

known fact regarding well known insects, was elucidated only since the inception of the Insectary. It may be added, in conclusion, that this is the second of the kind in India the other being in Pusa.

It is perhaps clear from the above account what an Insectary is and how it attempts to help the department and through it the agriculturists at large.

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### **\*The Kangayam Cattle.**

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The cattle in this district are either hill breeds (malaimadu: Alambadi and Burghurs) or Kongu-madu: plain breeds (nattumadu Kenganad) or Kangayam cattle. The Kangayam cattle are well known for their excellent qualities for draught purposes. The breed is highly valued and centres round Kangayam whence it is named. These are bred in the whole of the Dharapuram Taluk and the adjacent parts in the Erode, Palladam, Karur, Palani and Dindigal Taluks. The breed in its purest form is found in the herd of the Pattagar of Palayacottai the like of which cannot be seen anywhere else in the Kangayam tract. By a careful selection of heifers and sires for many years he has improved the size and the quality of the breed. He is the most extensive breeder in the Kangayam tract, so much so his animals are designated as "Pattagar's breed." It is very difficult to find another in this Presidency who pays so much attention or carries out the systematic cattle breeding as the Pattagar of Palayacottai.

There are two varieties of the Kangayam cattle: large and small. Both the varieties are found side by side in the Kangayam tract. The biggest sized animals are found only with the Pattagar of Palayacottai and it is incorrect to say that he is the breeder of the small variety.

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\*Extract from the paper read by Mr. P. N. Md. Miran Sahib, B. A., Revenue Divisional Officer Erode, before the College day and Conference on 11th July 1915.

As cattle form the backbone of Indian Agriculture, the question of maintaining its quality and condition is a most important factor in the Agricultural improvement of the country. The development of fine breeds in Europe and America is due to the continued interest evinced by the great land owners, from sovereign downward. The affluence of a farmer is determined by his livestock. It is but proper and appropriate that the Government is about to establish a stock breeding farm in the Kangayam tract.

The preservation and improvement of the best breeds of cattle are perhaps the most pressing questions of the country. The 'Kangayam' cattle are hardy and active with compact body and short and stout neck and legs. They are best fitted for mhothe, ploughing in deep soils and for heavy draughts. In the black cotton soils in the south they are almost exclusively used for agricultural operations. These can be worked for over ten years while the hill breeds do not stand for not even half of this working period. Thus in every way the Kangayam cattle deserve special treatment for agricultural advancement of the country.

To understand and distinguish this Kangayam cattle from the typical hill breeds found in the District it is better to describe their special features.

'The Kangayam' is elegant in appearance, with broad face, short thick and pointed horns, short and stout legs, compact body, with no overhanging dew lap, chest broad, hind quarters narrow with iron grey markings about the hump and quarters and front legs, quick and strong. 'Alambadi'—long bodied with horns tapering and well set up backwards rather than to the front, eyes prominent, dew lap lengthy, docile and well fitted for road work. 'Burghur'—are the swiftest and stoutest, moderate in size, head small, horns tapering and longer than Alambadi, fierce and active; dew-lap not so large as in Alambadi.

The Kangayam tract is an undulating plain sloping eastward towards the Cauveri but with a local watershed near Kangayam

falling into the Noyal on the north and the Amaravathi on the south. The soils are gravelly with an admixture of limestone on the surface.

In the Kangayam tract the breeding is mostly left in the hands of wealthy ryots. But up in the hills of Kollegal, Bhavani and Satyamangalam almost every villager has interest in the raising of cattle. In the Kangayam tract the forest area is insignificant and fodder for cattle is provided by reserving part of the patta lands for pastures and growing fodder cholam in lands irrigated by wells. In the hill villages there is only breeding of cattle. The bull calves are sold away when the cows get dry and the hillmen labour under a superstitious belief that unless and until they are sold away their mothers would not conceive. The 'breeding' and 'rearing' go hand in hand in the Kangayam tract. The hill breeds depend on scanty sustenance they have in the forests in summer. When there is no pasture, the cattle in the Kangayam tract are hand fed.

These are free from the evils of communal grazing. The conspicuous absence of common grazing ground, porambokes, combined with the system of private fencing contributes towards the success of cattle breeding in this area.

The quality and renown of the Kangayam cattle depend mainly on the extensive pasture grounds very rich in lime. Every *punja* allotted for grazing is fenced with Kiluvai (*Balsomodendron Berrie*) hedge. This grows high enough to protect the animals from wild winds, though this does not afford proper protection, as this is not allowed to branch thickest at the bottom. Perhaps with proper topping and cutting of the plant, the fences may be kept up thick and bushy from top to bottom. In most parts prickly pear is also planted on the sides, which by its rank growth even encroaches the pasture grounds. Temporary pasture is the rule, though exceptionally good pastures are often left 20—30 years before being broken up as found in the large Korangadu (pastures) owned by the Pattagar of Palayacottai.

