

Journal of the Madras Agricultural
Students Union.

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CONTENTS.

	PAGE.
A Note on the Purple Pigment in some varieties of Paddy ...	153
Fungus diseases of crops in the Madras Presidency *	156
A note on Lemons at Kadayam—Tinnevely District ...	162
Victamins in relation to milk ...	164
Work in the Tamil villages some experiences. ...	171
EXTRACTS :—	
Agricultural Education in Denmark ...	177
The Adikarnataka Colony at Gottigere in the Bangalore Taluk	178
Chrysanthemum Cultivation in Malur and Bowringpet „ ...	180
International Economic Conference. Geneva ...	183
REVIEWS	
Colour Inheritance in Rice ...	186
Inter University Board India—Annual Report for 1927-23...	188
Department of Agriculture and Fisheries Travancore ...	189
March Rainfall in Madras ...	191
NOTES ...	192
DEPARTMENTAL NOTIFICATIONS ...	194
EDITORIAL ...	196

Farming will never be a success unless the farmer
had more voice in the disposal of
his produce—P. Morrel.

THE JOURNAL

OF .

The Madras Agricultural Students' Union.

Vol. XVI]

MAY 1928.

[No. 5.

A Note on the Purple Pigment in some varieties of Paddy.

BY G. JOGI RAJU D. A.

In many varieties or types of paddy, the different parts of the plant above ground are usually green, but in some, a kind of purple pigment occurs in certain parts of the stem, leaf and flower. † The part or parts in which the pigment exists vary in different varieties or types though, in some cases the presence of pigment in one part is correlated with its presence in certain other part or parts also. The intensity of the pigment also varies considerably.

† In some varieties e. g. Puttu, the pigment occurs over the whole plant including the entire leaf surface, so that a crop of this variety stands in striking contrast to that of other varieties.

LIST OF PIGMENTED VARIETIES :—

Part in which pigment is present (marked P.)

Class or Group.	Sheath, outside.	Sheath, inside or axil.	Internode.	Pulvinus of leaf.	Auricles.	Margin of leaf.	Ligule.	Stigma.	Apiculus or tip of grain.	Ends of inner glumes.	Sides of inner glumes.	Outer glumes.	NAMES OF VARIETIES.
1													
2									P			P	Kakirekkalu 2.
3									P			P	Drohanapugada 2.
4	P								P	P			Mosapurulu, Peddakanneralu 1.
									P	P			Basangi 33, Garikasannavari 1, 6,
													Kotthamallisamba, Basangi 24,
													Punasa atragada, Araloddilu,
													Lodhari, Moharo, Swarnalu 9.
5	P	P							P	P			Kokkeradhanyam, Peshanam 2,
													Lamba, Aravadamsamba 6,
													Korangusamba, Nalla arelu,
													Masipeshanam, 1, 2, Lodhralu
6	P	P							P	P	P	P	Kakirekkalu 1.
7				P	P				P	P		P	Krishnakatukalu 1, 3.
8	P	P						P	P	P			Kanakasompu 4.
9	P	P		P	P			P	P				Rnsangi 21, 25, 26, 29, and
													Harisanker.
10	P			P	P				P	P		P	Drohanapugada 1.
11	P								P	P	P	P	Kakirekkalu 4.
12	P	P							P	P	P		Kanakasompu 7.
13	P	P	P						P	P	P		Basangi 75.
14	P	P		P	P				P	P			Tobarasulu.
15	P	P		P	P				P	P	P		Navakoti 3.
16	P	P							P	P	P	P	Peddakanneralu 2.
17	P	P		P	P	P			P	P			Ratnachudi 13, 14.
18	P	P		P	P	P			P	P	P		Borigi.
19	P	P		P	P	P	P	P	P	P	P		Navakoti 5.
20	P	P		P	P	P	P	P	P	P	P		Nallakonamani, Punasa akkullu 5
													Gudakutta.
21	P	P		P	P	P	P	P	P	P	P		Batlamokudi, Bodamoli.
22	P	P		P	P	P	P	P	P	P	P		Basangi 75.
23	P	P		P	P	P	P	P	P	P	P		Konna.

It will be seen from the list that the pigment occurs in a single part of the plant or two as in Kakirekkalu 2, or Drohanapugada 2, or in several, as in the case of Konna, the list covering a large number of intermediate classes.

In some cases the presence of pigment in one part is, as stated above, correlated with its presence in certain other parts also. For example, the presence of pigment in the axil of the leaf-sheath indicates its presence in the stigma and apiculus also (see group 4). Similarly its presence in the pulvinus of leaf indicates its presence in the auricles also, though there may be some exceptions, eg. Navakoti 5.

In some varieties, the pigment is very deep in the leaf-sheath, e.g., Konna, Nallakonamani, and Gudakutta, while as in others it is very light, eg. Mosapurulu and Kotthamallisamba. In the deeply pigmented varieties the pigment is generally present in a larger number of parts than in the light-pigmented ones. Similarly, the intensity varies much in that of the pulvinus, stigma, apiculus etc

The significance of the presence of the pigment in the various parts, or of the differences in its intensity is little understood. ‡ Unless a very large number of varieties are studied under varied conditions, no correlation between the presence or absence of pigment and the other characters having an economic bearing can be deduced.

The presence of pigment in different parts, however, helps the identification of many varieties and strains which otherwise look similar.

Varieties of paddy without purple pigment in any part are :-

Alwarsannalu.

Baital-fakir; Balaranabhogan; Bangaruthigalu 1, 2, 3; Basangi 27, 46, 61, 90; Bayyahunda; Bobbilibudama; Bobbiliganti; Boddumani; Budamavaddu; Burma 1, 2, 3, 4, 5.

‡ A similar pigment occurs in some varieties of ragi, samai, ogda, bean, brinjal, knol khol, etc.

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Chevitisompu; Chinnamundabolalo; Chipurubayyahunda; Chulakanamahipali; Co. 1.

Dasaradhilu; Dhanyarasulu; Dusisannam.

Garudavahanalu; G. E. B. 24; Gudarisanalu; Gummasari; Gunupuramrannalu.

Hemasannalu.

Kalahandisannalu; Kanakaratnalu; Kanakasompu, 9, 14; Kevitochompa; Konamani, 14, 15, 16; Kondakurangi; Kosakadilu; Kosisompu.

Maharajabhogam; Mahipali; Molakolakulu; Muttubayyahunda; Muthusamba; Mundlavari.

Naguthalisannalu.

Palagummasari 4, 7; Panianlu; Pedda akkullu; Pedda atragada; Peshanam; Prayaga; Punasa akkullu, 3, 5, 9; Punasa-konamani, 1, 2.

Radhaprayaga; Ramagarudamsamba; Ratnachudi 5, 7, 8, 9, 11, 15; Red sirumani.

Sanna atragada; Sanna bayyahunda; Sanna akkullu; Sanna-vari; Sorimundabolalo; Srikrishabhogam; Sunkisannalu; Sunnapuvvulu; Suvarnamuthilu.

Tellaradhaprayaga; Tobarasulu; Turpuranna akkullu.

Vankelu; Vavilapadusannalu; Vajjbanam.

Yerrabakkalu.

Fungus diseases of crops in the Madras Presidency.

(Concluded from M. A. S. U. Journal Vol. . . .)

SUGAR-CANE (*Saccharum officinarum*.)

- | | | | |
|-------------|-----------------------|------------|----------------|
| 1. Red-rot. | <i>Colletotrichum</i> | May & June | Throughout |
| | <i>falcatum</i> Went. | November. | the Presidency |

Transversely elongated white patches with the reddening of pith are seen when a cane is split open. The cane rots and turns sour giving rottin pine apple smell.

- | | | | |
|----------|--------------------------|----------|----------------|
| 2. Smut. | <i>Ustilago Sacchari</i> | August | Throughout |
| | Rabenh. | February | the Presidency |
| | | December | |
| | | October. | |

The central shoot or one or more side shoots get converted into a long whip like dusty black structure which is at first enclosed in a thin papery membrane.

- | | | | |
|---------------|----------------------|---------|------------|
| 3. Ring-spot. | <i>Leptosphaeria</i> | | |
| | <i>Sacchari</i> Van. | | |
| | Breda. | August. | Samalkota. |

Ring like spots on the leaves with a straw coloured centre dotted with tiny black dots arranged in rows and with a reddish purple margin.

FRUIT CROPS:— MANGO (*Mangifera indica*.)

- | | | | |
|-----------------|------------------------|-----------|----------|
| 1. Sooty mould. | <i>Capnodium mang-</i> | November. | Malabar. |
| | <i>ferae</i> . | | |

A dense black sooty crust appears particularly on the upper surface of leaves.

- | | | | |
|-----------------|----------------------------|----------|-------------|
| 2. Grey blight. | <i>Pestalozzia funerea</i> | December | Coimbatore. |
| | (var <i>magifera</i> Sacc. | March. | Salem. |

Grey spots or extended dry patches on the leaves confined to the edges and showing minute black dots on them.

- | | | | |
|------------|-------------------|-------|------------|
| 3. Mildew. | <i>Oidium sp.</i> | March | Salem. |
| | | April | Coimbatore |
| | | June. | S. Kanara. |

Ashy white powdery growth on leaves, twigs and flowers.

- | | | | |
|--------------|--------------------------------------|-----|--|
| 4. Red-rust. | <i>Cephaleuros parasiticus</i> Karst | | |
| | <i>virescens</i> Karst. | ... | |

Orange yellow roughly circular raised patches on the upper surface of the leaves and young twigs.

ORANGE—*Citrus*.

- | | | | |
|--------------|-----------------------------|------|-------------|
| 1. Die-back. | <i>Colletotrichum gloeo</i> | June | Tinnevely |
| | <i>sporoides</i> Penz | July | Kistna |
| | | | Coimbatore. |

Drying up of twigs from the tip and showing black dot like pustule on the bark presenting the appearance of the branching of horns of a stag.

2. Mildew *Oidium sp.* June Nilgiris
Coorg.
Ashy powdery growth on leaves and twigs.
3. Sooty mould *Meliola Sp.* Coorg.
Dense sooty black crust prominently on the upper surface of
the leaves.
4. Scab. October Salem
November. Coimbatore
Tanjore.
Brownish corky eruptions on fruits and twigs.

GRAPE-VINE.—(*Vitis vinifera*).

