

Burley

MALTA.

REPORT
ON THE
PRESENT CONDITION
OF
AGRICULTURE
IN THE
MALTESE ISLANDS

BY
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23rd April, 1934.

Sir,

Acting upon your instructions, I proceeded overland to Malta on March 20th to investigate the present condition of agriculture in the Maltese Islands, and to confer with the local authorities as to the steps which should be taken to effect development and improve the conditions of the farming community.

In the course of my journey to Malta, I took the opportunity of visiting the Fruit Experiment Station at Acireale in Sicily. I arrived in Malta on the evening of March 23rd. and left on the evening of April 8th.

Prior to my arrival, the Malta Government had issued a Press notice, notifying the public of the purpose of my visit, and inviting associations or individuals desirous of making representations to me on agricultural matters to arrange for the necessary interviews. A number of individuals and representatives of associations availed themselves of this opportunity, and I desire to express my thanks to them for the frank way in which they expressed their views on a number of agricultural problems and for the information they gave me in reply to enquiries made in regard to certain aspects of agriculture in the Islands. Visits were paid by me to a number of farms and wineries in Malta and Gozo, and to dairies, markets, wholesalers of agricultural produce, retailers, canneries, etc. A special meeting was arranged which was attended by the principal exporters of agricultural produce, and discussions took place with various parties concerned with supplies of fresh agricultural produce to the Imperial Services stationed in Malta.

The organization and work of the Department of Agriculture was examined, and during my visits to farms etc., I was accompanied by the Superintendent of Agriculture and officers of the Department. I was able to meet all officers of the Department, and to inspect with them the work on which they were engaged. An interview was also arranged with the late Superintendent of Agriculture, who had only recently retired after holding office for fourteen years. Meetings were also arranged with the Collector

The Right Honourable

Sir Philip Cunliffe-Lister, G.B.E., M.C., M.P.,
Secretary of State for the Colonies.

of Customs, the Government Chief Medical Officer, the Director of Public Works, and Professor Sir Themistocles Zammit, to discuss details of certain proposals for development.

It was a pleasure to find how ready were all with whom I came into contact to help, and I desire to record my deep appreciation of the assistance which was given to me. Without this assistance, so readily given, it would have been impossible to have accomplished the task given to me in the time at my disposal. The importance of agriculture in the Maltese Islands is realized, and there is at present a keen desire for steps to be taken to ameliorate the condition of the agricultural community, and to assist further development.

After careful consideration of what I was able to observe, and of the various representations which were made to me, I now submit for consideration my recommendations as to the manner in which agriculturists in the Maltese Islands can best be assisted, and the reasons which have prompted the conclusions which have been formed.

I have, etc.,

(Sd.) F. A. STOCKDALE.

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REPORT ON A VISIT TO MALTA.*(March 23rd to April 8th, 1934).*

INTRODUCTORY.

1. The Maltese group of islands consists of Malta and Gozo, and the two small islands of Comino and Cominotto, which are situated in the channel between the two main islands. Malta is nearly four times the size of Gozo, and the total area of the group is 114 square miles. The islands consist of coralline limestone, and five definite geological strata are recognized. At first sight there would not appear to be an extensive agriculture, but in the valleys considerable tracts of fertile soil are to be found and behind the numerous stone walls, which have been erected to free the land of rock, to prevent soil erosion and to provide shelter for the crops from strong winds, there have been created—often by the transport of soil—small farms of enclosed and terraced fields, which total a considerable acreage. In Malta, there are important industrial undertakings at Valletta and the other adjoining towns or suburbs, including flour mills, breweries, canning works, etc., but, in the main, agriculture is the chief industry of the islands. In Gozo, there are no industrial undertakings of any importance, and the industry of that island is almost entirely agricultural. Mills for the grinding of flour exist in the country districts of both islands, but most of these are at the present time out of commission except for the kibbling of beans and other grains for stock food. Animal driven mills and windmills are now used for this purpose, with windmills predominating. A limited number of steam-driven grinding mills also exist in the country districts, and these are used for the grinding of flour. Many of the valley lands provide fields of reasonable size, but on the whole fields are small and form an elaborate series of well-made terraces which spread well up the hill slopes. Water for irrigation fortunately can be secured in many areas, and potatoes, fruits and vegetables are grown under irrigation. The area under irrigation, however, comprises but 4% of the area farmed, and it could doubtless be considerably extended if circumstances warranted such extension and capital were available. Extensions of the provision of water would naturally increase production, as water is the prime necessity of the farmers in the Maltese group.

