THE IMPROVEMENT
OF LIVESTOCK IN THE BRITISH WEST INDIES

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The conditions under which livestock improvement programmes have to be implemented vary greatly not only from country to country, but also from area to area within individual territories. In some islands more progressive sections of the population have created conditions in which comparatively high levels of animal production have been made possible. In some, considerable improvement in the productivity of livestock of the main of the indigenous inhabitants still remain at a very low level. In most of the islands or territories it has been necessary to introduce various breeds of livestock to effect improvement.
INTRODUCTION

During the last decade there has been a marked unanimity among expert opinion regarding the place that livestock industry should occupy in the Caribbean economy. The West India Royal Commission of 1938 placed special emphasis on the necessity of a greater production of meat, milk, poultry and eggs, if a better balanced diet was to be provided for the population of the West Indies. Three years later Mr. A.J. Wakefield, C.M.G., Agricultural Advisor to the Comptroller of Development and Welfare, pointed out that the most promising line for agricultural development in Jamaica was the livestock industry from the stand point of both economics and of nutrition. In the next year, the Agricultural Policy Committee of Trinidad stressed the fact that the primary purpose of encouraging the keeping of livestock was to assist in stabilising the system of agriculture and to improve the standard of nutrition of the local populations. (1)

However, before the livestock industry as a whole can accomplish, to any marked degree, improvement in Agricultural Development, or nutritional standards of the various populations of the West Indies, there must be some form of improvement of livestock in the British West Indies.

The conditions under which livestock improvement programmes have to be implemented vary greatly not only from country to country, but also from area to area within individual territories. In some islands more progressive sections of the population have created conditions in which comparatively high levels of animal production have been made possible. In some, considerable improvement in the productivity of livestock of the mass of the indigenous inhabitants still remain at a very low level. In most of the islands or territories it has been necessary to introduce various breeds of livestock to effect improvement.
Not only is the improvement of livestock essential if standards of living are to be raised, but also the whole future welfare and progress of millions of peasant farmers, as well as the continued fertility of the soil, depend largely upon the evolution of sound systems of permanent agriculture, in which livestock must play a much more important part than it has been in the past. If crop production is to be maintained or increased, the animal will have to become a vital factor in the process. Improved animals possessing reasonably high standards of production, either for meat, milk, eggs, draught or otherwise, will go a long way in providing the economic incentive to the peasant farmer to use his animals in a sound system of mixed farming, which system appears to be most suitable for the development of the agriculture and livestock industries in the British West Indies. (13)

Some of the more important conditions to be found in the British West Indies and which govern the methods of livestock improvement employed will be mentioned in more detail later. These conditions or factors are: Nutrition, Management, Breeding, Control of Pests and Diseases.
Tropical Animal Nutrition is yet to be developed. Little critical work has been undertaken and as a consequence, published literature on this subject is almost non-existent. This state of affairs stems from the fact that livestock feeding in the tropics has not been the object of scientific investigation to the same extent as it has been in the temperate countries, largely because of the lack of education and interest.

The beginning of scientific agriculture in tropical territories is quite recent, and animal nutrition is an important part in any agricultural improvement policy. Better standards of animal nutrition will be possible as tropical territories improve their home-grown food production. (22)

POULTRY

There is much that can be done towards improving poultry nutrition throughout the British West Indies. At present poultry are maintained on a rather low plane of nutrition, made up chiefly of local by-products. Imported rations are sometimes fed, but these tend to be uneconomic. Trinidad has made the most progress in this line due to the presence of the St. Joseph Food Storage Depot, which was erected in 1942. Various stock feeds are produced at this Depot which are utilised locally. In 1954 Ojurongbe found that egg yields obtained from Rhode Island Red birds on range in Trinidad did not significantly differ from imported and locally compounded laying mashes. (22). There is therefore, a possibility of utilising locally produced rations to improve the present day production of birds, and at the same time much more economically than with imported rations.
PIGS

Nutrition of pigs in the West Indies does not present as great a problem as most other livestock, due to the relatively large quantities of by-products that are utilised as feed.