1. Mildew *Oidium Tuckeri*
Berk. February Coimbatore
January Salem
February Madura
do. Coimbatore.
A grey powdery growth on leaves and fruits. Fruits crack,
rot and become useless.
2. Anthracnose *Gloeosporium am-*
phelophagum. Pass. August Salem
September Madura
Sacc. April & Bellary
October.
Brown slightly sunken patches with raised borders resembling
the eye of a pigeon occur in all green parts especially on fruits
causing them to rot.
3. Leaf blight *Cercospora viticola* August & Madura
Ces and Sacc. October. Coimbatore
Irregular brown spots on the lower surface of leaves
4. Downy- *Plasmopara viticola*. January Salem
Mildew. Berk & Curt. February Kistna
November Coimbatore.
Pale yellow green patches on the upper surface of leaves.
5. Rust. *Uredo vitis*
(Schw) Fckl. November Coimbatore.
Small powdery pustules on leaves.

PLANTAIN.—*Musa sp.*

1. Fruit rot. *Goleosporium Musa-*
rum. Cooke, et. September Godavari
Mass.
Pale grey spots appear on the fruits causing them to rot.
2. Leaf spot. *Macrophoma Musae* January & Salem
(Cke.) Berk. Vag. February
April. Trichy.
Dry patches on the leaves with small black pustules on them.
3. Wilt *Fusarium sp.* January Madura.
Outer leaves turn yellow and wilt and the leaf stalks break.
Rotting of the pseudo-stem sets in and the plant dies. The
fruits ripen prematurely and unevenly and are rendered unmarket-
able.

POMEGRANATE—*Punica granatum*.

1. Blossom-end- *Colletotrichum sp.* November Coimbatore.
rot February.
The calyx cup blackens, rots and rot travels into the fruit,
causing complete or partial damage to the fruit.

FIGS.—(*Ficus carica*)

1. Rust. *Uredo Fici* Cast. September Ootacamund
Coimbatore
July, March
December.
Numerous minute yellowish brown pustules on the lower
surface of leaves.

GUAVA—(*Psidium guava*.)

1. Sooty mould *Capnodium*. February. Coimbatore.
A dense sooty crust on the upper surface of leaves.
2. Fruit-rot. *Pestalotzia psidii*. Nilgiris.
Brown corky eruptions on the fruits; the fruits crack and dry up.

PEACH—(*Prunus peisica*.)

1. Leaf curl. *Exeasus deformans*. March & May. Ooty and
Berk. Nilgiris.
The leaves become thickened turn yellow or less rosy and get
twisted.

2. Rust. *Puccinia Pruniper-sicae*. Pers. January and March. Coimbatore Ooty.

The lower surface of the leaves gets dotted with small round powdery yellowish-brown pustules.

MULBERRY.

1. Mildew. *Phyllactinia corylea* Merst. January and March. Coimbatore Ooty.

The lower surface of leaves becomes covered with a silvery whitish coat at first and tiny black spots appear later on.

APPLE—(*Pyrus Malus*).

1. Mildew. *Oidium*. March. Ootacamund

Whitish powdery growth on the leaves and young shoots.

2. Pink disease. *Corticium Salmonicolor B & Br.* November. Ootacamund

PLANTER'S CROPS. Rubber—(*Hevea Brasiliensis*)

1. Leaf fall. *Phytophthora Meadii* McRae. June, August, September. Travancore Cochin.

Leaves fall off from the branches leaving the bunches bare and fruits to rot.

2. Leaf blight *Helminthosporium Heveae* January May Bangalore Mundakayam Trivandrum Travancore. April January. Cochin.

Minute purple spots are formed on leaves which later on become white semi transparent.

3. Pink disease *Corticium salmomicolor* December. Malabar. Cochin.

Pink encrustation appears on the surface of the bark which rots and dries up and splits away from the wood causing the death of branches.

4. Die-back. *Botryodiplodia Theobromae* January. March. May. Travancore.

Branches die back from the tip resulting in the death of the tree.

5. Brown root disease. *Hymenochaete noxia*. Berk.

The attacked plant dies gradually. The roots are encrusted with a mass of sand and small stones bound together by the fungus

6. Brown bast. Physiological.

TEA.—(*Camellia Thea*).

1. Grey Blight. *Pestalozzia Theae* August. Bangalore. Wynaad. Kerala estates, Malabar. Travancore.

Grey patches on the surface of leaves causing the leaves to dry up.

2. Brown blight *Collectotrichum Camelliae* November. October. Wynaad. Anamalais.

Brown spots on the surface marked by concentric zones. The diseased portions rupture and fall out leaving large holes.

3. Leaf-spot. *Cercospora Theae* February August Kannan-Devan hills Kurdura estate Travancore.

Reddish brown spots which dry up and fall off leaving holes.

4. Root-rot. *Rosellinia sp.* February. Travancore high range

Plants die in patches, leaves wither, turn brown and dry up.

5. Brown root-disease. *Hymenochaete noxia*. March. Anamalai, Coimbatore.

The leaves wither and the bush roots are encrusted with a mass of sand and small stones bound together by the fungus.

6. Red-rust. *Gephyaleuros mycoidea*. August. Mundakayam Coimbatore.

Found on leaves and stem in red raised up patches.

7. Blister-blight *Exobasidium vexans*. August. Assam Darjeeling.

Blister like swellings found on the surface of leaves.

1. Rust. *Hemeleia vestatrix*. March Anamalai
September S. Malabar.
Nilgiris.

Orange coloured spots on the under surface with corresponding brownish patch on the upper surface.

2. Black rot. *Pellicularia* March Anamalai.
Koleroga September Coorg.

Leaves covered on the under surface with greyish white membranous film. The leaves turn black get detached and hang suspended by fungus filaments.

3. Sooty mould. *Capnodium*. November. Malabar.

The leaves and twigs are covered over with a dense black crust made up of dark brown hyphae.

4. Pink disease. *Corticium sal-* August Bangalore.
monicolor.

Rose coloured crusts are found on the surface of twigs and stem. The leaves wither but do not drop off. The bark splits and peels off. Greyish white spots with reddish brown margin on the leaves and berries causing them to turn black, shrivel and drop down.

5. Leaf-spot. *Cercospora* July. Kotagiri.
coffeicola.

A Note on Lemons at Kadayam—Tinnevely District.

By T. V. AYYASAMI AYYAR.

The village—Kadayam—is about a mile from the Kilakadayam Railway station. It is famous for the cultivation of lemons. Every year lemons to the value of over Rs. 10,000 are produced here, and also sent as far as Trivandrum in the west and Madras in the north east; it is the lemon of this place that is highly appreciated by consumers. For successful cultivation three important factors are necessary.

1. Rich surface soil with red gravelly sub soil. By rich soil is meant well tilled soil containing plant food.
2. Regular water supply.
3. Application of vegetable compost chiefly "kolingi" compost.

SOIL:— Loose fine rich soil with red gravelly subsoil. In this place there is red gravelly soil; this extends even below 2 feet from surface.

RAISING OF SEEDLINGS:—Small mud pots 9 inches in diameter at the top and 6 to 7 inches diameter at bottom and a foot deep are filled with fine rich soil and seeds are dibbled leaving nearly half an inch between seed and seed and watered. The watering is so regular that the soil never dries and for watering the rose can is used. It takes from 6 to 8 months to get seedlings 6 to 9 inches high and only 25 to 30 good seedlings are available from each pot.

TRANSPLANTATION:—In a good rich soil beds 5 feet long and 4 feet broad are formed. These are manured with well decomposed cattle manure, ashes and with any vegetable compost and the seedlings are transplanted. The distance between the seedlings is from 6 to 9 inches. There should not be heavy rain at the time of transplantation and so the transplantation is done between June to August. In these beds the seedlings are allowed to grow to a height of 2 feet to 3 feet which may take from 2 to 3 years. The plants are then thinned $1\frac{1}{2}$ to 2 feet.

The thinned plants are then planted separately in rich soil leaving a space of $1\frac{1}{2}$ to 2 feet between plants and regularly watered so that the soil may be always moist. The transplantation is done here also from June to August. These plants and all the other plants also when they have grown to a height of 4 to 5 feet which may take even 3 years after transplantation are planted out eventually in the garden:

Pits $5' \times 5' \times 5'$ are dug. The distance between pits is nearly 20 feet. The soil that was removed is first thrown into the pit. Then a mixture of red earth, sand, tank silt, and well decomposed cattle manure is put into the pit up to the surface level and the plant which has grown to a height of 4 to 5 feet is planted. The seedlings are regularly watered so that the surface soil may not become hard for want of moisture. Six months after planting, kolingi compost or avarai,—the former is more efficient,—is applied to the soil all round the seedling. The soil is dug with manmutti and the compost is applied and covered and watered. Then 3 months after the application of the vegetable

compost the droppings of the sheep are applied to the soil round the tree. Even in the first year the trees begin to bear plentifully. A well looked after lemon tree may even fetch up to Rs. 50 per year but this is exceptional. The application of the vegetable compost and the droppings of the sheep is done every year. A tree on an average yields from Rs. 10 to Rs. 30 per year and there are about 1000 lemon trees here. The average sale price of lemons is annas ten per 100.

Kinds :—There are two kinds; one kind possesses a hard rind and the other a smooth skin. The former variety keeps longer, is easier for transportation and is also better in quality than the latter.

*** Vitamins in relation to milk.**

BY M. P. KUNHI KUTTY L. AG.

Recent researches have shown that the diet of the human organism cannot be met entirely by an adequate supply of protein, fat, carbohydrates, inorganic salts and water. It is now established that in addition to these necessary constituents, certain unidentified principles known as accessory food factors must also be present in what is called "deficiency diseases." These accessory food factors are known as Vitamins. Their function seems to be to promote growth and maintain health. From the time of Leibig the great German Chemist, to the time of the discovery of vitamins, it had been established that the nutritive value of food, apart from its digestibility depended on its contents of protein, fat, carbohydrates and mineral salts. This discovery of vitamins has already displaced the theory of calories, which was fondly held by the old scientists. The famous reformers of diet believed that the nourishing value of food was in direct proportion to the amount of heat it generated within our bodies.

