

Another example is the bud-rot of palms. As it is not practicable to spray palmyra trees with a fungicide, recourse must be had to the surgeon's knife. So familiar have the Tahsildars, Revenue Inspectors and Village Officers, who carry out in the field the operations against this disease, become with the symptoms that, in the majority of cases, they can detect a diseased tree before the central bud is killed. If they cut off every leaf base that shows the diseased spots, the fungus is completely removed and the tree grows a new set of leaves that are quite healthy. It is not possible to save every infected tree because the first outward sign of disease in some cases appears only after the growing point is dead and the tree is beyond recovery. When the central expanding leaf becomes yellow it is possible to save the tree by promptly cutting off all the diseased leaf-bases but unless this is done within the first 3 or 4 days it is useless as the bud is killed by the fungus meantime. In other cases rows of spots appear on the leaves and such a tree can be saved by prompt surgical treatment in every case.

In 1910 when we were not so familiar with the disease the number of trees that died was 74,000 and there were very few recoveries. In 1914, 33,000 untreated trees died and 41,000 recovered after treatment, while in 1915, 20,000 untreated trees died and 32,000 treated ones recovered. Thus in the last two years 73,000 palmyra trees have been saved from death and this means a considerable gain to the cultivators, besides which the disease is now more in hand than it has ever been.

Manuring of Sugar Cane in Godavari and Vizagapatam Districts.

In the deltaic tracts of the Godavari district cane fields are usually crowbarred in January after paddy harvest when the land cracks fairly deep. The work is generally done on contract at Rs. 10/- to 12/- per acre. When the clods dry fairly well the

fields are flooded towards the middle of February, cane sets broadcasted the next day and pressed down in the mire. No initial manuring is generally done. The fields are usually trenched towards the end of April and before the closure of the canals when one good flooding is given. No irrigations are given in the hottest part of the year for nearly 40 to 45 days when the canals are closed. The deep tillage by crowbarring and the retentive nature of the soil (heavy black clay) maintain the crop during this period of drought. This may probably be the reason for not applying any manure when the crop is planted as manured fields suffer most in the hot weather and they must consequently be irrigated.

When the canes are about three months old, castor cake at 10 bags (1660 lbs.) per acre is universally applied early in June after the opening of the canals or after the out-break of the South-West monsoon. This forcing manure accelerates the growth of the canes and usually very heavy crops are harvested.

The paddy crop immediately following canes is invariably poor and experience has taught the delta ryot that this is actually the case. Therefore every landlord insists in the following condition inserted in the lease. "No cane crop shall ever be cultivated on the land in the last year of the lease," so that the after effects of the cane crop are borne by the tenant as both are aware that the paddy crop after canes must necessarily be poor.

But in the Vizagapatam District the treatment is entirely different. Fields intended for cane planting are always ploughed, at least 20 times, either sheep-folded heavily at 6,000 to 8,000 sheep per acre per night or 40 cart loads of penta (a mixture of cattle manure and house hold ashes) are applied per acre. The fields are then laid into beds of convenient size for irrigation from wells and sets planted fairly in regular lines along with irrigation from March onwards. When the canes are about $2\frac{1}{2}$ to 3 mont'

old about Rs. 20/- worth of green wild indigo plants are spread over the field, trenched and the leaf covered with the earth from trenches. Canes are regularly irrigated throughout the hot weather once a week. The nature of the soils (loams or sandy loams) and the liberal initial manuring demand copious irrigations in the hot weather. The mixed cropping of various sorts of vegetables when the canes are young is another source of drain on the soil moisture. The bulky and slow acting cattle manure applied before planting canes supplemented by the green manuring of wild indigo plant when the canes are growing is not completely utilised by the cane crop, and so the crop is never so heavy as in Godavari. As a necessary consequence the succeeding crop of ragi after canes is always very heavy and so Anakapalli ryots always insist to cultivate the lands at least for a year more after every cane crop; whereas in the Godavari delta the tenants are compelled to crop the land for a year after canes to share the poor paddy crop immediately after the canes.

D. BALAKRISHNA MURTI.

Notes.