2. The majority of the farms are small, averaging between 3 to 4 acres in extent, and farms of 30 and 40 acres are classed as large. The division of properties is general by the prevailing laws of inheritance, and to-day few farms form composite blocks of land. The area under cultivation is 43,000 acres and the holdings number 11,000. The smaller farms are run by the farmer and his family, and, except during the time of sowing the spring crop of potatoes, paid outside help is rarely secured. On the larger farms paid labour is employed, and the use of the Fordson Tractor on the hire system has been adopted to a limited extent for ploughing. Its use is, however, limited. Six tractors exist in Malta and one in Gozo. These are either employed co-operatively, or are hired to those farmers who wish to have their land ploughed by mechanical means. In the smaller farms the tillage operations are done by manual labour with short-handled hoes or the two-tined hoe (known in Ceylon as the mamoty fork), or by the steel-shod wooden plough drawn by one or two animals. For tillage two kinds of short-handled hoe are used,—one with a narrow steel tipped blade and the other with a broad blade. These are made locally by the country blacksmiths. Thorough digging and trenching is done every four years, and the large clods are broken down with either hoes or light animal-drawn harrows. Dry farming methods for certain crops have been developed to a high degree of efficiency. Ploughing may be done immediately prior to the sowing of crops either on land which has been thoroughly tilled by means of hoes or on land untilled after the earlier crop. For ploughing, horses, mules or donkeys are used, but oxen are not so employed. In Malta cows are used in ploughing, but this custom does not prevail in Gozo. The wooden plough used is primitive, but it is light in weight and can readily be carried

by the farmer to his homestead or lifted, as it so frequently has to be, across the stone wall boundaries of the fields. It is probable, however, that with thought and experiment some improvements in the present types of implements could be effected. Potatoes were not grown to any extent in earlier days, and a light double mould board plough would be of advantage. Wooden double mould board ploughs are employed in certain parts of the world and simple modifications of the existing wooden ploughs have been made in India and Ceylon with success. Trials should also be made with the light motor cultivators which are being used in market garden cultivations in other countries. Their use should be possible in some areas where the fields are reasonably large.

3. The harvesting of cereal crops is done by hand and the threshing is performed by trampling by animals. No mechanical threshing machines are in use. Their use would not be favoured by the farmers, who desire that the straw shall be thoroughly bruised, so that it may be more readily appreciated by stock when fed to them. It would also be difficult to move machines from field to field, and the cost of the transport of the harvested crops would be increased.

4. The soils in Malta vary in composition and texture. There are true examples of the laterized terra rosa of the Mediterranean area, as well as somewhat heavy clay soils and lighter soils containing considerable quantity of stones. The lime content of all the soils is naturally high. In Gozo, the land is less steep than in Malta, the soils are generally heavier and less irrigation is practised. The production of potatoes and market garden produce is not general in Gozo, and the agriculture is more extensive and at the same time simpler in character.

5. The rainfall in the islands averages 20 inches per annum, and half of this falls in the months of November, December and January, and the other half during the months of February, March, April, September and October. The months of May, June, July and August are practically rainless. The highest temperatures occur in July and August, when the monthly average in the shade is between 85° and 90°F. During this period all vegetation becomes parched, and, except in the areas where irrigation water is available, there is little or no green produce except the Cactus (*Opuntia ficus indica*) which at this time of the year provides the green fodder for all classes of animals. Irrigation water is secured from wells by means of Persian Wheels or Noria, and pumps driven by windmills or oil engines. Oil engines are favoured by some, as there are periods during the height of the summer when there is insufficient wind to drive the windmills. Such periods, however, are not extensive and windmills constitute the main source of power for the pumping of water. Some irrigation water is also secured from reservoirs fed from springs and from the Government water supply. Wells vary considerably in depth according to the locality, the height of the farm above sea level, and the foliation of the impervious substratum of blue-clay. For non-irrigated lands the early rains in September and late rains of March-April are the most valuable. Early rains are followed by unceasing activity in preparing land and the sowing of crops, and the bulk of the crops is mainly determined by the extent of late rains of the spring months. Occasional heavy storms and gales are experienced and hail storms are not uncommon.