It was in 1906 that Professor Hopkins made some experiments which showed that rats could thrive if they were fed only on a well proportioned diet of protein fat and carbohydrates in a pure form. In Nature rats and other animals feed not on chemically purified food, but on all sorts of animal and vegetable

material, very far from pure chemically. Among the impurities there must be something necessary to the adequate maintenance of life. The few drops of raw milk, far too little to have any nutritive value in the ordinary sense added to the chemically pure rations made all the difference to the rats. Professor Hopkins took two sets of rats A and B of about the same age and size and fed A with the isolated constituents similar to those that can be obtained from milk viz, protein, fat, sugar and mineral salts and B with the same substances plus a minute quantity of fresh milk. The rats belonging to A series lost weight and showed decided pathological symptoms; those belonging to B series steadily gained in weight. On the 18th day the diet was reversed so that now A was getting the little extra milk and B had its cut out. Almost immediately A began to gain in weight and B to lose in weight. The milk added was about 2/500 of a pint. The isolated food stuffs yielded energy in quantity more than necessary to satisfy all calorific requirements. The chemical composition of the whole milk did not materially differ from the chemical composition of the constituents isolated from milk. This shows that something must be present in exceedingly small quantities since the addition of a few drops of milk made such striking change. This something was called by professor McCollum as Vitamin. This he believed to be an "Amine" or compound derived from Ammonia by replacing the hydrogen with one or more alcohol radicals. Again as it was found to be essential or vital to growth, he called it a vitamin. But further research in this direction revealed that it was not an Ammonium compound got by the replacement of one or more hydrogen atoms by alcohol radicals. But still it is called by the original name vitamin with the last letter e dropped.

Vitamins like electricity are known more because of their effects than from their composition. The exact chemical composition of vitamin is still to be discovered. Some are of opinion that vitamins like enzymes are mere catalysts which influence chemical reaction without themselves undergoing any ultimate change. Others think that they are in the nature of hormones, the active substances which are present in the various internal secretions such as in thyroid and adrenals and that they probably stimulate activity in the cells. Others consider that their function is to supply certain chemical groups to the body and which the body itself cannot manufacture. Again, some assert that all the vitamins contain carbon, hydrogen and oxygen.

* Paper read at the M. A. S. U. Conference in July 1927

This discovery attracted the attention of a great number of scientists. With great enthusiasm, they set to work and with if another year two more vitamins, different from McCollum's Vitamin were discovered. To distinguish these Vitamins, the first discovered, McCollum's was named vitamin A and the subsequent two were called B & C vitamins. Again, afterwards, it was found that A vitamin was a combination of 2 different vitamins. Hence the second and new vitamin in this combination was called vitamin D. Again, very recently a fifth vitamin different from the preceding four, has been discovered. The new one is called vitamin E. Thus five vitamins A. B. C. D and E. have been discovered so far.

Each of these five different vitamins has a separate function in the upkeep and growth of body. Again, definite proportion of these vitamins is essential for the proper and safe keeping of health. The absence or disproportionateness of one or more of these has been proved beyond all doubts to be the causes of a few common, but none the less serious diseases. These diseases are called deficiency diseases and a few of them frequently met with are Xerophthalmia, Beri Beri, Scurvy and Rickets.

Vitamin A. is found in abundance in milk, butter, codliver oil, yolk of egg, liver and kidneys of animals and green parts of plants. It is quite soluble in fat and is not affected by heat up to 200° C, when decomposition sets in. The complete absence or serious disproportionateness of this vitamin in our diet will cause Xerophthalmia, a dry red and itching ailment of the eyes, always accompanied by an appreciable inflammation. The chief function of the vitamin A seems to be to promote growth in young and immature children and protect health in the adults.

Vitamin B is water soluble and is stable till a temperature of 120° C when it begins to decompose. It is found in yeast, pulses, in outer coverings of wheat, barley oats and rice, in Carrots, Onions, Tomatoes and in many other fruits. Polished grains are bereft of vitamin B. This is a point to be noted by all the rice eaters. When they consume polished rice, they are excluding not only the most nutritious part of the grain, but an important vitamin as well. The scientists after a series of experiments on

monkeys have found out that vitamin B is also very essential to growth. One set of monkeys were fed on a diet rich in other vitamins, but wanting in vitamin B. Another set of monkeys equal in age and size were given a diet rich in all vitamins including B. After a few weeks, the first set grew thin, lost weight, played little and before 3 months became quite weak and miserable, but the other set increased in weight were more playful and were found very strong. Then the experimenters stopped the deficient diet and substituted one rich in B vitamin and within a week the monkeys were found recovering their original strength and energy. Any deficiency in this vitamin will cause Beri Beri. The symptoms of Beri Beri are, pains in the limbs, swelling of parts, extreme weakness and paralysis of legs. Final stage takes the form of a general paralysis which is usually very quickly followed by death. In the last stage there is difficulty in breathing. The patient can neither walk nor move his arms and his heart may become seriously affected. This disease is believed to attack the people on a diet of polished rice. In about the year 1890 a Japanese training ship with 176 men on board set out for a voyage of 9 months. During this time, their diet being rice, 169 cases of beri beri developed. Of these 25 died. Soon after another ship with a similar crew set out over the same route. This time the crews' diet was radically changed. Rice was reduced and milk and meat substituted to increase protein. During this time only 14 cases of beri beri developed. This was then considered as being due to protein deficiency but subsequently it has been proved that the disease is not due to protein but to vitamin deficiency, that the type of the rice used by the Japanese is deficient in water soluble B and that an addition of milk and meat supplied the necessary vitamins. The polished rice is the cause of Beri Beri, as has been already stated. The rice should contain its pericarp (outer covering). Most of the gentlemen present here will ask me why they are not developing Beri Beri, although they have been eating polished rice ever since their childhood. The only explanation is that they are getting B vitamin from some other sources, such as Onions, fruits, vegetables etc.

Vitamin C :—is almost only found in the leafy vegetables and juicy fruits which are well exposed to sun. This is found in abundance in fresh fruits especially in limes and oranges. It is soluble in water and is easily lost when heated. This is tolerably stable when the containing fruit is acid to a large extent. But it

should be borne in mind that if it is mixed with or taken after an alkaline substance, the acid is neutralised and the vitamin destroyed at once. By storage also vitamin C is lost. People who do not eat fresh green vegetables and fruits and who eat only boiled or sterilized food lack from this vitamin and suffer from Scurvy. The symptoms of Scurvy are great fatigue, headache, disinclination for exertion of any sort, change of complexion to a pallid dusky hue. Small haemorrhagic spots appear round the hair follicles of the legs and patches like bruises of varying size appear on the skin. Often gums are affected. Soft spongy swellings sprout up between the teeth and are followed by ulceration and haemorrhages of the gums. The teeth become loose and may fall out. Unless the progress of the disease is arrested by a timely change of diet, it ends fatally. This is absent in dried fruits and vegetables.

Vitamin D is fat soluble and it exists in milk. In Codliver-oil, it is found in combination with vitamin A. The function of D is to promote the assimilation of minerals particularly calcium and phosphate. For this reason it prevents rickets in children and Osteoporosis wasting away of bones in adults. It is known that the assimilation goes on at a greater degree with direct sunshine. The ultra violet rays of the sun when they fall on our skin, are said to penetrate into our tissues and produce there this vitamin. In 1919, an experiment conducted on children suffering from rickets at Vienna, proved that exposure to sun light or ultra violet rays was a sufficient remedy without the addition of this vitamin to the diet. Dust particles absorb these extra violet rays and hence any person affected by rickets should go and live in a country seat. Exposure to sun has therefore a beneficial effect upon the upkeep of our health. A lack of this vitamin leads to rickets, which is mainly a disease of bone: the symptoms are, the head of the patient enlarges and becomes flat, the bones grow irregularly and remain soft leading to permanent distortion and deformities. The disease is generally found among children.

Vitamin E:—The last vitamin E is the most recently discovered and no detailed information about it has yet been pronounced. The best known source of it at present is milk and an oil extracted from the sprouting green of wheat. This is also fat soluble. Deficiency in this vitamin lowers the reproductive times capacity, some producing complete sterility.

After knowing the important and marvellous effect of vitamins people will be anxious where they can get these useful commodities. Vitamins are abundant in nature, but the greatest pity is we destroy them by boiling, sterilizing or by special treatment of our food stuffs. Vitamins are the products of vegetable growth and are found in vegetables only. It is mainly due to the presence of vitamins that the vegetarian diet is superior to non-vegetarian diet. Vitamins found in animal organisms are supplied to the animals through their vegetable foods. Commodities which are rich in Vitamin will be in great and increasing demand and their prices will go up in the near future. Commodities which we now exclude from articles of food will have to be included in the food list while some others which are now included will have to be excluded. As has been already stated the absence of any one vitamin is said to cause deficiency diseases. One vitamin cannot replace another and all of them are required for the maintenance of orderly balance between the constructive and destructive cellular processes. All vitamins are more or less susceptible to heat. Of the five water-soluble C seems most susceptible and water soluble B least.

The following substances do not contain any vitamins, Tea, Coffee, Cocoa, Chocolate tinned meat, honey, jam white fish, skim milk, meat extracts, malt extracts, white wheat flour, polished rice, pea flour, white corn flour, mustard powder, tapioca, sago, lard, olive oil, coconut oil, linseed oil, margarine from vegetable etc.

So far, we have been dealing with vitamins in general. Now let us consider the importance of milk as a diet of vitamins which the title of this paper claims. Milk is an easily digestible food containing all the nutrients and an adequate quantity of mineral salts. The protein of milk is rich in amino acids specially suited for the nourishment of the human system. These special nutritive values of milk are nothing when compared to its marvellous dietetic value as a vitamin supplier.

