

10 Supervisors with head-quarters at Vizagapatam, Bezwada, Madras (for Chingelput circle), Cuddalore, Tanjore, Trichinopoly, Tinnevely, Coimbatore, Vellore and Gooty.

On looking over the copy of the rules we find that special facilities will be given to the ryots in well-boring and blasting, and the erection of pumping, cotton ginning, rice-hulling and other installations.

Rural Agricultural Education.

India's prosperity lies in the field of agriculture. In general, we take to agricultural life easily enough. The geographical conditions of the country are favourable and proper agricultural education of the people can have a very pronounced effect on our general well-being. The British ever since their advent into this country have been keenly alive to our agricultural needs and offered facilities for the improvement of our primitive agricultural methods by establishing from time to time at various centres, Agricultural colleges, Farms, Research Institutes, Horticultural and Botanical gardens. The deliberation of the Famine Commission of 1878 landed the India Government in a definite policy of preparing us as an agricultural nation. By this it should not be understood that every Indian is expected to become a graduate in agriculture and should take to the cultivation of the soil only. The object is to make every Indian by a suitable training in schools in their boyhood to take an intelligent interest in the cultivation of the soil in his after life in whatever calling he may be engaged in. Every Indian is expected to take an active interest in agriculture by studying the varying methods of cultivation with the help of his early training in the schools and with the help of his superior culture in other professions; to give the ryots the benefit of his study and experience, to suggest possible improvements in many of the crude operations and also to translate to the ryots the results of experiments and demonstrations conducted by Government. Agri-

cultural Exhibitions, Associations, Cattle Shows etc., will then be truly represented by Indians for whose benefit they are intended. To attain this noble object, the India Government in all their educational despatches have been emphasising the necessity of suitable early training in schools, in nature study and school gardening so as to turn every Indian into a lover of plants and plant growth, animals and animal rearing. In this Presidency this idea of the India Government was given effect to by arranging weekly lectures in Training colleges and schools, by introducing elementary agricultural books and by introducing Elementary and Intermediate Examinations under the scheme of the Government Technical Examinations. The effect of all these have been practically nothing, owing to the misconception of the Educational Officers themselves, and of the students and people also. Responsible educationists were under the impression that these lectures, books and examinations are intended to make the school masters as experimentors and demonstrators of agriculture in their school gardens and to be also expert agricultural advisers to the surrounding ryots. If it is possible to make these school masters, Doctors and Engineers, it is possible to make them Agricultural Experts also. Of course many school masters do pose themselves as Doctors, Magicians, etc., to popularise themselves and to augment their income. I know hundreds of school masters are appearing year after year for the elementary and Intermediate Examinations in Agriculture and have myself been their examiner in some years. I do not know how a pass in these examinations covered as they are in testing the candidates' knowledge of Farm-yard manure and of the cultivation of Choram and Paddy, qualifies him to train boys as observers, thinkers and experimentors. It is to correct this misconception that the India Government on or about the year 1902 have in clear unmistakable terms stated that all school masters should be so trained that they may in turn train the school boys in their care, as observers, thinkers and experimentors. The object of such a training should be to prepare the present school population to take an interest in the future agriculture of the country and it is the duty of the Agricultural Department to look to the present agriculture of the country. I am therefore convinced that Agricultural knowledge is of

no use to school masters. Again the so called elementary agricultural books are being misplaced in the hands of school boys. If Moore's Book on Family Medicine can be used as a text book to prepare the school final candidates as Doctors, then the teaching of agriculture as an optional subject for the school final examination is justifiable. All school masters should therefore be trained in Nature study, Horticulture, and Elementary science. Agricultural graduates with a good training in Horticulture and in Teaching would prove very good trainers of school masters of all grades. It is Horticulture that will excite the interest of children and even adults to observe. The Educational Department should insist on every school to maintain a neat and well-kept garden, however small it may be. With any collection of any rare plants, interesting and exciting lessons on nature study can be taught. A good collection of capsicums, flowers and some specimens of brinjals and maize cobs, in a neatly kept garden, will surely make children observers, thinkers and experimentors, more than all the vast fields of Cholan, Cumbu and Paddy, amidst whose surroundings the teeming millions of India are brought up. It was the observation of a careless youth that led to the great invention of steam engines and ships. An experiment with an ordinary tea-kettle to demonstrate the property of water in its gaseous state will be more interesting and useful than an elaborate lesson on the Capillarity and Porosity of bodies to the boys of the lower forms. Most of the machines and their parts are only imitations of the various parts of animals and plants. Various operations in Agriculture, Medicine and Engineering are only imitated from nature. In short all the arts, industries and professions have been the outcome of observations of nature, natural objects and their phenomena. A lesson in a school garden showing the boys ordinary plants and animals, explaining to them how the hundreds of raw materials now used in Indian homes are from either plants, animals or minerals would be more useful to an Indian boy than an elaborate lesson on soap and iron manufacture. It will be interesting to ascertain for example what percentage of the pupils of an upper secondary school can correctly assign the sources of production of such articles as Assafoetida, Camphor, Rubber, Kerosine Oil, Silk, Candle, Glue, Wool,