In the Leeward Islands pigs are fed mainly on sweet potato vines, sweet potatoes, molasses, corn meal and Imported Grower Rations. The position in the Windward Islands as regards nutrition of pigs is much the same. (16)

In Barbados, Jamaica, British Guiana and Trinidad & Tobago pigs are also fed mainly on locally produced foodstuffs. However these territories produce a much wider range of by-products and are therefore able to produce more balanced rations than either the Leeward or Windward Islands. Among the by-products utilised for feeding pigs in the above-mentioned territories are: - Rice husks, Molasses, Coconut meal, Blood meal, and Corn meal. (6)

One of the main difficulties met with in tropical territories where attempts have been made to expand and improve pig husbandry, is that of finding suitable feeding stuffs with which to fatten pigs economically and produce reasonably good carcasses. The problem is accentuated by the shortage of cereal and starchy foodstuffs for the human populations. Any improvements in the rearing of pigs in larger numbers, or to produce high grade products must therefore solve the problem of feeding. (6)

SHEEP AND GOATS

Comparatively little or no research has been done on the nutrition of sheep and goats in the Tropics.

In the British West Indies these animals are kept by many private individuals principally as a sideline or to ensure a home supply of meat and milk in some instances. (17) For this reason very little attention has been paid to the nutritional requirements of these animals. They are mainly grazed along the road sides or in pastures. Recently, however, there has been a tendency towards feeding these animals on better types of forage grasses such as Guatemala and Elephant Grass, and in some instances/
some instances small amounts of concentrates are being utilised.

At present, research is in progress at the Imperial College of Tropical Agriculture, which aims at determining the digestability of some of the more promising grasses. Sheep and Goats are used in these trials, and the results obtained will be of much **value to the West Indian small stock owners.**

**HORSEKIND**

Horsekind play a relatively important role in the British West Indies particularly the larger sugar estates. Horses, donkeys and mules are maintained mainly for estate cultivation and haulage, riding purposes on estates, transport of goods and merchandise, and in some cases for racing purposes. (17)

On the best estates the standard of feeding is good, but on others, especially where there is little or no skilful supervision conditions are different.

Local fodder grasses constitute the main part of the diet during the wet season, together with small quantities of concentrates and mineral licks. During the dry season, cane tops are used as a source of fodder.

**CATTLE**

Among livestock in the British West Indies, most attention has been paid to cattle. At present most of the work done on nutrition of cattle is centred upon the establishment and testing of various fodder grasses either for grazing or forage purposes.

In the Leeward Islands various trials have been laid down with Elephant Grass, Guinea Grass, Guatemala Grass and Uba canes. (16), To date, these grasses have produced fairly good results. The feeding of concentrates is somewhat limited mainly because of the cost of imported rations. However, fair amounts of locally produced cotton seed cake, Coconut Meal and Corn Meal are also utilised.
In the Windward Islands the position is much the same. It has been found desirable to promote on a wide scale the feeding of young cut fodder and mineral mixtures. Concentrates are mainly imported and therefore costly, until a cheaper source of concentrated feed becomes available the emphasis will have to be on improving the quality of fodder and pasture grasses, and the use of leguminous plants as fodder (15).

Waste land unfit for cultivation was mainly used for grazing peasant stock in Barbados. However, the Central Livestock Station has carried out various experiments, mainly to improve pastures. Some of these experiments include:

1. the search for suitable legumes to use mixed with maize and Guinea corn fodder for ensilage.

2. development of silage methods and feeding, with a view to introducing them to Dairy owners.

Small amounts of cotton seed meal, sweet potato, meal, and Molasses are available and are often included in the Government Balanced Animal Feed. (1)

Pasture development and improvement is being undertaken by the Department of Agriculture in British Guiana. Trials are being conducted with Guinea Grass, Elephant Grass, Guatemala Grass, Sweet Sudan Grass, Locumtu Grass and Wynne Grass. Investigations are also conducted with the legumes *Indigofera endocaphylla*, *Alysicarpus vaginalis*, *Alysicarpus longifolus* and *Tropical Kulzer*. Good results have been obtained from these trials (1).