A convincing proof of the importance of the vitamins in milk has recently been furnished by the result of an investigation extending over 4 years which has been conducted by Dr. H. C. Corry Mann, on behalf of the Medical Research Council of the

United Kingdom. Some 200 boys have been fed continuously in groups on concentrated diets. They all received a basic diet, which by itself was enough to satisfy the appetite of growing boys, but some of them received in addition a pint of fresh milk daily, other rations of sugar, of butter of water cress, of casein or of vegetable margarine. It was found that the boys who received the basic diet only had an average annual gain in weight of 3.85 lb. per boy and an average annual increase in height of 1.84 inches. Those who received milk in addition to the basic diet gained on the average in the year 6.98 lb. and 3.63 inches in height. Those who had the other ration put on varying intermediate growths of weight and height. In case of all the additional rations including the milk the calorific value of the extra food was practically identical. It is thus clear that milk has specific qualities as a food which are not to be accounted for by the ordinary assignment of the calorific content. Milk contains all the vitamins except B. But C which is very unstable is lost when milk is subjected to heat. Heat affects the vitamins A, D and E in milk to some extent but a fair amount will be still available, if it is not heated to a very high temperature. It is therefore advantageous to take milk in a fresh unheated condition. As a lesser evil, if milk has to be boiled to prevent disease like tuberculosis, the Vitamin C which is lost should be replaced. The children fed on sterilized milk develop scurvy and they must be given lemon or orange juice to supply vitamin C which is lost by sterilization. If cows are kept in clean and sanitary condition and tested periodically by a Veterinarian there is no need to pasteurise or sterilise milk. Owing to this important question of conserving vitamins, sterilization of milk is now going out of practice and in some countries even pasteurisation has been stopped. In Norway, in addition to sanitary method of milking, the milk bucket, at the time of milking, is filled with a layer of ice in its outer jacket and the milk is strained and bottled, immediately after it is drawn. The low temperature prevents bacteria from infecting the milk and there is no loss of vitamins. As vitamins are required by all people young and old and as most of the vitamins are found in milk, milk should form an item of diet and it should be consumed unheated as far as possible. An addition of fresh fruits and vegetables will supply other vitamins which are lacking in milk. To enjoy the full benefit of vitamins, the diet should be consumed uncooked. Cooking lessens or destroys the value of most of all foods. If one

is to advocate such a course, I am afraid, there will be a revolution among people, as it is not possible to change their habits all on a sudden. But a real attempt may be made to give up unnecessary cooking and treating of food. As an example, lime fruits when consumed fresh are a source of vitamin C, but when pickled that valuable property is lost. All the refined articles of food, have less dietetic value than their crude forms from which refined products are made. Every diet should include fresh milk, fruits and vegetables and it is worthwhile for a man to expose himself to bright sun for some time daily.

In future it is quite likely that some more vitamins are discovered and a host of diseases traced to their absence. Doctors will very rightly attribute every disease to the lack of one vitamin or another and it is up to you to satisfy the vitamin requirements of your system and lead a happy and healthy life.

Work in the Tamil Villages Some Experiences.

(CONTRIBUTED).

"India is the land of Agriculture and 80 per cent of its population live by tilling the land—" How often has this been said, often with great emphasis, when anybody pretending to be interested in India's development, pleads for improvement in agriculture—as the first item for consideration. There it begins and there it ends. Few try to go deeper than this and obtain at first hand a knowledge of the actual conditions and behaviour of the average ryot in the different parts of country, to see how he yields and co-operates with us for any improvement we may endeavour to achieve. It is easy to say that we should improve the agriculture of the land, ameliorate the socio-economic conditions of the ryot population and so on and so-forth, but it is only those who actually work in the field that can know the manifold but peculiar difficulties one has to experience before any thing can be achieved. The experiences narrated here though not too many are quite significant and may seem important as well in connection with our efforts to improve the village and its agriculture. How much of an uphill task, this introduction of improved methods of agriculture is, for a prosperous rural population, will be well evident from these seemingly trivial observations.

To begin with, the typical ryot is reserved, takes every-thing as it comes, and is influenced by the immediate surroundings and happenings. He has at the present day lost all self-reliance, deep thinking and most important of all a desire to improve his condition at any cost. He is simply plodding on from year to year, sinking or falling according to the vagaries of the season and the market and also his domestic circumstances,—thus never spends a continuous period of peace and prosperity. The time honoured boasting that our ryots know much in agriculture and that most of their methods are perfect, can hold good no longer. The present day agriculturist is an automaton, is not a simpleton, going on in his endless routine on the soil, often, simply copying what his neighbour does and with no thought for the future or the past. When the season favours a good harvest he enjoys and spends away on the impulse, but lo! When the wheel turns the other way he is the worst sufferer. We are not however in a position to exactly point out why such a state of affairs exist, except that it is so on account of long neglect of them by the enlightened classes or perhaps due to their conservative tendencies. Neither we can clearly point out the way to improve matters in a short time,—I mean their regeneration into a prosperous rural community.

In every village there is a preponderance of the average cultivating class i. e., 70% of the agricultural population will be of average means—not free from want completely. About 3 % will be fairly well—to do and the rest poor owning bits of land or tilling on lease or eking out as labourers. I can say with confidence from my experience that this average class is the great stumbling block, the most indifferent set, but it is this class that requires the helping hand sorely by virtue of the number and situation. The life of a ryot of such an average means is of the same kind—monotonous, uninteresting and far from smooth. It is this class that suffers and makes matters look serious. What is true of the town is also true of the villages. As said above, by virtue of his position and the circumstances in which he is placed, the average ryot is at a loss to know how to improve his conditions, and much worse he has ceased to bother about making attempts to better his conditions.

The great majority of them have fallen into the valley of darkness, and they have to be injected with knowledge, supplied

with the tonic of money and are then to be infused with hopes about the possibility of attaining a state of equilibrium and prosperity in their lives. And this is the TASK. Experiences are disappointing though not entirely. Preaching and proving, begging and entreating are all equally ineffective. The ryot listens at best and leaves it at that. He may be deep, may also think but is never prone to act. The man from the Agricultural Department is still a queer person. With all previous arrangement with the village officers, tom-tomming and personal requests, we may find a 'huge' gathering of a dozen people at the village Chavady to have a serious talk with the man who may be bent upon changing the agriculture of the village. Out of the dozen one is the village munsiff, another the karnam and the third may be the President of the Village Panchayat or that of the obscure Co-operative society. One or two others may be well-to-do ryots, a few more of the average type and the rest are mere onlookers with nothing at stake in their lives. All of them listen, a few crossquestion, but all of them uniformly express great surprise and wonder when told about the small and big iron ploughs and other labour saving machinery for improved agriculture. If one such plough is actually shown and its working demonstrated they evince great eagerness in looking and examining it, appreciating it in no mean terms. But when the question of purchasing and using comes, i. e., when any of them is asked to go in for a few for his use the answer is invariably of this nature,—that he does not require the ploughs now and that he would think over it and have it some time later. When the show is over and things go on as usual in the village this is forgotten and none of them think seriously about purchasing and using iron ploughs. Some time later he is again approached the man of the agricultural department is hastily shaken off and the response is often disappointing. Soon after the show the ryots of the village may discuss in a light hearted way the use of iron ploughs and come to the unanimous conclusion that iron ploughs are heavy, their animals are unsuited and even if they use them their animals are sure to go weaker and weaker and may even die a premature death. As if they care for their working animals so much and feed them with enough systematically. The animals live merely upon straw, stalks of grass only as the case may be, and generally the average ryot never feeds his animals with any other thing except this. He extracts heavy work, but gives only very light food. It is true however

that poor feeding and good work never go together. It is a pity anyway that the ryot is now in a state of utter ignorance and forgetfulness as to the necessity for improving the working capacity of his cattle by selection of breed and good feeding. It is such a common affair to see him purchasing an old pair for such a small amount as Rs. 10 work them for a year or so and then sell them away at any price they may fetch again going in for such old animals for him. This state of things is most deplorable but this gives the clue as it were for the hopeless condition of the cattle at the present day.

With the South Indian ryot I mean the average one agriculture is only a question of sowing and reaping. Other operations are by the way and never receive his serious attention. Why it is so we cannot exactly point out, but it is the fact and it may be due to so many circumstances. It is no use blinking the fact for over the greatest part of the area under cultivation agriculture is at its minimum practically. The same sort of manure is applied to the same land year after year for all crops. In fact all other operations are the same. I have observed ryots carting village rubbish from a distance of ten miles paying Rs. 3 a cart load and applying at the rate of 30 to 40 cart loads per acre. How much money and energy wasted on this rubbish. And they think this the only sort of manure available in the world besides of course the small quantity of cattle dung obtained. If one ryot ventures upon this sort of manure purchase, others quickly follow suit. The aping tendency seems to have a strong hold upon him. The oft repeated view that the ryot when once he finds any new thing very advantageous would take to it at once tenaciously does not hold good in nine cases out of ten. For look at the way he behaves with the use of the iron ploughs and other improved implements about which he waxes eloquent in appreciation. There is some other cause or causes working in and the impression is formed that the generality of the ryot population is labouring under some complex difficulties which make them unable to act upon impulse or after deliberation. They are helpless, the majority of them.

The Cotton Diseases and Pests Act insisting upon the uprooting of Cambodia cotton plants before a particular time in the year has been in force for the last seven years and more.

Even the ryot who has understood the advantages of such an Act acts up to it with very great reluctance. I mean often he abides only upon pressure or fear. Many are still quite ignorant as to why a particular variety of cotton should be uprooted completely at a particular time, and a good many would find it hard to eradicate the belief that the plants are removed to check certain kinds of plague as among men. The ryot does things and believes by virtue of his hereditary notions, environments and outside pressure, but rarely thinks for himself and attempts at new and successful innovations for his betterment in life. It is therefore natural that we find it a herculean task to enforce any regulations for the general benefit of the ryot population.

There are again the ryots' superstitious beliefs which are the greater stumbling blocks. Every kind of mishap, insect attack or fungus disease, is attributed to the wrath of some deity, or sin committed by the community. Sometimes he accuses the changing weather conditions, but he again believes that the mishap will pass away when favourable conditions turn up. This is of course true to some extent. The folly lies in the passive attitude assumed by the ryot when his crop is attacked by unseen enemies. All of them are not able to sow a particular crop at the same time. The man harvesting early gets a good crop but sometimes when the late sown crop is found to be infested with some insect or fungoid pests, he at once concludes that the "Harvest wind" (Aruppu-kathu-Tamil) from the early crop has been the cause of the pests. He clings to this theory ignoring other environmental and weather conditions and the lateness of the crop. When the Steam-borer attacks paddy, he believes that it is a particular disease of the shoot tip, and that it would not spread when there are good rains during the growth of the crop. Unless actually shown he would not believe that the disease is due to an insect boring into the stem below. Anything that is not seen outwardly and solidly he attributes to the work of supernatural agencies and has the ingrained belief that he is powerless in such matters.

Again some half educated ryots, happening to know of the existence of the Department of Agriculture, apply to it for help. They of course usually seek its help only long after they have found their usual methods unsuccessful and with the impression that the Department will be able at once to suggest profitable crops

suited to the soil-which may be of the worst type on which any crop would not grow. When we tell him that it is not possible to suggest crops suited to soils as such, but that we should make the soil suited to all crops by improving it in the course of time, we can see him look disappointed and afterwards taking no interest in us. Leaving alone ordinary ryots, even fairly literate ryots expect improvements and changes taking place immediately, something like magic, as a result of the efforts of the Department. Otherwise they think it is not worthwhile seeking its help. With all that, he would nextday commence to cart to his lands hundreds of cartloads of tank-silt or town-rubbish at great expense, but is really very suspicious to spend upon small iron ploughs or improved manures. Even after actually demonstrating the superiority of certain methods, he doesn't take to it with such avidity as we may expect, the excuse given is that his servants are quite averse to it.