*Kolukkattai grass* is raised regularly and is sown after cholam and cumbu are raised. Even garden lands are laid down to pasture. The

soil best fitted for this grass is "odai" jelly—red loam full of canker gravel as it is in the Kangayam tract. With fencing there is complete control over pasture ground. The Kolukkattai grass seeds do not germinate if sown deep. After good ploughing cereal grains are sown and ploughed in. The grass seeds are sown superficially to germinate naturally, with the aid of rain. The peculiar long duration cumbu (nadam cumbu) is sown in this tract now; and in this crop, after it is weeded by ploughing (pairulavu) a few weeks after germination, the grass seeds are sown. Once the Kolukkattai seed germinates there can be no difficulty for its propagation. This has a bulbous root stalk and withstands drought considerably. The animals are turned in the pastures just after summer rains when the grass is over a foot high say in September. They are allowed to remain in the 'Korangadu' day and night till Thai Pongal (January). The cattle during this period are not at all stall fed. They have plenty of grass and pick up flesh gradually. No necessity is felt for any concentrated food during the grazing period. The field proposed to be raised with this grass should be ploughed well in summer rains. Each grass plant may put forth over 100 branches with bulbous roots below. The roots lie superficially and do not penetrate below 3 inches. Once the seeds are sown after ploughing the seeds do not require covering by ploughing or harrowing. This may be sown at the rate of 10 M. M. per acre. This plant seeds freely and its seeds are easily shed. A heavy rain causes a rapid flush of pasture and in 2 or 3 weeks, the parched up pasture grows to sufficient height fit for grazing. This is ploughed up every 3rd or 4th year to quicken the grass. Cereals and grass seeds are sown together. Once it takes root it never dies. This grass can thrive in all lands except in clay soils. This germinates in 6 days. In areas where there is more quantity of grass than is required for grazing, the grass is cut immediately after it flowers and stored. Grass so stored is used for working cattle, milking animals and animals intended for sale in summer when there is little or no pasture.

Without suitable and nourishing fodder, no good breed can be maintained. When natural pasture is deficient, hand feeding is resorted to. Raising of fodder crop is not unknown to the Kangayam

tract. There is a regular practice of sowing fodder cholom closely so as to yield heavily and this is grown at any time in the year, in garden lands when pasture is scanty. Cholom is also raised largely in dry soils during rains. Ryots in the Kangayam tract indiscriminately raise any variety for fodder. I am advising them to go in for 'Periyamanjal' cholom which gives heavy yields both in grain and stalks. In garden lands where cholom fodder is raised I am asking the ryots in the Kangayam tract to irrigate the stalks cut. The stalks left after cutting grow again. In this way cholom fodder may be kept on the ground for a longer time and the fodder used according to necessity like grass.

Lucerne (Alfalfa) is raised on a small scale by the Pattagar of Palayacottai. This was introduced by him only a few years ago. This is a most nutritious and rich fodder. This increases the flow of milk and is given to cattle mixed with other fodder. This is likely to thrive well in garden lands in the Kangayam tract as they are rich in lime with good drainage. The roots go very deep and withstand severe drought. After deep ploughing and manuring, the field should be prepared in ridges 1 cubit high and the seeds sown on ridges and watered. The grass is cut whenever it flowers, say 10 times in a year, and in this way an acre may yield about 150 to 200 cart loads in a year. This requires irrigation once a week in summer. This will stand for 10 or 12 years, if it is not allowed to seed and is properly attended to. The breeders do not go in for any other fodder crop. This can be sown at the rate of 3 to 4 M. M. per acre.

Sunn hemp can, with advantage, be raised in the single crop wet fields in the Amaravathi valley where there is good drainage and this may also be raised in garden lands. The breeders of the Kangayam tract will be adding good feed in this crop when pasture is scanty. This is also a quick growing green manure crop. An attempt is made in some parts in the Amaravathi valley to raise this.

Guinea grass can be easily cultivated in wet areas and in garden punjas. This is also a good fodder crop for milch cows. Its special excellence consists in its being perennial. This is usually raised from clumps.

In all the pasture areas throughout the Kangayam tract there is rank growth of "Velvelan" trees. The leaves and pods are eaten by cattle with great relish as they are very nutritious. In some parts along the Amaravathi and the Cauveri valley babul trees are found. The existence of "velvelan" trees in large number in pastures affords shelter to the cattle grazing therein day and night.