6. The cropping system in Gozo is much simpler than in Malta, consisting at the present time of winter crops of wheat, or a mixture of wheat and barley, and the leguminous forage crop sulla (*Hedysarum coronarium*), with summer crops of pumpkins and melons. Cotton formerly was a summer crop, but owing to the fall in prices this is not at present grown, although there is some hope that with the recent improvement in prices some attention may again be given to this crop. In succeeding years sulla is followed by wheat and the area previously devoted to cereals is sown with sulla. The sulla is cut for hay, or it may be folded once and then allowed to grow up for the making of hay from the second growth. Areas in Gozo not sown with annual crops are planted with vines, and the area under vines has shown a considerable increase in the past few years. Second-class land is normally employed for planting with vines, but there are some cultivations on good soil.

7. In Malta also non-irrigable land which is not suitable for annual crops is planted with vines. There has been some increased planting in recent years, but not in the same ratio to the total cultivated area as in Gozo. For the annual crops grown in Malta the rotational systems are much more complicated than in Gozo, and depend upon whether the land is irrigable or not, and upon the demand for potatoes for export and for vegetables. Wheat is the chief cereal crop grown for grain with barley as a subsidiary. Barley (cut green) and sulla are the chief forage crops, potatoes and vegetables the main money crops, and, on non-irrigated lands, cumin, pumpkins and melons the chief summer crops. Broad beans, vetches and the ochra pea are also commonly grown, but the broad bean, contrary to the custom in Italy and parts of Sicily, is not usually grown for the dried bean. Crops of broad beans are usually picked green and utilized as vegetables. Onions constitute another important crop, being sown in December and January and transplanted in March and harvested from July-September. Three crops of potatoes are grown—the winter crop sown from locally saved seed in September-October and harvested in December-January, the spring crop sown in December-January and harvested in April, May and June, and a small summer crop grown under irrigation for local consumption. On the medium-quality lands, cumin usually follows the spring crop of potatoes or barley cut for forage. Sulla is mainly cut for hay after its flowering in April. Amongst vegetables, the globe artichoke is the most profitable, prices before Easter being considerably higher than those realized afterwards. Cauliflowers or broccoli of large size and high quality are produced from March to May, and cabbages of equally large size and quality during March and April. Lettuces, carrots, green peas, spinach and tomatoes are also produced. Tomatoes commence in June, and crops extend to September or even later. In the height of the season, they are abundant and cheap, and the English types grow without difficulty. Tomatoes of a special grade are also grown for canning and for the preparation of purée by the canning factories. The canning of green peas is also undertaken to a small extent, and small quantities of other vegetables are occasionally canned.

8. In areas sheltered from the wind olives and carobs are grown in fairly considerable quantities, and, in sheltered valleys and areas which are either naturally or have been artificially protected from wind and where irrigation water is available, oranges and mandarins are grown. A number of varieties exist which are assessed with varying degrees of favour by their individual owners and the consuming public in Malta. Groves consist of a mixture of types, and it is rare to find any groves of absolute uniformity as to type or quality. The quality of the Maltese oranges is excellent, but the area devoted to their cultivation is relatively small, being made up of areas in enclosed gardens rather than of orchard cultivations. It is difficult to see how the cultivation of oranges could be economically extended to any material extent. Owing to the variation in types and the limited extent of the cultivation, either individual or collective, it would be difficult to build up any material export trade in competition with the well organized industries of such countries as Palestine or Spain. There is a considerable local demand for oranges and at times an actual shortage. In fact, there are at times imports from Sicily and other countries. Several attempts have been made to ship to English markets, but the results have not been favourable. This has been due in part to the methods of packing, but to a greater degree to the mixture of types and lack of grading. It is not impossible that a small luxury trade might be built up if very strict attention were given to grading and packing, but, owing to the mixture of types in the cultivations and the relatively small quantities of the supplies available, it would be excessively difficult to meet the requirements of importing countries which demand high standards of uniformity of packing and grading, especially when these markets are being supplied with increasing quantities from countries with extensive and well-organized industries. Endeavours might, however, be directed towards finding a means of carrying over stocks from the height of the season to those periods during which there is a shortage in the local market. Only selected fruits could, however, be so utilized, as the Mediterranean fruit fly causes considerable damage to the crop and no affected fruit can be kept.

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9. Peaches, apples and pears are also grown, but in insufficient quantities to meet the requirements of local demand, and the crops are often seriously affected with insect pests. The Mediterranean fruit fly causes very considerable losses of peaches. Figs are also abundant at certain seasons.

10. Some bees are kept and there is a small production of honey.

CEREALS.