Most of the improvement in cattle nutrition in Trinidad has been brought about by the utilisation of tested fodder grasses, and legumes. Much of the work done on the grasses and legumes has been carried out by the Imperial College of Tropical Agriculture. Concentrates are used extensively, mainly because they are produced locally and for that reason are much less expensive than imported concentrates in the other West Indian Islands.
Improvement in nutrition of Cattle in Jamaica has been in the form of introducing and testing various exotic grasses and legumes. Among the introduced species of grasses are:- Guinea Grass (*Panicum maximum*), Bahia Grass (*Paspalum notatum*), Coastal Bermuda Grass (*Zoysia matrella*), Rhodes Grass (*Chloris gayana*), Molasses grass (*Milinis miniatiflora*), and Jaragua grass (*Hyparrhenia rufa*). Introduced legumes planted in a mixture with various grasses are:- *Calapogonium mucunoides*, *Stylosanthes gracilis*, *Desmodium destortum* and *Pueraria phaseoloides*.

Guinea Grass (*Panicum maximum*) has proved to be an ideal fodder grass for conditions in Jamaica, and other trials have been laid down with it, including:

1. Effects of different cutting and grazing treatments on seeding habits.

2. The study and methods of seed collection.

Grass-legume mixture trials did not show much success; however these mixtures will be continued for a further period. Since they do not usually pass through recognized poultry markets (11), they are reared mainly on range, but sometimes in batteries. Recently a cheap and durable poultry house was put on display at a livestock show by the Government Stock Farm, Trinidad. Such a house should be adequate for poultry rearing and management throughout the West Indies.

Encouragement and advice are necessary particularly to private enterprisers, for where owners are keen and interested they will give more time and attention to proper management (17).

Pigs are reared on a larger scale than poultry mostly because they are much more economical to rear. They appear to be easily adaptable to varying conditions, and thrive on local vegetable by-products.
Proper Livestock Management in the British West Indies is probably not fully realised. On the other hand, proper management is an expensive branch of farming, requiring capital skill and experience. Lack of capital and an understanding of management for the most part, can be claimed to be the most serious drawback in the British West Indies. This is easily demonstrated by the fact that the more wealthy livestock men and farms practice a much better and a more elaborate system of management than the average peasant.

Propaganda, demonstrations and livestock shows can be of great assistance in showing all animal husbandmen how better and reasonably cheap systems of management can be practised.

POULTRY

Poultry are reared mainly as a sideline by many private individuals. Poultry contributes very little to the breeding stock of the islands, and have little real economic importance, since they do not usually pass through recognised poultry markets (11).

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PIGS

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The feeding of pigs produces little difficulty in the West Indies, local feeds being easily supplemented by imported or locally produced balanced rations.

Protection from the extremes of weather is essential for the health and economical growth of pigs (8). At various stages pigs should be given access to pig runs where they can graze and at the same time get sufficient exercise. This is sometimes difficult where land is limited or living expensive.

A supply of clean, cool drinking water is also necessary both for drinking purposes, and bathing (8). These necessities are realised and are carried out as far as practicable throughout the British West Indies.

SHEEP AND GOATS

In some cases little care is taken of these animals. They graze mainly on the poorer pastures and roadsides, and in some cases receive the minimum of shelter from the weather.

Excellent goat pasturage can be provided by planting pigeon peas, from which the peas may be reaped to pay for the planting (9). This system is used to some extent in Trinidad and is highly recommendable.

Clipping is in some instances practical. This is necessary particularly in the dry season, as clipping keeps the animal cool, and rids it of lice, which are present on nearly all unclipped goats and sheep (9).

Proper housing is essential but only the better types of dairy goats are supplied in the British West Indies. In such cases it makes it easier and less wasteful to feed concentrates which are only fed to dairy goats.

HORSEKIND

Methods of management for horsekind varies throughout the West Indies to some extent. However most of them are housed over night, where they are fed from a long continuous trough, and have water for drinking (17).
These animals are used under varying conditions and therefore have correspondingly varying systems of management. For instance, horses used for racing purposes are managed under different conditions to the estate riding horse or draught mule.