Musk, Incense, Enamel vessels, Glass, Indigo, Lime, Shells, Sugar, Quinine, precious stone, paper etc. A considerable number of the literary population somehow derived the queer notion that Assafoetida is coagulated blood of an animal that they could not name. Camphor is dug out of the earth, Rubber is the skin of the camel, Kerosine Oil is extracted out of some poisonous seeds, Coal is made by drying elephant skins, silk is glazed cotton etc. Would you not be surprised to hear that students of a VI form told their teacher that betel-leaves are produced by tall trees like palms. Such profound ignorance among the literates should no more be tolerated. To remove such ignorance among boys, to train them as real lovers of plants and animals, to enable them to choose their own professional studies, I beg to propose the following :—

Model School Gardens should be attached to all Government Training Colleges and Schools. All schools should be compelled to maintain small neatly kept gardens. The Science and Nature Study should be so framed that lessons on them could be taught in a school garden only and never within the four walls of the school. It is unnatural to study nature and the different phenomena of the several elements in the artificial surroundings of a school. Laboratories are intended to conduct experiments of the observations of the various phenomena in nature. Children must therefore be made to observe nature first and imitate experiments then. In their examinations of plants and animals the teacher should indicate to the students nothing more than the Vernacular names they bear and the economic purposes which they subserve and allow them to find out the rest of the details for themselves gradually. The organic or the inorganic origins of the hundreds of raw materials in daily use in our homes should be explained by a reference to the plants, animals and minerals themselves as far as possible and to their pictures where they cannot exist in the locality and steps should be taken that all these are in constant view of the boys. Lessons on the properties of solids, liquids and gases and of all the mechanical powers must be given in the garden itself with illustrations chosen from the objects or phenomena occurring there. All the geometrical shapes and their

measurements could be taught entirely in the school gardens. A lesson in a school garden on the various methods by which plants protect themselves from their enemies would be more interesting than one in a school room on Nitro-Bacteria. An illustrated lesson as to how different climbers adapt themselves to climb over supports would be more suited to the age and comprehension of the boys, than a dictation of elaborate notes on the classification of soils and the methods of cultivating Choram, and Tobacco for getting them by heart.

Examinations should not be conducted on paper but only in school gardens. If a school boy is able to separate sand, clay and the organic matter in the soil, even though he does not know the various ingredients and if a boy without knowing the definitions of capillarity and porosity shows, however, how water rises if a lump of clay is held over a basin of water just touching it, I would consider these for instance good scientists. In these ways the boys should be introduced to scientific habits of the study about plants, animals minerals, the properties of solids, liquids, and gases, and the mechanical powers and of Chemistry, Geometry, and mensuration.

To do this agricultural graduates with special training in horticulture, nature study, elementary science and teaching should be appointed to all training schools and colleges with prospects of rising as Sub-Assistant Inspectors of schools. They should be in charge of Model school gardens equipped with all facilities for teaching elementary botany, zoology, physics, geometry and mensuration. School gardens should be attractive and interesting by growing in it specimens of cereals, pulses, flowers, vegetables and all other economic and ornamental plants as far as possible.

One Inspector of school gardens for the whole Presidency should be appointed, whose duties shall be.

- (1) To be in charge of a central nursery, model garden and seed-store.
- (2) To distribute seeds and plants to all school gardens.
- (3) To prepare plans and give estimates to school gardens.

- (4) To train teachers in Horticulture etc.,
- (5) To supervise the working of the school garden etc.,
- (6) To conduct school garden shows,

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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