As a writer in the Poona Agricultural College Magazine says, "The cultivator must feel that the propagandist is not there merely to teach him how to improve, but that he is a man who has the power to redress his grievances if there are any real ones". Further he adds,—“At present the District propagandist knows full well that he has no power over the Irrigation or the Forest Departments. He knows that the sanctioning or granting of Takavi loans does not rest with him and that he has only partial control of the Agricultural and Co-operative Societies. The cultivators therefore, ignorant as they are know that they need not mind what the propagandist says and they manage to send back the propagandist with his improvement, with a kind word of thanks as they would do a man who goes to preach them lessons on morality.” This is only too true. It is however easily gleaned that the main causes for such queer behaviour and disappointing results are often the extremely poor financial circumstances and the ignorance and illiteracy of the average ryot. It is needless to urge the necessity for a thorough study of the conditions obtaining in different places separately and then working out suitable schemes for a radical alteration in the mentality, outlook and circumstances of the average cultivating class and thus make the present day ryot march with the times with ease and willingness.

EXTRACT.

Agricultural Education in Denmark.

Some time back, we referred in these columns to certain features of education in the secondary schools of Denmark, known as the people's schools. Mr. Faber, Agricultural Adviser to the Danish Legation, London describes, in the course of an interesting article in the current number of the "Edinburgh Review", the position of primary schools in that country in relation to agricultural training in rural parts. The tuition in these institutions, it is stated, has been restricted to a few elementary subjects and no attempt is made to teach agriculture, but the school system is so arranged that the children have a chance, while still young, to take part in agricultural work at home. It is said to be a principle of education in Denmark that agriculture, being a collection of applied sciences, cannot be taught in elementary schools nor to anybody who has not acquired a thorough practical training. Those children who stay on the land are employed in practical agricultural work and thereby get a leaning towards agriculture. Though this subject is not included in the curriculum of studies in the primary schools, being considered "too advanced a subject for children," yet some of the subjects connected such as botany, are often taught to pupils. The principle that the system of school-teaching in the country districts should not interfere with the interests of the farmers or peasants had been recognised and in fact that principle was formulated by a Royal Commission, appointed by an absolute King, long before Denmark became, in 1849, a democratic and constitutional country. Under the authority of that report, the direction of the rural schools was left, and is still left to a great extent, in the hands of local boards, on which the peasants are said to be largely represented. Just at the beginning of the nineteenth century, it was declared, during the deliberations of the Royal Commission concerning the seminaries, that "the school teachers should be educated to be sensible peasants among the peasants." Practical training in farm cultivation ought to precede any agricultural instruction in schools and a young agricultural worker, be he a humble labourer or the son of a farmer with many acres, whose farm he might be called upon to manage and cultivate, will not attempt to proceed to higher institutions nor would he be accepted by any Danish agricultural school or college before he reached the age of

18 and has had a sufficient practical training. The Royal Agricultural College in Copenhagen will accept no agricultural pupil who has not worked for at least three years on the land. Mr. Faber further observes that the many agricultural schools in the country, all private undertakings, are evolved out of the people's high schools and it is due to these latter that young men, and women too, have learnt to value adult education and flock to the agricultural schools at the age of 18 to 25, and often even later, when they have been duly trained for practical work. There they show keen interest in absorbing the scientific teaching, which explains to them many problems they have met during their practical work on land. With regard to the period of school work it is stated that the agricultural school may be open for about nine months and the work is concentrated during the winter, leaving the pupils free to earn their living during the summer months by practical farm work. Thus it comes about the Danish farmers, and also farm labourers, are all through the year engaged in studying practical and scientific agricultural farming and this is stated as one of the reasons why they are not drawn away from the land. Mr. Faber observes that one would be perfectly justified in saying that there are many more fully trained young agriculturists in Denmark than can be accommodated with land or find employment with farmers. It is worthy of notice that a large proportion of the teachers are drawn from the farming population and they are therefore in full sympathy with the farming interest. There is a close and healthy co-operation between the teachers and the parents of the pupils, many of whom are farmers.

(*The Hindu* May 23).

The Adikarnataka Colony at Gottigere in the Bangalore Taluk.

The need for helping the landless people of the depressed classes to own and cultivate lands has always been recognised by Government and several measures for the amelioration of the depressed classes have been sanctioned from time to time. The chief difficulty in the way of progress of the depressed classes is that they are too poor to tide over the period of work and waiting which must elapse before they can get any return from the land. With a view to help them through this difficult period without impairing the spirit of enterprise and self reliance—without which there can be no real progress—in April 1927, the Government

sanctioned the establishment of an Adikarnataka Colony Co-operative Society as an experimental measure and also a grant of Rs. 3000 for working out the scheme. According to the scheme 20 Adikarnataka families residing within easy reach of one another have to form a Co-operative Society for the common object of agriculture and equipping them with land and facilities for cultivating it and each family should be given 6 to 8 acres of land free, the land being so selected as to provide for contiguous holding and afford scope for co-operative farming and the lands shall not be alienated by the members for a period of ten years from the date of grant. Each member should be given Rs. 80 for the purchase of a pair of bullocks and Rs. 20 for purchase of agricultural implements, manure, seed and fodder for the bullocks. To enable the members for meeting their maintenance charges till the harvest Government sanctioned up to a limit of Rs. 10 for each family per month with the condition that it should be given in the form of ragi or other articles of food. Government have ordered that only half of the amount thus advanced to each family should be recovered from them in 5 to 8 equal instalments according to the circumstances of each individual.

In consultation with the Revenue Commissioner and the Director of Agriculture a piece of land consisting of 231 acres 33 guntas in Pilligenahalli village near Gottigere was selected for starting the Co-operative Colony and thick scrub jungle on the land to be cleared before it could be made fit for cultivation.

After investigating the condition of 44 Adikarnataka families at Gottigere, 15 persons representing 15 families were selected for the Colony and a Co-operative Colony Society was formed. They worked together for about two months and before the mungar rains, they cleared the jungle and also removed thick roots in about 32 acres of land and made them ready for cultivation. The land was properly ploughed and scientific manure was used for the area thus made ready. Good ragi and groundnut seeds were sown on the land. As the rains were somewhat timely a fairly good crop was raised on it. The ragi crop has just now been reaped and stacked. The groundnut crop was picked and it fetched about Rs. 225.

Sun-flower was also grown in a portion of the land and it has been preserved in a silo pit for being used as fodder for the bullocks of the members.

On the Silver J bilee Day the members planted 44 trees in suitable places with a view to commemorate the blissful reign of His Highness the Maharaja. The members have not yet purchased the bullocks for cultivating the lands and they will do it in January, in the village cattle shows during *jatras*

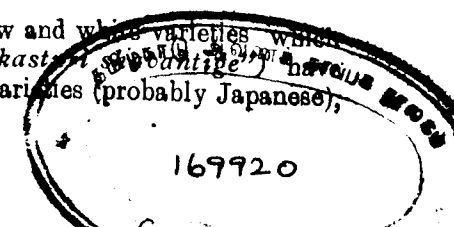
The work done so far on the colony is very encouraging and after the full extent of 100 acres are brought under cultivation, the members will be able to maintain themselves very comfortably. Mahatma Gandhi visited this colony and was much impressed with the work that had been done there for the amelioration of the depressed class members.

(Mysore agricultural calendar).

Chrysanthemums are grown in most of the villages near the railway line between Krishnarajapuram and Kangundikuppam. These flowers, of which there are many varieties both in size and colour, are mostly sold in the Madras market, though other towns such as Chittoor, Walajapet and Arkonam on the Bangalore-Madras line go in for small quantities. It is interesting to note that the railway revenue derived at Malur Station by booking these flowers and green chillies (both the crops are dealt together in the same season), between June and October last year was about Rs. 14,700-0-0, of which one-third may be taken for chrysanthemums.

The cuttings head up in about 20 days. Two weedings are given, the first one, a month after planting and the second, in the third month when the crop is also earthed up. The planting of the cuttings takes place in February—March, which period being summer, frequent waterings once in three days are indispensable. So far as Malur Town is concerned, much difficulty is experienced in this respect as the wells in the red soil tract never have enough water. It is on this account that individual attempts are restricted to small plots of even 5 to 6 guntas and therefor the total acreage under this crop in a given year depends on the water supply from the well and the seasonal conditions. Nowadays, even big landholders in villages outside Malur who have good *kapile* wells are also attempting this money crop. The first flowers appear by about the middle of June and the plants are in full bloom till the end of October. The advantage of growing this crop is that, as it comes after the potato which always receives heavy manuring, this crop need not be manured.

Varieties :—The common yellow and white varieties which bear very small flowers (also called "*kasturi*" ^{or "*chandanika*"}) have come to be replaced by three new varieties (probably Japanese).



which are now largely grown in Mysore for their large flowers. The varieties are the white, the yellow and the pink. Of these the white stands foremost in demand as its petals can go to make garlands for which there is a considerable demand. In the opinion of the growers, the pink coloured variety seems to be the least in demand. The prices in the Madras market are said to vary from annas two to rupee one and a half per thousand flowers depending mainly on the supply in the season and the demand therefor.

Realisation:—The total period of the crop is about 8 months from March to September-October. The crop is generally, with very rare exceptions, sold wholesale, and the value realised depends upon the size of flowers, variety and the condition of the market in the year.

Half an acre of chrysanthemums fetches to the cultivator about Rs. 350 to Rs. 450. In Kolar Town the crop from 1½ acres was sold last year for Rs. 1,300. On an average, a modest net profit ranging from Rs. 350 to Rs. 500 per acre may be expected.

COST OF CULTIVATION PER ACRE.

	Rs.
Digging the land 2 feet deep 80 men at As. 8 a day	... 40
Making beds and furrows 10 men	... 5
Cost of cuttings	... 5
Watering for the 1st 3 months	... 30
Planting—4 men & 20 women—woman at As. 4 a day	... 7
Earthing up—once	... 6
Two weedings at 12 women per time	... 6
Fencing with Lantana	... 5
Rent of land, etc.,	... 6
	—
TOTAL	... 110
	—

(Mysore Agricultural calendar).