As a general rule it can be said that the system of management although not perfect is of a fair standard. The feeding however can be improved, by planting and grazing better types of grasses and legumes or by supplying more concentrates and mineral licks.

**CATTLE**

The ideal conditions for the management of Cattle will probably not be found in the British West Indies, but in some cases a fair standard is maintained. One of the main improvements in recent years is the management of pastures. Attempts are being made to establish good large pastures, or a series of small paddocks either permanently fenced or on the hurdle system, and a supply of ample water for the grazing animals. Shade trees are also established to provide shelter for the animals during the hotter periods of the day. In Trinidad the Saman tree is highly favoured.

The principal grasses which have been found to establish themselves as permanent pastures in Trinidad are: - Bahama grass and Carpet Grass, the former being a better drought resister than the latter, but the latter furnishes a larger quantity of succulent fodder during the rainy season which is especially suitable for cattle (20).
The heterogeneous conditions of the Livestock populations in the Caribbean territories is proof that for many generations efforts have been made to improve local stock by the introduction of imported breeds. But these attempts were largely due to the initiative of well-to-do individual owners and breeders, and were not part of any consistent plan to evolve animals combining adaptability to the area with the economic characteristics being sought. As a result, the benefits which occurred to the small farmer, though by no means negligible, were incidental rather than designed. The animals were not selected with any reference to the peasants' particular limitations of space, capital or credit availability which often made a quick turn over essential. The importers themselves frequently had to face bitter disappointment and financial loss, though the fact that introductions were made without due consideration being given to adaptability, or even to adequate housing and finding arrangements to counter the change-over from temperate to a tropical environment (14).

The present day position is greatly changed, and it can safely be said that because of former mistakes a great lesson has been learnt. With the presence of trained livestock men, and improved practices, such as artificial insemination, appropriate selections etc., the improvement of livestock in the British West Indies through breeding is well on the up-grade.

Methods of breeding generally employed, fall into three categories:

1. Improvement within existing types
2. Grading up by introducing more productive types or breeds, and
3. Development of new types out of animals that are graded up only part of the way to a more productive type, or out of animals produced by crossing two distinct types in an effort to combine desired traits.

The selection of any particular method tends to take into account the climatic, nutritional, and managerial conditions under which livestock are to be produced.
POULTRY

Throughout the West Indies better breeds of poultry have been imported from time to time for breeding purposes. In some cases success has been met with, whereas in other cases complete failure resulted.

The greatest improvement in poultry breeding has been in the larger territories of Trinidad, British Guiana and Jamaica, largely because of a fairly sound basic policy. The policy at the Government Stock Farm in Trinidad is:

(a) to breed replacements for the farms and demonstration stations.

(b) to exchange pure-bred cockerels for common-bred, through the District services and Land Settlement divisions of the Department.

(c) to sell surplus stock of hatching eggs and young chicks to the public, and

(d) culled eggs for eating.

The two breeds maintained under this policy are, Rhode Island Reds and White Leghorns (2).

In British Guiana a considerable number of better classes of poultry are imported for breeding purposes, among which are Barred Plymouth Rocks and Rhode Island Reds. The more enlightened poultry rearers in Georgetown appreciate the need to improve and increase production of flocks, which is reflected in the larger numbers of pure bred birds of high yielding strains of Barred Plymouth Rocks and Rhode Island Reds (3).

The opening of few shops dealing in plucked poultry also provided a necessary improvement in the marketing system and, moreover gave producers of good quality birds, a more remunerative and encouraging outlet for their output.

Breeds of poultry have been divided into three classes in Jamaica, Egg Birds; Meat Birds; and Dual-purpose Birds. It has been found that dual purpose birds are best to choose from when rearing poultry. Any attempt to keep several breeds at once only lead to disappointment, (11).
The local peel-neck - "Transylvania breed" of poultry - exhibits characteristics which make it suitable rearing under peasant conditions. The possibility of crossing these birds and evolving a new breed has been under consideration for some time. The object of this work is to carry out the following crosses:

- Rhode Island Red hens x Transylvania Naked Neck Rooster
- White Leghorn hens x Transylvania Naked Neck Rooster
- Plymouth Rock hens x Transylvania Naked Neck Rooster

and to select offspring of the F₁ generation, back crossing with further selection. The Rhode Island Cross (F₁) has shown some promise. F₁ White Leghorn x Peelneck Roosters are being crossed with White Leghorn hens. The roosters are well developed and active and not as nervous as the pure breeds, and appear to show good promise (12).