When the animals are stall fed fodder is thrown among the animals which soon gets trodden and soiled. This should be fed in troughs or proper mangers. No animal however hungry it may be, will eat fodder thus soiled. The trough or manger should be cleaned daily especially when green fodder is given. The fodder that may be thrown in trough could be completely made use of by cattle if these are cut into small pieces by chaff cutters. This is attempted in a way by the Pattagar of Palayacottai. For want of manger, all over his cowsheds and vacant sites, where the animals are tied to pegs, fodder is considerably spoiled.

During the grazing period for nearly 7 months Purattashi to Pankuni (October to April) the cattle roam about in the pasture grounds in wild state; drinking water is available in ponds and wells inside the enclosures. There is sufficient supply only in winter months. Breeders experience considerable difficulty in summer for watering their cattle. Even the Pattagar of Palayacottai has not made proper arrangements for supply of pure water to his livestock in most of his pasture grounds. The big sizes of Mysore and Alambadis are due mainly to the waters of the mighty Cauveri. It is worthy of note even in the hill villages where there is good pasture the animals are found invariably of stunted growth whenever there is difficulty for getting pure water. 'Arabakeri' and 'Dintalle'—the hill villages about three miles from the Cauveri are famous for their big sized Alambadis by their watering in the river and only from these villages stud bulls are purchased by hillmen. Chengadi another village in the Kollegal Taluk only about three miles from them and about 6 miles from the river with no access to it have only cattle not even up to the stature and size of ill-bred country animals.

I have been impressing upon the Pattagar and other breeders the necessity for going in for pastures adjoining the Cauveri and the Amaravathi.

For 'Thai Pongal' wherever the animals may be for grazing they are all taken to the respective breeders' houses and after washing them they are stall fed. Animals intended for sale in the Kannapuram and Tiruppur Fairs are selected and separated from the general breed and the rest are sent back again for grazing for two months more. Such animals are fed with special green stalks and pulse pods etc., for a time and gradually they are given concentrated food, consisting of cotton seed, and ground-nut cake. The nearer the fairs approach the better the animals are fed. In addition they are given the best fodder available throughout the day and night.—e.g. Cholum fodder, pulse pods and Kolukkattai hay. The animals during the stall feeding pick up flesh and develop rapidly from day to day and they become docile as they are kept tied throughout this period.

Every ryot keeps his cows and other cattle in his own fields fenced and he parts with his young stock at a very young age. In the case of big breeders the cows with calf at foot, dry cows, heifer calves, young bulls and castrated animals for sale and working animals are grazed separately in different pasture grounds separated from each other by proper fences.

The small breeder takes more care of his promising young calves. The calves are allowed to suckle as much milk as they can for the first three months. It is a great mistake to neglect calves. The greatest growth takes place during the first year and it is during this period special care should be taken to build up the frame of the young calf. Throughout the Kangayam tract only bull calves are taken proper care of. Breeders take special care of the male offspring as they get fancy prices.

*Housing.* Throughout the Kangayam tract provision made for the sheltering of cattle cannot be considered in any way satisfactory. It is not customary to afford shelter against sun and rain. The cattle

are protected in a way by screens of bamboo and wild twig pens. These are moved at intervals from place to place in a field and in this way the whole field is manured.

During the period of hand feeding in the Kangayam tract no attempt is made to secure the valuable manure in urine. It appears necessary that even a big pasture ground where the animals are allowed to remain exposed night and day for months should be provided with cow sheds to shelter them at least during heavy rains. Nothing like protecting them against heavy rains and cold winds. I take this opportunity of moving the Agricultural Department to advise the breeders in the Kangayam tract as to the necessity of putting up model cow sheds with all improvements found necessary for housing the cattle and for securing the farm yard manure in the best way possible. In the rules framed under the Agriculturists Loans Act, there is no provision for state aid for such construction, the most important and necessary thing to be attended to in the improvement of live-stock. This rightly comes under the agricultural object. Unless specially mentioned and extended the needy ryots cannot expect to get state aid for construction of their cow sheds from the Revenue Officers who adhere to the letter in the working of the Loan's Act. With such a support the breeders may not find it difficult to put up proper cow sheds wherever necessary.

Both the cows and working cattle are tied exposed throughout the Kangayam tract. How far such an exposure would affect cows in special I need not tell.