International Economic Conference. Geneva.

Report of the Agricultural Committee full text.

(Continued from M. A. S. U. Journal Sep.—Oct. 1927).

2. AGRICULTURAL CREDIT.

The increase of agricultural production is intimately bound up with the organisation of agricultural credit, which will place at the disposal of agriculturists the necessary capital on favourable terms.

Certain countries have at their disposal sufficient capital for agriculture, but in many countries adequate provision for agricultural credit has not as yet been made, either because saving has been diminished by the general economic conditions or because the appropriate organisations have not yet been constituted.

Such a position is seriously harmful to agriculture in the countries in question, since it prevents agriculturists from increasing their harvests, from exploiting their land to the full extent, from securing lower costs of production and from providing for contingencies arising from the very nature of agricultural production by the use of suitable equipment or of a reserve working capital.

The first condition for surmounting these difficulties is the organisation of suitable credit institutions in those countries where they do not yet exist and their development where they are already in existence. The best form of institution appears to be the co-operative credit society operating by means of resources which the very fact of association enables it to procure and to increase with or without the assistance of the public authorities.

It is, moreover, by the co-operation of national organisations that the necessary effective guarantees for appeals for credit, whether national or international, can be most easily procured.

Having had laid before it by several of its members schemes with regard to the setting-up of an international organisation capable of increasing the resources available for agricultural credits where they are as yet insufficient;

But having heard observations on that question based chiefly on the elementary consideration that credit must be secured by effective guarantees;

And being aware of the fact that the International Institute of Agriculture is collecting special information on the question of agricultural credits;

The Conference requests the League of Nations to give full consideration to the documentation of the International Institute of Agriculture with a view to examining the possibility of international collaboration in respect of agricultural credits in whatever form may be found from experience to be most suitable with a view to promoting the recovery of agriculture where agriculture is short of capital.

3. CAMPAIGN AGAINST THE DISEASES AFFECTING PLANTS AND ANIMALS.

Diseases which affect plants and animals diminish agricultural production, and should be scientifically combated, on the basis of an international plan and international agreements.

This international campaign has already been admitted in principle by forty-three nations, which have set up an "International Epizootic Office," and the International Institute of Agriculture is proposing to convene a special conference to bring about united international action in connection with phytopathology.

International agreements which establish sanitary supervision, if they provide the contracting countries with adequate guarantees, should, without infringing sovereign rights, remove from the regulations any suspicion of disguised protection and should add to the stability of trade relations, which is one of the conditions of successful production.

4. AGRICULTURE IN COLONIES.

The Conference recommends that an investigation be made into the best means of encouraging agriculture among the indigenous inhabitants in colonies and especially in tropical and sub-tropical colonies, in order to augment the prosperity of the indigenous inhabitants of those countries and to increase the general wealth,

5. FORESTRY.

The Conference recommends that a special study should be made of the resources and the exploitation of forests in order to assure the regular satisfaction of the needs of industry.

6. DOCUMENTATION ON AGRICULTURAL QUESTIONS—STATISTICS—ENQUIRY.

(I) Great as is the value of the documentation which has served as the basis for the discussions on agriculture, it must be acknowledged that there is not yet a sufficient foundation to permit of a complete analysis of all the problems or to suggest a solution of them.

The fundamental importance of agriculture demands an exact knowledge of its economic situation. Such knowledge can only be gained satisfactorily through a methodical analysis of farm accounts. Such researches would bring about a general improvement in agriculture. They would facilitate the mutual understanding between the nations, and the common interests of the agriculturists of all countries would thereby be interpreted with precision. Finally, a better understanding would be created between the producer and the consumer.

To achieve this purpose it is desirable that in the different countries an exact system of farm accounting should be formulated. These accounts should be drawn up in every country as simply as possible, but by the method ensuring the greatest guarantee of accuracy, so as to obtain comparable results for the different kinds of agricultural enterprises in any country, classified by climate, nature of soil, size of holding, systems of cultivation, principal crops grown etc., and so as to make it possible to study the influence exerted on the net return of agriculture by the factors of greatest importance in production and returns (wages, quantities of chemical fertilisers consumed, taxation and social charge, prices, indebtedness of agriculturists, etc.).

It is therefore recommended that a committee of experts be established charged with the study and preparation of the requisite measures.

(II) The Conference considers it necessary that a better service of periodical agricultural statistics should be instituted, especially as regards live-stock and animal products. The data collected by the International Institute of Agriculture show that, during the last twenty-five years, only thirty-seven countries, representing less than half the total area and about 30 per cent. of the population of the world, have as yet proceeded to the compilation of an agricultural census.

A world agricultural census on the lines proposed by the International Institute of Agriculture would make it possible to give to the statistical data of the different countries a character of uniformity which up to the present they have lacked.

It is no less necessary to organise, nationally and internationally, the speedy transmission to agriculturists of information on harvests, stock, consumption, and the movements of different commodities, these being important factors in the formation of prices. The monthly publication of indices of comparative prices of agricultural products and industrial products would prove of great value, as would indices of the principal elements of the costs of production of agricultural products.

(III) The Conference requests that all Governments should be invited to initiate a general enquiry into the present situation and the possibilities of developing agriculture, the distribution of holdings and the systems of exploitation, into the relations between agricultural production, into comparison between agricultural and industrial and industrial prices, into the costs of production and selling prices, into the condition of the workers and into the facilities required for their access to the land, etc.—in fact, into the economic, social, financial and technical conditions of agriculture the study of which will permit further progress to be made.

REVIEWS.

Colour Inheritance in Rice.

(Memoirs of the Department of Agriculture in India Botanical series Vol. No. 4.)

In this memoir Messrs S. K. Mitra, S. N. Gupta and P. M. Ganguli record the results of their investigations on the colour inheritance in rice. The writers have continued the work of Hector and Parnell and on the same lines. They have observed colour characters in (1) leaf sheath (2) pulvinus (3) ligule (5) inter node (6) outer glume (7) inner glume (8) tip (9) stigma and (10) kernel. Their examination of these parts of rice have led them to the following conclusions:—

1. The inheritance of colour in rice is very complicated. The colour complexes are not fixed in a particular part of any organ.

2. The factor that produces the colour exists in some part the parent plants, either visible or invisible, which effects the expression of colour when suitable factor combinations occur by cross-fertilization.

3. The factors for purple, pink, brown, yellow, red, black, white and green are independent of each other and so is the actual shading of each one of them as light or deep colour.

4. Generally, coloured factors are dominant over non-coloured ones. Purple is dominant over green or white, red over white, green or yellow over brown, and black over green or yellow. Exception is found in one case of pulvinus character where purple is dominant over amber.

5. In majority of cases where coloured and non-coloured factors were crossed, simple Mendelian ratio of 3:1 prevailed. Exceptions were met with in a number of cases where the ratios were 9:7, 12:3; 1, 9:3:4, 9:6:1 and 12:1.

6. In a few crosses between non coloured plants the segregation occurred in the ratio of 9 coloured : 7 non coloured except two cases, where the ratios were 15:1 and 1:3 respectively.

7. The existence of an original third colour factor was found in all cases, where intermediates arose in F₂, which were distinctly crosses between coloured and non-coloured plants.

Inter-University Board India—Annual Report for 1927-28.

This is the third report of the Board since it was constituted in 1924 as the result of the Universities conference held in Simla under the auspices of the then Viceroy Lord Reading. Since that date the board has done very good spade work in bringing Universities in India into close touch with each other, coordinating their work where necessary and leading them on to higher ideals. We are glad to note that all Universities have become members of the Board and we congratulate Sir R. Venkataratnam, Chairman of the year under report, and the indefatigable Secretary Prof. P. Seshadri on the excellent work done during the year and the very readable report they have submitted. Being an infant institution, the Board certainly needs the fostering care of the Central Government and the very willing cooperation of Universities both old and young. One or two points in the report which need special mention are the attempts made by the Board for exchange of distinguished professors both between Universities in India and between Indian Universities and those abroad. It is greivous, however, to confess that their efforts in this direction were not quite fruitful, largely perhaps owing to paucity of funds at the disposal of the several Universities. The institution of the University Training Corps in places where none exist at present and provision of further facilities for military training for students in Indian Universities formed the subject of an important correspondence with the Army Head-Quarters and the Board has certainly scored on this very desirable point. There are a number of other matters fully set forth in the several appendices to the report which space forbids us to detail. We hope all lovers of higher education in this country will find the report very interesting. We understand that the heavy agenda of the last meeting held at Madras in February was fully discussed and the proceedings were characterised by a full knowledge of the subjects discussed. The next meeting will be held at Patna. Prof. Seshadri continues to be the Secretary while Pro. A. C. Woolner Punjab, will be the chairman of the coming year.

Department of Agriculture and Fisheries Travancore.

ANNUAL REPORT 1926-27.

Ordinarily it is given unto few to visit the very wooded country of Travancore and gain first hand knowledge of its enormous natural resources. But the report under notice gives us a very vivid penpicture of the doings of the Department under the control of one of the ablest Indian Directors of Agriculture. This report speaks volumes of the abilities of Dr. N. Kunjan Pillai despite the handicaps Travancore is suffering under in the matter of Agricultural and other development.

During the year the rainfall is reported to have been far below the normal, the deficiency being more marked in the southern Taluks, in Shencottah and Peermade than in other places. In the early part of the year there was severe drought in most parts owing to the partial failure of the North-East monsoon and crops like horsegram and gingelly suffered badly. The rain fed Makaram crop of paddy was also unsatisfactory. The Punja crop was also bad; the hot weather rains were however beneficial to coconuts. The heavy South-west monsoon rains which were earlier flooded the fields and crops were washed away. Thus the season was not favourable to the cultivator.

From the results of soil surveys of Nanjanad, Kuttanad, Vaikom and Sherthalai which have been finished it is clear (1) that the soils of Travancore are generally deficient in lime. (2) The soils of Nanjanad, Kuttanad and Vaikom are fairly rich in Potash. (3) Majority of soils in Kuttanad contain plenty of organic matter and Nitrogen but the nitrogen present is in some cases not in a form easily available to crops. (4) There is a general deficiency of phosphoric acid in Travancore soils and (5) the soil in the coastal tract of Sherthalai is deficient in all plant food materials.