PIGS

Throughout the British West Indies improvement of pigs through breeding has been attempted through importing better breeds.

In the Leeward and Windward Islands the two most important breeds are the Berkshire and the Large Black. Boars are maintained at the Stud Centres and services from these boars are available for a small fee (15) & (16).

In Barbados the Large Black is the important breed used in improving pigs. Recently two Large Black sows were imported from England. The progeny of these sows are being retained for replacements at the Central Livestock Station and District Agricultural Stations. Future litters will be available for distribution to the general public (4).

British Guiana appears to be faced with the problem of too much water. However native and imported breeds of pigs have succeeded in surviving without undue losses, in the watery environment.
Two imported breeds which stood out as far superior to the others for crossing purposes, were the Canadian Berkshire and the Large Black. The progeny of the first crosses between these two breeds were almost equally superior, while in a few cases a worthy effort was being made to produce pure bred pigs of these two breeds.

The policy of the Department of Agriculture in breeding up bulk numbers of Canadian Berkshire and Large Black pigs for distribution throughout the Colony is worthy of full encouragement.

In addition to the Large Black and Berkshire breeds, Large White pigs are also maintained for improving local pigs in Trinidad. However the latter as yet do not play a very important part in breeding programmes.

The Canadian Berkshire and the Tamworth are the most important breeds of pigs involved in improving the local stock in Jamaica. The Berkshire is an exceptionally economical feeder and fattens quickly, but this tendency can be regulated by selection of breeding stock and suitable feeding. It matures early, and crosses readily with other breeds, the progeny tending to be superior to either parent (11).

The Tamworth is golden red in colour and is a typical baconer, its carcass being of excellent quality. This breed has retained it hardiness and ability to adapt itself to practically all conditions, especially when raised under pasture-run conditions.

SHEEP AND GOATS

Sheep and Goats are maintained in the Leeward Islands chiefly by the peasant for the production of meat. However importations of better breeds by the Department of Agriculture for breeding purposes are sometimes made.

The Wiltshire Horn x Black Belly types are already proving their worth in Barbados for mutton purposes. It is proposed to import a small flock of Black Belly sheep from Barbados and
Barbados and pure-bred Wiltshire Horn rams from the United Kingdom to effect improvement of the local stock (15).

Pedigreed British Alpines and Anglo-Nubians are maintained in the Leeward Islands, Windward Islands and Barbados for breeding purposes. Pure Bred Saanen bucks are also maintained for breeding purposes in Barbados (4).

The policy to grade up local sheep using Barbados Black Bellied and Black Headed Persian rams is continued in British Guiana. Somewhat better results are obtained from the former. Ten rams were recently sold to farmers for grading up their flocks; rams were also issued on loan to farmers for breeding purposes. (3)

The grading up of Milch Goats using Saanen rams is pursued. Fifteen goats were recently imported from the West Indies by the Goat Society (3).

Sheep breeding does not play an important part in Trinidad. Sheep breeding is confined to the Tobago Farm where grading of native and imported foundation ewes to the Barbados Black Belly ram is undertaken. During 1952 seventy five (75) foundation ewes were imported from Antigua to increase the number of breeding females. A small number of the Wiltshire Horn breed is also maintained for experimental purposes (2).

The presence of a Goat Society, and by bringing off Goat shows has stimulated the improvement of Goats throughout Trinidad and Tobago. British Alpine, Grade Alpine, Anglo Nubian, Jumna Pari and Saanen breeds all play some part in improving the native animals (2).

