydraulic reclamation (i. e.) the cutting up of the land, draining it, and making it healthy for settling—was started in 1926 and completed in 1929. The agrarian reclamation which started in 1929 is still going on, and roughly it takes two years on the average for grain to grow on the reclaimed land.

Towards the Rs. 4000 required for reclaiming each acre of this land, the state gave Rs. 3500, and the society Rs. 400 ultimately to be paid by the cultivator himself. The Government also spent Rs. 500 per acre for preparing the land for cultivation, for building houses etc. One might consider that a sum of £ 40 million is perhaps too large an amount to spend on land reclamation, although 2½ million acres of cultivable land more have been added. But, larger sums than these have been spent in Europe on wars without any tangible gains, while reclaimed land ensures increased production of food, less expenditure to the state, and incidentally solves the problem of unemployment, illhealth, cost of export etc. The state takes a large view of its economic duties, and does not hesitate to incur expenditure, which it believes, will be justified in the long run.

Next to reclamation, comes agricultural research. Of course agricultural research in Italy is very much the same as in other countries. But the present regime was the first in Italy to take hold of research work done and make use of it. Prof. Strompelli who has been working for thirty years on wheat, has several improved varieties, which in special regions have yielded as high as 6000 lbs per acre. Prof. Novelli has similarly been working on rice for many years, as a result of which, the production per acre, which, before 1860 was only 1300 lbs, now averages 3600 lbs, with the maximum having gone to even 8000. At the Institute of Agricultural Chemistry, Rome, Prof. Thomasi has been putting his principle of 'supercultivation' into practice (i. e.) intensive irrigation, dense semination, manuring, cutting at comparatively young stage—methods which have succeeded in raising the acre yield of wheat in an experimental area to 11000 lbs, and by methods which aim at the maximum conservation of moisture in the soil, he has made it possible to raise seven crops a year.

The fascists have also re-organised vocational education including agricultural education. Agricultural propaganda is ordinarily the duty of what are called 'Ambulating chairs'. An officer holding such a place was available for each of the 92 districts of Italy, a district being generally called the Province. These Ambulating Chairs are responsible for giving technical advice to agriculturists for doing propaganda, for arranging special courses, for holding exhibitions, for calling together conferences of agriculturists and for making representations to political authorities. They are semi-official and are maintained by the local Council in charge of the district or province. There are also under the control of the Ministry of Agriculture, and the Director-General of Agriculture. A national wheat victory competition has been organised with a prize list of Rs. 4 lakhs, and prizes of Rs. 2½ lakhs are also given for improvement of livestock. The prizes are awarded annually in Rome at a ceremony where all the members of Government are present and the prizes are presented by Sgr.

Mussolini himself. A wheat motor train of 8 exhibition vans is sent out as a travelling exhibition carrying samples of seeds, fertilisers, machines, cattle-food, etc., and the train before start was personally inaugurated by Sgr. Mussolini. A list of 10 commandments has been drawn up for the wheat grower and propaganda is being made in respect of them. Numerous agricultural films have been made by the Luce Institute in Rome and they are exhibited in different parts of the country. As regards manure, orders of the Government make it compulsory for cultivators to keep manuring pits of approved design, otherwise they are fined and they lose financial facilities for livestock.

The price of wheat is kept up by means of a tariff so that the producer of wheat gets a reasonable return for his wheat. Agricultural credit is provided for by the putting up of warehouses where the cultivator can store his produce and obtain advances. Institutes and banks which provide agricultural credit for Rs. 50 crores are available, of which the State furnishes 37½ per cent. In each local area, a syndicate has been formed one for the cultivators, one for direct owners and one for indirect owners. There is a federation of syndicates for each district and a confederation for the whole country. Wages and conditions of work are fixed by local syndicates. A male labourer gets about Rs. 3 a day, and a woman labourer about Rs. 1½.

Although the campaign was specifically undertaken for the production of wheat, they have generally improved the whole structure of agricultural production. There is also a philosophy behind the methodology of the wheat campaign. The methodology by itself could not have been successful even if the Government had undertaken all these farsighted measures of organisation. It was one of the declared objects of the fascist party that they looked forward to the ruralisation of Italy. They wanted to create an agricultural conscience and raise the prestige of the agriculturist. They regarded the agriculturist in the same position as the civil servants for whose essential work to the community they were paid. The Agriculturist also produced food which was essential for the community. He had, therefore, his rights and duties. And with such an enhanced prestige for agriculture they started a movement of "back to the land". They believed that an agricultural population was more healthy and sane than an urbanised population.

The cry of 'back to the land' in Italy is not, however, the cry that you have in this country and elsewhere. In Italy 'back to the land movement' is worked on the principle of what may be called 'extension and tension', that is to say from a central area which provides amenities, radiate activities all round in connection with the improvement of the land. Progress is spiral not circular and you not merely go back to agriculture, but go back to improved agriculture.

When I had the pleasure and privilege of seeing Sgr. Mussolini he told me three things, that they attached great importance to agriculture, that they attacked problems of agriculture on a wide front, and thirdly, that they were able to get their cultivators to accept the results of science. These three things sum up what the wheat campaign has done. It was the Government that organised and backed up the campaign. The problem to them was how to make the individual do something which to himself was not much, but to the community was much. At the back of this economic organisation was the spiritual background. In the Agricultural Department here they are trying to improve everything but the man (laughter). They have been trying to improve manure, the seed, agricultural implements and all sorts of things. But the missing link in their agriculture was the man. Two things we require; one was stimulus in the shape of organisation on the part of Government and non-official agencies, and the other the spirit of the people. We might increase the strength of the economic stimulus but we must also re-arouse the spiritual life of the people.

Research Notes.

On Crossing Tobacco.

Tobacco is both a self and cross pollinated plant. The technique of crossing in tobacco is simple as the flower is fairly big and handled easily. The method described here is a modification of G. L. C. Howard's.

The colour of corolla is a reliable indication of the development of the stamens and stigma inside the flower bud. The corolla lobes of the flower buds that will open on the next day exhibit light pink colour. In a young flower bud the stamens are much below the stigma and the filaments grow very rapidly as the bud develops. During anthesis, the stamens occupy one of the three following positions viz. a little below the stigma; flush with the stigma; or a little above the stigma depending on the type of the tobacco. Dehiscence of anthers takes place even before the flowers open. This character is not associated with any type in particular for the flower buds with both the burst and unburst anthers can be noticed in the same inflorescence on the same day at the same time in the various types of tobacco. In no case however, were the anthers observed to dehisce at the time of emasculation. Under Guntur conditions the receptivity of the stigma follows the bursting of anthers. The flowers commence to open from 8 A. M. and the bursting of anthers takes place usually from 8-30 or 9 A. M. to 4 P. M.

Crossing:—The male and the female parents are selected at the first instance and the flowers that are to open on the following day are protected by enclosing them in tissue-paper bags. The corolla tube of the flower to be pollinated is scissored off just above the stamens and stigma. Two V shaped bits at the top of the scissored corolla tube are removed from either side thereby thoroughly