"Eye of the master fattens the cattle". The truth of this proverb is amplified well by the care taken by the Pattagar of Palayacottai in the rearing of his cattle. He will be seen from sunrise to sunset and even late in the night in his cattle pens moving from place to place seeing to the proper feeding of each and every one of his livestock. He can tell to a day the history of each of his animals in whatever pastures they may graze or in whatever pens they are stall fed. In the Kangayam tract all breeding bulls are private property of big breeders most of whom do not allow petty



breeders to have their cows served by them unless the male offsprings are sold to the owner of the bull. Of late *in breeding* appears to have become less common and now breeders often buy their breeding bulls from the Pattagar of Palayacottai. Nowhere in the Kangayam tract a breeder could trace the pedigree of bulls for more than one or two generations. This is the case even with the most advanced breeder—the Pattagar of Palayacottai as no pedigree register is maintained by him. Cattle if moved when young get acclimatized more quickly and this susceptibility of cattle to changes of climate should be borne in mind in attempting to improve cattle by supply of breeding bulls. Bulls for breeding should be got in pairs so that one may be an inducer to the other. Both can then be useful as breeders and workers. The Kangayam stud bulls found in Tinnevely and other districts were all grown up animals when they first arrived so that they could not get easily acclimatized and from day to day they were declining in strength and failed to be good stud bulls. The bulls were entrusted to Village Munsiffs and private persons and as a rule these were not taken proper care of by them. It is expected ere long every Government Farm, every Veterinary Hospital, every Grazing Panchayet and every Rural Co-operative Society where there are large number of cows may be provided with proper stud bulls. There is provision for state aid under the Agriculturists' Loans Act for purchase of stallion which does not form part of the Agricultural stock of the country. This should be advantageously extended for purchase of stud bulls as cattle are the backbone of agriculture in the province. In the Pattagar's herd, there is always a stud bull with milkers. The moment a cow is found in heat the bull is taken for service. Unless a cow calves once a year there can be no good profit for a breeder. During the last visit of Pattagar's livestock a cow was shown which has conceived in second month after calving. The Kangayam cows generally conceive in the third or fourth month after calving. Some yield milk during the whole period of pregnancy. In such cases they should be dried at least two months prior to calving so that the mammary glands may have rest and the formation of new milk may go undisturbed. It is usual to have a stud for every 50 cows. Grey colour shows hardihood.

It is better to go in for this colour both in heifers and bulls. A heifer should not be allowed to become very fat lest it becomes barren. One may start breeding with a fresh set of animals; a good pedigree bull calf with a few good heifers of proper breed well suited for the locality should be procured. The younger they are the easier it is to get them acclimatized. This applies equally to the Kangayam and hill calves. This is my experience. It is a bad investment to go in for adult animals. Among the calves born in a herd the best one should be used for breeding. By continuing this process the herd will be considerably improved as we see in the Pattagar's livestock. In the case of one who has already a herd and desires to improve the same he should secure a good stud of the same type better formed and large sized. No other bull should have access to the herd.

The crude method of castrating with wooden rods or balances is still in vogue. This is commonly resorted to even in the Pattagar's livestock. This is not complete emasculation. It is safe, easier and less painful to cut open and remove testicles completely with knife and then treat the operated part with antiseptics. This may be done when a year old or even less, say three months old. Bulls not intended for breeding should be castrated before they develop any breeding propensity. With the opening of the Veterinary Hospital at Erode it is hoped that breeders may resort to this western method of castration in preference to the cruel mulling process. The Pattagar has recently castrated some of his stock.

Cows are worked in some parts in the Kangayam tract for mhoting, ploughing and other draught purposes. There is no reason why they should not be used so when dry and until they are within two months of calving, and fed and looked after well. This practice is in vogue in other parts of Coimbatore and in Salem district and deserves further extension. It is a pleasant sight to see in the Kangayam tract women driving mhotes, ploughing and attending to other agricultural operations. In the Kangayam tract the women mostly look after the livestock.

*Shows and prizes.* Kannapuram is situated in the heart of Kangayam tract surrounded by fertile breeding centres. The Chitra Pournami cattle fair at Kannapuram being the first annual fair, the pick of Kangayam cattle are brought in large numbers for sale. Only the animals remaining unsold are taken to the Tirupur Show which generally takes place a month after. Cattle Shows to be of any value to the country should be in the centre of cattle breeding areas like Kannapuram and the ryots and breeders that attend the show should be stimulated to choose better stud bulls and workers and to know what sort of animal is the best.

In conclusion I urge that the pressing need of the country towards the improvement of cattle is increased facilities for proper rearing and housing of cattle and supplying of pedigree bulls and extension of private grazing grounds.

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**\*“The Indian Village—How to improve it.”**

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The problem of a country is the problem of its villages. Tell me how your villages are, and I will tell you how your country is. The prosperity of the village is the prosperity of the country. John Bright says, the nation lives in the cottage.

The few educated people with their borrowed but ill-suited fashions and noise on the platform and in the press, are not the whole nation. They are not solely the leaders that, they think, they are. It is the villager that mostly shapes the destinies of the nation. It is he that represents the true civilisation, the true character of the nation and not the English educated man who neither retains all that is best in the civilisation of his own country nor has assimilated what is best in the civilisation of the west. The latter has been talking much of late years about the need

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\* Paper read by Mr. Balakrishna Murthi, (Diplomaed in Agriculture) on 11th July 1915, before the College Day and Conference.