It is realised in Jamaica that raising Goats for milk purposes is much more profitable than to raise them for meat. For this reason the policy has been to pay more attention to higher producing Milch breeds, such as the Saanen, Toggenburg Anglo-Nubiam and British Alpine.
Horses are bred in the West Indies mainly for two purposes: speed and draught. (19). The Leeward Islands Department of Agriculture maintain imported Light Draught Canadian horses for breeding purposes. The emphasis in this case is mainly on draught. In St. Kitts however, some interested individuals maintain imported horses mainly for racing purposes (16). Pure Bred Jack Donkeys are also maintained throughout the Leeward Islands mainly for mule breeding.

The present position in the Windward Islands is much the same.

In Barbados breeding of Horsekind is mainly along three lines: Speed, Draught and Mule Breeding with more emphasis on Speed.

The effects of racing in Trinidad serves to maintain a good type of riding horse. There is also a valuable though smaller contribution made by race-horse mares to the supply of mules for riding and the lighter pack or draught work (17). In addition to the effects of racing in Trinidad, the stock farms in Trinidad and Tobago maintain imported horses and asses for breeding purposes.

This table lists the number and origin of importations of horsekind into Trinidad 1952 (2):

<table>
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<td></td>
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</tbody>
</table>
CATTLE

In the Leeward Islands where the majority of cattle are peasant owned, a dual purpose type of animal is in demand. For this reason the Red Poll has been imported and is used extensively in grading up the local stock. Grade Jerseys have been imported in the Windward Islands for breeding purposes, and so far has proved to be well suited to the environment and climatic conditions (15).

Trinidad has tended to concentrate most of its breeding work around Grade Holstein. These animals have been crossed with native animals with the idea of evolving a tropical milch animal. Recently one hundred and six (106) cows were imported from Jamaica and distributed between the Stock Farms and Centeno. Separate records of their production and progeny are being maintained. The purpose of this importation is to build up a number of cattle which will eventually be sold to the public (2).

Artificial insemination is now proving to be a most useful factor in breeding programmes in the British West Indies. A.I. divisions are being established in Leeward and Windward Islands, while in British Guiana this division is already functioning. The stock owners in British Guiana now have a choice of pure Holstein, ½ Holstein x Sahiwal, ½ Holstein x Sahiwal, and pure Sahiwal (5).

Jamaica has been the most successful of the British West Indian Islands with regard to improving cattle, due to constant rigid selection under long term experiments of breeding, Jamaica has been able to produce a Tropical Dairy type of cattle, the Jamaica Hope. With the foundation of this breed, the Jersey was extensively used.
Recently a Dairy Herd Improvement Scheme was drawn up. The objectives of the Scheme are:

1. To test individual cows for milk production and so be able to indicate to the farmer which cows he should breed.

2. To progeny test bulls and cows.

3. To lead up to selective registration of higher producing animals in the herd book of the new breed.

The regulations under the scheme provide:

1. The entire herd of grade or pure bred Jerseys to be entered for recording.

2. Notice of all female calves sired by Jersey bulls to be sent to the Senior Livestock Officer within 30 days of birth giving date of birth and names of sire and dam.

3. All cows and heifers of the Jersey breed in milk to be recorded in the Scheme and daily milk production of each milking kept by the farmer.

4. For the purposes of recording the lactation of a cow to start on the fourth day after calving.

5. The 305 day lactation to be used as the standard for all purposes of evaluating production.

6. Five unselected heifers to be used for progeny testing of a sire to give his rating.

7. Three offspring of a cow to be used for testing to prove a dam. The dam's rating will be given from the mature production of three or more of her daughters in milk.

SALE OF BULL CALVES

In order to encourage the use of improved stock of the new breed bull calves from the Government herds which are not needed for the various breeding projects of the Department, are on sale to the public.
In order to encourage a system of mixed farming amongst small holders and to encourage the development of the dairy industry, the Revolving Herd Scheme was founded in 1945. Under this scheme in-calf heifers are placed with small farmers who provide certain standards of housing, feeding and attention. The heifer is looked after by the farmer and inspected regularly by the Parish Livestock Officer. The farmer must surrender the first heifer calf born to his heifer to the Department, and the original heifer becomes the farmer's property.