The Board of Agriculture :—The ninth meeting of the Board of Agriculture was held on 7th February in the Phipps Laboratory at Pusa. Mr. Coventry, Agricultural Adviser to the Government of India presided. The Madras delegates, were the Director, Mr. Wood, Mr. Hilson, and Mr. Anstead, while Dr. Coleman attended to represent Mysore. A perusal of the subjects for discussion does not disclose anything of wide importance, except the question dealing with Cattle Breeding and it is to be hoped that this very important subject received the fullest consideration.

The report of the Board is not yet published, but will no doubt form the subject of further remarks in these columns. To the

general regret of all who knew him, Mr. Coventry took his leave of the Board, as he is due to retire shortly. He is not leaving India, but will assume control of the Agricultural Department in the Central States of India. Mr. Chadwick moved the vote of thanks to the Pusa staff for the general efficiency of the arrangements and the hospitable arrangements made for the comfort of the visitors. The next meeting will probably be held at Poona, as a result of an invitation tendered by Mr. Keatinge, the Director of Agriculture, in Bombay.

Controlling sex in calves :—There seems to be a theory current that the period of heat is a determining factor as to the sex of animals and it is asserted that the proportion of sexes changes with the time of service. Of numerous tests of distinct breeding operations made in New England Homestead in 1913, it was observed that when the cows were served when the period of heat was early, the proportion of male to female was 134 to 178, when in middle of heat the proportion was 67 to 58 and late in heat 77 to 44. These figures evidently show that there is a real and definite law of sex determination and that the sex ratio in cattle can be to some extent modified by controlling the time of service. It would be very useful if such tests are conducted in India to see if the theory could be corroborated. D. A. R.

That the quantity and quality of milk are influenced by causing cows to drink water in excess is a common fallacy. In a paper read by two Edinburgh college lecturers some years ago before the British Association, Dundee, the lecturers showed that a large quantity of water in a ration did not increase the percentage of water in the milk or reduce the percentage of fat. In the experiment conducted over a period of three years it was observed that the greater yield was obtained from cows on the concentrated ration. On the other hand, the cows which were fed on succulent

fodder (Turnips) gave milk which was richer in fat. It is generally viewed from the results of the experiments that the excess of drinking water does not appear to have any effect on either the quality or quantity of milk, and yet those of us engaged in dairying in India, when supplied with poor milk by a customer are often confronted with the bewildering reply that the cause of the poverty of milk is due to the large quantity of water consumed before milking! The experiments show that it is one or more of the other ingredients of the food rather than the water content, which are responsible for the variation in the output and fat content of the milk. D. A. R.

The School of Tropical Agriculture was opened at Peradeniya on the 15th of January, with the Hon'ble Sir Anton Bertram, Attorney General of Ceylon as President. It was attended by a large number of people from all parts of Ceylon.

In a lecture delivered recently at the Calcutta Senate House, Dr. Bentley traced the relation between Malaria and Agriculture. He is of opinion that where agriculture prospered, malaria was little in evidence and vice versa. He substantiated this statement from Government and other reports in Bengal which showed that agricultural deterioration took place where malaria prevailed. Large quantities of water are necessary for crops like paddy and in such places there was very little of malaria, whereas insufficiency of water brought in, deterioration in agriculture and along with it malaria. It would be very interesting if corroborative evidence is forthcoming in other Provinces, specially in this Presidency, and although we are aware that in dry districts like Bellary, malaria is more prevalent than in the deltaic districts of Godavari or Kistna, we are not prepared to say that such districts in consequence deteriorated agriculturally.