The biological analysis of punja soils made in the year have shown that (1) rice on punja lands absorbs Nitrogen as ammonia and not as nitrate. (2) the total nitrogen increases by about 20 % during the growth of the rice crop probably due to the activities of anaerobic species of bacteria or fungi. (3) Rice plant absorbs nitrogen required for its growth mainly during the period between transplantation and seed formation. (4) The increase

in the Nitrogen content noticeable during growth falls off rapidly to-wards the time of harvest on account of denitrification. (5) Nitrogen fixation by free bacteria and fungi takes place in punja soils and this is at its highest during the growth of the crop.

Attempts made at Porakad to reclaim *Kari* soils for rice cultivation were attended with success. Artificial farm-yard manure which is the rage in British India seems to have caught on here also.

Of green manures sunnhemp, daincha, Kolingi and Boga medeloa were popular, the last one in Rubber estates, coconut gardens and dry lands. Paddy being the staple food grain a large amount of attention was paid to this crop. Several experiments were made and useful results obtained with this crop at Nagercoil and other places. Experiments on coconut and Tapioca were interesting. Pepper one of the chief commercial crops claimed equal attention. Cattle were not neglected. The farm at Trivandram with its Scindi cows and stud bulls did good work. The Agricultural School at Alwaye admitted the third batch of students and as an incentive to students to pin them on to agriculture a block of land at Koni was given to them with money advances to commence cultivation and live thereby. Another school was sanctioned at Kottarakarai. Work in connection with Veterinary and Fisheries sections was arduous and was done with care and diligence. Co-operation was also kept in the fore-front and the allied departments joined heartily in advancing the interests of the cultivators. The report is illustrated with charts which are useful and can be consulted. We congratulate Dr. N. Kunjan Pillai and his staff on the excellent work to their credit and wish them increased success in coming years.

MARCH RAINFALL IN MADRAS.

No. of Stations	Districts	First Half.	Second Half.	Mean average month.	No. of rainy days.	Mean average rainy days.
16	CIRCARS—Ganjam (Littoral.)	...	0.05	0.69	0.2	1.3
17	Vizagpatam (Do.)	...	...	0.61	...	1.0
14	East Godavari Plains ...	...	...	0.36	...	0.5
8	West Godavari	...	0.04	0.34	0.1	0.6
13	Kistna	...	0.28	0.42	0.5	0.6
16	Guntur	...	0.03	0.35	0.1	0.5
15	DECCAN—Kurnool	...	0.11	0.23	0.3	0.3
11	Bellary	...	0.70	0.22	1.4	0.4
14	Anantapur	...	0.15	0.18	0.4	0.3
11	Cuddapah	...	0.29	0.21	0.4	0.3
16	CARNATIC—Nellore	...	0.37	0.26	0.6	0.3
14	Chingleput	...	0.97	0.16	1.5	0.28
1	Madras	...	1.04	0.34	2	0.5
17	South Arcot	...	0.65	0.20	0.5	0.3
13	CENTRAL—Chittoor	...	0.54	0.33	0.7	0.5
16	North Arcot	...	0.78	0.34	1.1	0.5
21	Salem	...	0.81	0.45	1.3	0.7
20	Coimbatore	...	1.63	0.57	1.8	0.9
	Kollegal	...	2.73	0.68	2	1.1
16	Trichinopoly	...	1.28	0.43	1.1	0.5
11	Pudukota	...	0.30	1.40	0.5	0.6
26	SOUTH—Tanjore	...	0.85	0.34	1.0	0.5
15	Madura	...	0.89	0.75	0.9	1.2
20	Ramnad	...	0.25	0.64	0.5	1.0
21	Tinnevely	...	0.32	1.24	0.8	2.0
6	HILLS—Ganjam Agency	...	0.79	0.00	1.8	1.8
11	Vizag Agency	...	0.56	0.80	1.5	1.0
5	East Godavari Agency.	...	0.41	0.59	0.8	0.9
1	Kodaikanal	...	1.76	2.95	3	3.3
1	Yercaud	...	0.22	0.80	1	1.6
11	The Nilgiris	...	1.84	1.23	3.5	1.9
1	Anamalais	...	3.71	—	3	—
10	WEST COAST—Coorg	...	2.82	0.54	2.9	1.1
11	South Kanara	...	1.71	0.10	1.7	0.2
25	Malabar	...	1.33	0.70	2.3	1.1
6	Cochin	...	0.65	0.99	1.8	1.1
9	Devikulam	...	0.15	2.15	2.02	4.2
14	Kottayam	...	...	2.25	2.00	2.9
21	Quilon	...	0.18	2.65	2.28	3.6
31	Trivandrum	...	0.37	1.23	1.84	2.6

NOTES

Honorary Visitor:—Mr. J. Chelvaranga Raju paid an official visit to the College and the Institute on the 25th Instant. We wish he found it convenient to be here when the College was in session and acquainted himself with the nature of the work students were doing. As a retired officer of the department and one who has since retiral been taking an abiding interest in agriculture, his visit and suggestions should be welcome and useful.

The Scottish countryside:—In the last 50 years the total population engaged in agriculture has declined by 63,000. During the 6 years-1921-26 no fewer than 295,000 persons migrated; Of 194,301 persons returned as engaged in agriculture in 1921, 137,965 were employees, 25,982 worked on their account and 29,647 were employers.

Holdings owned by their occupiers amounted in 1920 to a total of 606,000 acres and in 1926 to 1,094,706 acres. Farmers, often forced to buy their holdings as an alternative to quitting have now all their capital lodged in land, and landowners and tenants suffer from shortage of capital and these handicaps have resulted in "underfarming."

Australia's Loss:—Drought in 1926-27 involved the deaths of 10 million sheep in Queensland and 2 millions in New South Wales and 2 million cattle.

Co-operation in Madras in 1926-27:—The number of societies was 13,357. Of the total number of members which was 830,522, agriculture contributed 497,940.

There were 11,000 agricultural credit societies and 116 societies for purchase and purchase and sale of agricultural requirements and agricultural produce. There were 9 land reclamation societies, 2 land mortgage banks and a dozen milk-supply societies.

An old dame's soliloquy:—Oh! What a nice world? Everything has got its place. Numbers succeed where reason is not wanted, brains beat where technicality is stuck to, honesty scores where safety is required, repetition wins when argument is weak and money washes all sins.

How to cure abortion:—One Mr. H. Annett writes to the Scottish Farmer that after repeated losses in his herd, the introduc-

tion of a billy goat produced marvellous changes in maintaining the health of cows.

Is this fact or fancy?

April-May Weather:—Weather at Coimbatore during these two months has been, unlike in previous years, favourable for cultural operations. Showers at intervals have tended to mitigate the severity of heat though on days the maximum temperature went upto 99-F. Summer Cholams are in good heart and sheep have a good bite of grass. The South-west winds have just (24th) begun to make a feeble advance and we hope the monsoon currents will set in early and get heavier and help the cultivator better this season.

The Maidan on the estate this year presents a greener appearance and it is an enviable sight to see boys and girls spend their evenings merrily on it.

Demonstration Lorry:—This means of carrying home to the very doors of the cultivator modern methods of agriculture seems near of fulfilment and we understand that a lorry or two will soon arrive and be fitted up for display by the beginning of the next cropping season. We do not know who will inaugurate the opening ceremony. It would be appropriate if the Governor did it, and at the Agricultural College, Coimbatore in the presence of Rajahs and Zamindars who may be invited for the occasion, as most of them are on the Hills and would enjoy a sally into Coimbatore very much especially for a useful purpose like this.

Domestic Occurrence:—That grim monster-Cholera-whose presence at Tirupathi was long notified spread his dreaded wings over a useful member of the department during his visit to the shrine of Lord Venkatesa and snatched him away from his near and dear ones. It looks as if Mr. R. V. Subramanya Ayyar purposely went to Tirupathi to become a voluntary victim. The late Mr. Ayyar took one month's leave in the first week of this month to recuperate his health and to visit a few holy places to fulfil his vows.

At Tirupathi, he caught the contagion and on his way back to Coimbatore, he succumbed at Erode, in his father-in-law's house on the 23rd. The late Mr. Ayyar was one of the best typists in the department. He was a genial young man and had

a number of friends in higher social circles. He leaves behind him two little children, a widow, an aged mother and brother, to mourn his loss. Our sympathies are extended to the members of his family.

Personal:—Mr. A. M. Richards, Veterinary Assistant, went on two months' leave with effect from 7th May and Mr. Vinayaka Mudaliyar from Tiruvannamalai has taken his place. Mr. Mudaliyar has put in several years' service and comes with good credentials.

Vice-Principal M. R. Ry. D. Balakrishnamurthi Garu went on 28 months' leave with effect from 21st May. Since he joined the department in 1902 i.e., over 25 years ago he has had few periods of rest, but considerable knocking about, being a man of resourcefulness, alertness and of phenomenal activity. This period of leave he was understood to utilise for consolidating his slender resources, in improving his lands, in giving lantern lectures in villages and in training sons of rich landowners. Whether all this would give him enough work is more than one can say. But the anxious time he had had to pass at Coimbatore after the death of his brother in February and for the care of his most loving octogenarian mother will we are sure insensibly glide away and the rest will leave him leisure and give him strength of mind to perfect his plans for future work.

Mr. P. H. Rama Reddi, M. A., B. Sc., Deputy Director of Agriculture, Bellary, has been posted as officiating Vice-principal.

Departmental Notifications.

Mr. D. Balakrishnamurthi Vice-Principal, Agricultural College, leave on average pay for two months and ten days from 21st May and leave on half average pay for two years one month and twenty days. Mr. P. H. Rama Reddi Deputy Director, III circle, is posted as officiating Vice Principal. Mr. K. T. Alwa, Assistant Director on special duty, to be Assistant Director in charge, III circle, Bellary.

Mr. G. N. Rangaswami Ayyangar, Millets Specialist, leave on average pay for one month and a half from date of relief.

Mr. Rao Sahib C. K. Viraswami Ayya, Deputy Collector, Cuddapah, to be Statistical Assistant to the Director of Agriculture vice V. N. Viswanatha Rao reverted to the Revenue Department

Mr. M. C. Cherian, Assistant Entomologist, leave on average pay for twenty days from 7th May.