**LOAN BULL SCHEME**

This scheme was started in 1945 for the purpose of assisting large and medium sized farmers by the loan of imported and native-bred bulls. A number of different forms of loan agreement were drawn up with varying requirements as to health and conditions of loan (18).

The policy of the Department appears to be quite sound, and the schemes adequate for both small and large-scale farmers.
The British West Indies as a whole can be said to be free from such well known diseases as Rinderpest, Pleuro-Pneumonia and many other forms of Piroplasmosis e.g. East Coast Fever and Biliary Fever. The same applies to the well known contagious condition Foot and Mouth Disease, occurring in a milder form in many parts of the tropics.

A peculiar form of Rabies, transmitted by the Vampire bat to most of the domesticated animals, especially cattle and horsekind, occurs in Trinidad. The condition has interfered somewhat with animal breeding in the past, but the position is now more satisfactory.

The well known contagious diseases of the temperate climates - Tuberculosis and Contagious Abortion - have been introduced with European cattle.

Recently a survey was carried out in Trinidad and Tobago to determine the status of Bovine Trichomoniasis. The findings were somewhat startling. Examination of eighteen stub bulls was made in Trinidad for Trichomonas foetus, and fifteen or 82.2 per cent of the bulls were found to be infected with the organism. Since these bulls were available to and used by the public, it must be concluded that Trichomoniasis is widespread and a problem in Trinidad. Although no definite conclusion of freedom from the disease can be drawn for Tobago it appears/Trichomoniasis is rare.

The disease is invariably spread by coitus and is characterised by sterility, or failure to conceive after repeated services, abortion and pyometra. It is, in fact, a very costly disease. The only certain control in an infected herd is to resort to artificial insemination. The infection is permanent in the bull, despite treatment, but often dies out after treatment in the female, after sexual rest for three heat periods (24).
NATURE AND ADEQUACY OF PREVENTATIVE MEASURES

Diseases proclaimed by law, Glanders, Anthrax, Rabies, Tuberculosis etc., are controlled by the Diseases of Animals Ordinance, Cap. 256. Under the regulations of this ordinance any area can be proclaimed to be infectious and authority is given the Veterinary Department to destroy animals, recommend compensation to owners, and protect in-contact animals whenever necessary.

All stock arriving in the Colony have to be inspected at the port of entry by a Veterinary Officer, and Cap. 256 deals with the control of importations as well as outbreaks of disease. Importation of animals from certain parts of the world, e.g. Cloven footed animals from certain places where Foot and Mouth disease/enzootic, are only permitted on the written authority of the Director of Agriculture, but subject to Quarantine restrictions. Preventative measures include lectures by the Veterinary Officers (10).

As can be seen from above, the prevention and control of diseases in Trinidad is an elaborate and necessary factor. The position in the other West Indian territories is much the same.

In St. Kitts an attempt at improving the efficiency of the Veterinary Service by appointing additional officers has been introduced. The duties of these officers include:

1. Instruction and help in Animal Husbandry methods and care of animals in country districts.
2. Distribution of phenothiazine for parasite control.
3. Simple treatment and first aid for peasant stock etc.
4. Anthrax vaccination
5. Tubercular testing
6. Disease reporting
Internal and external parasites are also prevalent especially among sheep, goats and young calves. Routine treatment is carried out by the Stock Farms, but it is difficult to convince peasant owners of the value of such treatments and many animals are lost or severely set back by such parasites (2).

Some of the more Common Diseases and Parasites affecting livestock in the British West Indies are listed -

**Poultry:** Newcastle disease; Fowl Pox; Caecal coccidiosis; Fowl cholera; Pullorum (B.W.D.); Ectoparasites.

**Pigs:** Swine Fever; Tuberculosis; Brucellosis; Rabies.

**Sheep & Goats:** Brucellosis; Ecto and Endoparasites; Foot rot.

**Horsekind:** Anthrax; Tetanus; Strangles; Trypanosomiasis; Sarcoptic mange; Rabies.

**Cattle:** Anthrax; Tuberculosis; Contagious Bovine Abortion; Mastitis; Anaplasmosis; Rabies.

Mineral deficiency diseases are also prevalent among peasant stock to a certain extent.