Speaking about malaria, we are informed that sunflowers are reputed to be antimalarial in action. Experiments have been conducted in swampy districts of the river Potamic and in the neighbourhood of the Scheldt in Holland, where sunflowers are largely cultivated with the result that malaria has ceased to be endemic. On this subject *the Statesman* says "the observer attributed the antimalarial action of the sunflowers, not only to their properties of absorbing and destroying malarial miasm and of emitting an abundance of pure oxygen, as recorded by other observers, but also to their great capacity owing to their rapid and vigorous vegetation of absorbing and utilising the moisture of the soil in districts which are unfit for human habitation. The aromatic odour of the flowers may also be possessed of aromatic virtues"

The oil content of a seed is influenced more by the climatic conditions than by the soil. Within ordinary limits the relative fertility of the soil remains a minor factor in influencing the size of the seed and its oil content. In fertiliser tests with cotton the addition of a complete fertiliser to an unproductive soil gave larger seed and considerably a higher percentage of oil. Application of increased quantities of nitrogen did not affect the size of the seed but lowered the percentage of oil. Increasing application of phosphorus or potassium did not affect their character. In pot culture tests with soy beans, the addition of phosphorus did not change the size of the seed but increased the oil content. (Extract from the *Agricultural News*). K. U. K. M.

An old Cocoa planter of Jamaica has found out a means of smoking the rat out of his estate. What he did was that he built one or more wood fires ready for lighting on the windward side. At dusk with a steady breeze blowing he lighted the fires and threw on them a number of smoke forming substances such as

sulphur, incense &c. together with a quart of bird's eye pepper. In his own experience he says that it is 7 years since he tried this remedy and the rats have not returned. Human beings are advised to keep out of the track of this smoke. [The Journal of Jamaica Agl: Society extracted in Tropical Agriculturist].
K. U. K. M.

Rainmaking. The Government of New South Wales intends to finance Mr. J. G. Balsillie in his experiments at the artificial production of rain.

A captive balloon coated with metallic paint and at a height of about 6000 feet is to be made to discharge electricity into the atmosphere. This, it is believed, will cause the adjoining clouds to give up their moisture in the form of rain. He found that if a room be filled with steam, the discharge of high tension direct current electricity with a simultaneous discharge from a Rontgen ray tube caused the whole of the air to be cleared of steam in $1\frac{1}{2}$ seconds the floor of the room being covered with large drops.
T. S. V.

We are sorry to record the death of (Professor) Dr. E. W. Hilgard at California at the age of eighty-three—a name which should be familiar to students of Agriculture. He was a native of Rhenish Bavaria but was taken to America in early childhood. His scientific studies were pursued at Heidelberg, Zurich, and Freiburg. He became State Geologist of Mississippi, and Professor of Chemistry at the University of Michigan. His chief work was done as professor of Agriculture at the University of California from 1874 to 1904 and as Director of California Experiment Station. He established the first experiment station in the United States. He also inaugurated the system of 'Farmers' institutes.' He received the Liebig Medal from Munich Academy of Sciences and a gold medal at the Paris exhibition of 1900. Dr. Hilgard was the author

of numerous books and monographs dealing especially with the investigation of soils. (Extract from nature). K. U. K. M.

Banana flour. The manufacture of banana meal or flour as a regular industry promises to be an effect of the war realised in Jamaica. The diminished sales of bananas, says Popular Science Siftings, have led to careful experiments, and a consular report states that in one of these 537 pounds of fruit yielded 138 pounds of flour, the cost being low enough to make selling at 2 pence a pound very profitable. Mixed with wheat flour, the banana meal makes satisfactory and nutritious bread and cakes that housewives are urged to try. For bread, the material may be equal to or some what less than the wheat flour and for plain cake or ginger bread the banana meal may be substituted entirely for other flour, the other ingredients usually being added. (From the Indian Review). W. R.

Blood bread. Prof. Kober, of Munich, has just published a little treatise on the utilisation of blood as food. For centuries blood bread has been the staff of life of the Esthonians of the Baltic Provinces and their colonies in all parts of Russia. It is made of rye flour, with an admixture of at least 10 per cent of whipped hogs' blood. In the vicinity of Petrograd ox-blood is also used. Blood bread is very nutritious and is highly praised by Esthonian physicians because of its richness in organic compounds of phosphorus and nerve-restoring salts. Bread made with ox blood dries very quickly, but this defect can be remedied by the addition of potato flour, which is now a common practice in Germany. Blood bread is the most natural substitute for meat and says the Professor, with Government control of the slaughter houses, it need cost little or no more than ordinary bread. According to the "Frank futer Zeitung" rye bread containing hog's