Transfers etc:—Mr. Bhaghirathi Padhi, to be Upper Subordinate, V grade on probation and posted to III circle. Mr. U. Vittal Rao, Assistant, Sugarcane section, is reabsorbed in the Madras Agricultural Department and posted as Assistant Lecturer, II grade. The resignation tendered by Mr. V. R. Sundararaman Assistant, Cotton section, is accepted from 2nd May. Mr. K. Ramaswami Ayyar, Demonstrator, on relief is posted to Madura depot and sub-circle. Mr. G. J. Balaram, Assistant Demonstrator is posted to Uthamapalayam. Mr. S. V. Ramachandran, Demonstrator, is posted to Koilpatti for training. Mr. N. C. Tirumalachari, Demonstrator on return from leave is transferred to VI circle. Mr. P. S. Atmaraman, on relief to the V circle. Mr. K. Varadachari Demonstrator, from II circle to IV circle. Mr. M. V. Narasimha Sastri, Assistant Demonstrator, is posted to Madras in charge of the breeding bulls there. Mr. S. P. Fernando, on return from leave to be assistant manager, Guntur.

Leave etc:—FIRST CIRCLE. Mr. M. Ramamurthi, Assistant, Manager Anakapalle, leave on average pay for one month and 15 days. Mr. G. Jogi Raju, Manager, Samalkota, leave on average pay for days from 21st May.

SECOND CIRCLE. Mr. V. G. Dhanakoti Raju, Manager, Guntur, leave on average pay for one month from 21st May. Mr. R. Balasubramanyam, Cotton Assistant, leave on average pay for 15 days from 5th. Mr. K. V. Seshagiri Rao Tenali, extension of leave by one week.

THIRD CIRCLE. Mr. K. L. Ramakrishna Rao Cotton Assistant, Hagari, leave on average pay for 14 days. Mr. S. Varadarajulu Naidu extension of leave by one month.

FOURTH CIRCLE:—Mr. K. E. Viswam Ayyar, demonstrator, Polar, leave on average pay for three months from 15th May. Mr. C. S. Krishnaswami Ayyar, Manager, Palur, leave on average pay for 27 days from 5th May.

FIFTH CIRCLE:—Mr. M. Subramanya Pillai, Demonstrator, Trichinopoly, leave on average pay for one month and a half from 1st May. Mr. T. R. Venkaswami Rao Demonstrator, leave on average pay for 15 days from 15th May.

SIXTH CIRCLE:—Mr. L. Sankarakumar Pillai, Demonstrator, Melur, extension of leave on average pay for one week.

SEVENTH CIRCLE:—Mr. G. Sakkarai Rao, Demonstrator, Puttur, leave on average pay for 15 days from 5th May.

EIGHTH CIRCLE:—Mr. P. K. Parameswara Menon, Demonstrator, leave on half average pay for three months from 19th March. Mr. V. Satagopan, Demonstrator, Betelvine Station, leave on average pay for one month.

LIVE STOCK SECTION:—M. S. P. Fernando, Assistant Demonstrator, Madras, leave on average pay for one month.

PRINCIPAL'S SECTION:—Mr. M. Raman, Manager, leave on average pay for one month.

G. L. B. SECTION:—Mr. K. Cherian Jacob, Assistant, leave on average pay for one month.

C. S.'s SECTION:—K. Abraham, Assistant, leave on average pay for 15 days from 7th May. Mr. R. Chockalingam Pillai Assistant, leave on average pay for one month and 24 days from 7th May..

G. M.'s SECTION:—Mr. C. S. Krishnaswami, Assistant, leave on average pay for 15 days from 7th May. Mr. S. Rajaratnam, Sub-assistant, leave on average pay for one month from 16th May.

P. S.'s SECTION:—Mr. K. B. Viswanadham, Manager, Maruteru, leave on average pay for one month and 15 days from 2nd May. Mr. S. Dharmalinga Mudaliyar, Assistant, leave on average pay for one month from 1st May.

G. A. C.'s SECTION:—Messrs. P. Satyanarayana and G. Ganapathi Ayyar, Assistants, leave on average pay for one month each. Mr. M. Sanyasi Raju, Assistant, leave on average pay for 27 days. Mr. Kochukrishna Pillai, extension of leave for one week.

EDITORIAL.

SERVANTLESS.

Sir Frederick Nicholson, in this one word characterised the situation of the St. George's Home, Ketti and appealed to the members present for help not for pampering the growing children under the care of the Principal but for expansion of work by the admission of yet more children.

This would be the feature of every institution whose motto is selfreliance and selfhelp. It is the fashion in modern days to preach dignity of labour but clamour for prestige, servants and facilities which one often cannot afford to get and without which perhaps one would be more happy and respected than others.

Sir Nicholson said that the children in these homes did all work cleaning, cooking, washing, everything themselves and the training given would fit them up for their future career. We wish and hope that such could be wholly said of the students under training at the Agricultural college so as to fit them for the battle of life in coming years as agriculturists—which profession demands and exacts of its votaries, rigid self-discipline, self-help, self-reliance, and self-confidence. Perhaps this may seem a novel idea but some such innovation brought in betimes will be blessed as a happy and desirable change later, and felt as such by all concerned though it may be unpalatable at present. And we are sure students themselves will be the first to co-operate provided facilities could be created and sympathies extended.

POST GRADUATE STUDIES.

Universities in India have not all of them launched on this item of higher education. It was reserved, however, for Sir Asutosh Mukerji to persuade the Calcutta University and the Government of Bengal and to lead the way in this direction. —Happy results have accrued and the influence which has spread thereby has given India the Bose Institute and a School of investigators under the distinguished and parental guidance of one of our talented countrymen—Dr. C. V. Raman. Similar institutions should spring up in different University centres or work under the auspices of universities.

Post graduate studies require for their success, a genial atmosphere, teachers or researchers with deep knowledge of the subject and sympathy for the student, bright students with a capacity for patient work and a knack to interrogate Nature and understand her answers but who should be kept above want and worries, laboratories for work and libraries for consultation. It is perhaps not possible to secure all these elements in one place, but the deficiency should be made—up wherever possible; the chief element without which no progress is possible is the guiding hand.

The Madras University has for some time, instituted scholarships for post-graduate studies in some subjects and they have also considered eligible graduates in agriculture for such scholarship. The Agricultural College at Coimbatore is, in our humble opinion, eminently fitted to be a centre for such studies in several applied sciences dealt with here—Viz. Botany, Chemistry, Agricultural economics etc., and the desire for such studies has been more than

once expressed from several quarters. It was only last year, on April 4th, when the then Honourable Minister for Development visited the College, students presented an address on their own behalf and on behalf of fellow students and prayed that Government might be pleased to make provision and afford facilities for post-graduate study at the College and the Honourable Minister seemed to sympathise with the idea. Ofcourse, in working out proposals and giving effect to them, there may be difficulties which will not however be insuperable for a talented and popular Director like Mr. B. D. Anstead. There may be creaks in wheels which will need perhaps to be oiled or renewed if necessary, if the machine has to reach its destination.

We hope that before long, post-graduate studies will be instituted here without which the higher atmosphere that should prevail about University education may get attenuated and lead to barren results.

B. Sc. Ag. RESULTS.

We congratulate our young members who came out successful in the April examination in Parts I and II and propose to publish full lists in the next issue. We sincerely and profoundly regret that eight failed to secure the Degree and earnestly wish that these latter would join the college with hopes of better luck next time.

GOVERNMENT COWS FOR SALE.

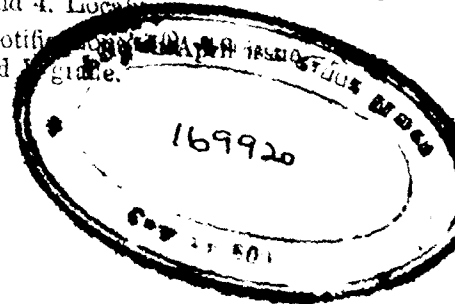
From the pages of the "Planters' Chronicle" dated 26th instant we understand that the Deputy Director Live Stock, Hosur Central Farm, proposes to sell both from Coimbatore and Hosur, a few cross-breed cows of heavy milking qualities—This is a safe and sure means of popularising heavy milk—yielding cows amongst the public—Particulars are given of the prices, dates of birth and their performances.

We hope the public will utilise this opportunity of owning good cows.

ERRATA.

In the article "Fungus Diseases of Crops in the Presidency" in this issue, after the word volume add "XIII Pages 366" and insert the following as heading:—1. Popular name; 2. Scientific name; 3. Time of occurrence and 4. Location.

2. Under 'Departmental Notification' read 'Gazetted in line 3 for 1 grade read 1 grade.



The Journal of

THE

Mysore Agricultural & Experimental Union

BANGALORE.

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Printer & Publisher:

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(vii)

The Ramasastrulu-Munagala Prize 1928.

1. The Prize will be awarded in July this year.
2. The Prize will be in the form of a Medal and will be awarded to the member of the Union who submits the best account, of original research or enquiry, carried out by him on any agricultural subject.
3. The subject matter shall not exceed in length twelve foolscap pages type-written on one side.
4. Intending competitors should notify the Secretary of the Madras Agricultural Students' Union not later than the 1st June the subject of the paper which they propose to submit and the paper should be sent in so as to reach the Secretary, Madras Agricultural Students' Union not later than the 15th June 1928, with a covering letter showing full name and address of the sender. The author's name should not be shown on the paper which should be entered under a *nom-de-plume*.
5. Four type written copies of the essays should be sent in.
6. The name of the successful competitor will be announced and the prize awarded at the time of the Conference.
7. The Union reserves to itself the right of publishing all or any of the papers.
8. All references in the paper to published books, reports or papers by other workers must be acknowledged.
9. Papers submitted will become the property of the Union.

Any further particulars may be obtained from the Secretary,
Madras Agricultural Students' Union, Lawley Rd. P. O. Coimbatore.

Secretary,
M. A. S. Union.

(viii)

Amendments to the Rules of the Union

Members under old rules whose arrears to the Union exceed a sum equivalent to their two years' rate of subscription for the journal will not be eligible either to vote or to serve on any of the Committees.—M. Rajagopalan.

In rule 3 after the word "journal" insert the word 'quarterly.'—C. S. Krishnasami.

The title of the journal instead of as at present shall be "the Madras Agricultural Journal"—Organ of the Madras Agricultural Students' Union.—V. Muthusami Aiyer.

There shall be an editorial board of not less than five members ordinarily to represent one section each of whom two namely the Editor and one member shall be members of the working committee; the Vice-President shall be the ex-officio member of the board.—V. Muthusami Aiyer.

Donation for a patron shall be Rs. 250 instead of Rs. 100 as at present.—V. Muthusami Aiyer.