The implementation of schemes for the control of animal diseases in any country is largely dependant on an adequate number of well trained veterinarians (21). In the smaller West Indian islands there tends to be a shortage of such Officers. For extensive improvement in this line of the animal industry in the smaller islands, it may be necessary to employ the services of more veterinarians. Another drawback in the smaller territories is that Office and Laboratory accommodation are very inadequate. Lack of these facilities is a handicap to the Veterinary division and Livestock improvement as a whole.
CONCLUSIONS

The stress placed by Agricultural policy-makers in the British West Indies, during the last decade, on the importance of improved livestock has had an obvious effect on the research programmes of the area. It has been realised that if the peasant is to produce livestock for the maintenance of soil fertility and improvement of the nutritional status of the population as a whole, his own economic benefit must be covered. He must have access to suitable animals and to good fodder and forage grasses on which to feed them. He must also be able to purchase adequate stock feeds at prices within economic reach, and his animals must be protected by good management and by proper veterinary services.

The needs of the small farmer are reflected in the present livestock research programme of the area. Side by side with the efforts to solve the problems of the organised dairy industry, by production of high grade milk producing varieties which often have special and heavy feed requirements, is the drive to develop a hardier dual purpose breed which combines good meat and milk qualities. The quick turnover value to the peasant, is being catered for by the attention accorded to the obtaining of early maturing animals. In crop rotation investigations, fodder grasses and legumes are receiving optimum coverage.

There can be no doubt that Livestock improvement, from almost every aspect, has found a place in the British West Indian research programme, as was clearly demonstrated at the Caribbean Commission conference of livestock specialists held at Kent House in February 1950 (1).
A recent research survey disclosed that 16.6 per cent of the projects reported in the field of Agriculture were based on this consciousness of the need for improving the animal, dairy and poultry industries in the area (1).

There are however, many difficulties encountered which tend to hinder more rapid progress in Livestock improvement programmes of the area. Some of the more important obstacles will be listed below:-

(1) The British West Indies cannot be considered as a single territory as such. Because the islands are separate and have somewhat different climatic conditions etc., individual programmes will be varied. This involves the need for more capital than if single programmes were possible for the entire area.

(2) There is a shortage of trained officers. The question of awarding scholarships for higher training in veterinary science and animal husbandry for locally born personnel merits consideration.

(3) Perhaps one of the greatest single difficulties to be overcome in undertaking effective experimental and development work in the livestock field is that of convincing both practical farmers and Government administrators of the necessity for and advantages of such work.

(4) Progress in animal research work is slow owing to the slow rate of reproduction, and because people do not see the real possibilities of improvement in livestock or do not understand the steps which are necessary to bring this improvement about.

(5) The majority of livestock are peasant owned, which renders improvement work difficult due to the lack of capital.
Animal husbandry can be regarded as an industry requiring much capital, which is invariably inadequate. Governments should give willing support for constructional livestock work.

To conclude, it must be stated that, throughout the British West Indies, it can be said that there is a growing consciousness of the need for improving livestock. As long as the difficulties, and the advantages to be derived are realised, progress should continue.

[1] British Guiana and the Agricultural Superintendent, Grenada, are also greatly appreciated.
ACKNOWLEDGEMENTS

Acknowledgement is especially due to my tutor Mr. J.R. Howes for his suggestions, advice and guidance in the writing of this project.

The information and references supplied by the Director of Agriculture, British Guiana and the Agricultural Superintendant, Grenada, are also greatly appreciated.

2. Acknowledgment is especially due to my tutor Mr. J.R. Howes for his suggestions, advice and guidance in the writing of this project.

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### LIVESTOCK POPULATIONS OF THE BRITISH WEST INDIES

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<tr>
<th>Country</th>
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<th>Swine</th>
<th>Sheep</th>
<th>Goats</th>
<th>Poultry</th>
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<td>28,200</td>
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<td>488,500</td>
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### APPENDIX II (23) (attached)

Map Showing Relative positions of the British West Indian territories considered in this project.