11. Wheat and sulla constitute the essential crops of Maltese arable agriculture whether in Malta itself or in Gozo. Without them a satisfactory system of agriculture could not be maintained, and it would be fatal to the farming industry if conditions made the continuance of wheat-growing impossible. At present, it is the staple food-crop of the farming community. The farmer takes his wheat to the local steam driven country mills, has it ground, and then mixes it with a proportion of flour from imported wheat for the use of himself and his family. A duty on imported wheat has been imposed, and by this means the farmer is safeguarded in respect of his chief grain crop. Some form of subsidy is necessary in order to maintain the cultivation of wheat. The acreage under this crop has been decreasing, but the farmer continues its cultivation mainly because he must have the straw, and wishes to have his own food supplies assured. The large flour mills in Valletta do not use the local wheat, and very little actual sale of locally-grown wheat takes place. The locally-grown wheats are macaroni wheats, and being threshed on the ground are naturally not as clean as wheats which have been threshed mechanically. Unless a wheat can be grown locally which can be used by the large flour mills in Valletta, and its use in such mills safeguarded by a quota system, it is only a question of time before the farmers will be inclined to depend more and more on the flour produced from imported wheats, and will have to seek outlets other than those in use at the present time for their home grown wheat. History clearly indicates that the farming community will in time turn more and more to the whiter flour for its bread, and gradually the farmers will be compelled by force of circumstances in order to maintain wheat cultivation—if they cannot produce a kind suitable for use in modern central flour mills—to convert their grain into human food through poultry and other livestock. Two kinds of wheat are grown, a red wheat which is more suitable for the red soils, and a yellow wheat which is grown on clays. It is usual to sow wheat in December, although sowing as late as January and February is frequent. Broadcasting is the method of sowing employed. At the time of my visit the cereal crops were not looking very well. The season had not been a good one climatically, and the stands of wheat were backward and thin. Over 40 varieties of wheat are reported to have been introduced for trial, but nothing of promise to the agriculture of the Colony has resulted from these introductions. There would appear to be no reason why further trials with imported varieties should not be made, nor why breeding work should not result in the production of higher yielding types possessing the hardiness of the local wheats. At present, each farmer saves his own seed. Exchange of seed is rare, and particularly good samples of grain are not always saved expressly for seed. The Department of Agriculture could perform useful service by purchasing seed of high quality from fields which have yielded well, and then exchanging this purchased grain with the farmers for equal quantities of their own grain. In this way, improvement of yield and quality might be effected. I was informed that the present average yield is equal to $3\frac{1}{2}$ quarters to the acre, and it should be possible, if greater attention were given to seed supply, to secure an increase in this return. Some farmers do specially select their seed, but this is not general. When the Experimental Farm is in full working, line selection from the local wheats should be undertaken, but it will be necessary for someone on the staff to gain experience abroad in this work if loss of time and effort is to be avoided.

VITICULTURE.

12. The cultivation of vines is another important section of the local agriculture. The vine is planted largely on the second-class lands, and only to a limited extent on the better class soils, which are devoted in Malta to the cultivation of the more profitable market-garden produce, especially if water for irrigation is available. Lands planted with vines are, however, reported to be to the landlord, as well as to the tenant, almost as remunerative as land under irrigation. In the past two years, there has been an increased interest in vine cultivation, and larger areas are yearly being placed under this crop. For the second-class lands, there is no doubt that a more suitable crop could not be found, and therefore the maintenance of vine cultivation should be considered as essential to the agriculture of these Islands. In 1919, the occurrence of *Phylloxera* was detected first in Gozo, and then in Malta. This necessitated the establishment of extensive nurseries of American vines for the provision of root-stocks. The Department of Agriculture has rendered very useful service to the country by the establishment of these nurseries. Assistance in this direction was received from time to time from Professor Paulsen. A large number of varieties were laid down in these nurseries in order that their suitability for the types of soil found in Malta and Gozo might be tested. Accurate scientific records of the behaviour of the various varieties tested have not been kept, but the experience of those entrusted with charge of these nurseries and of the farmers themselves shows that a small number of the types tried are very well suited to varying classes of soils in Malta and Gozo. The time has clearly arrived for the elimination of a number of the varieties originally planted in these nurseries, and for the trial of newer types which have been developed in other vine-growing countries since the nurseries in Malta were established. At the present time, there are three nurseries in Malta and two in Gozo. They have rendered and are continuing to render assistance of material value to the farmers who grow vines. Whilst this attention has been given to the development of supplies of root-stocks, no attention, under scientific guidance, has so far been given to the testing of the compatibility of scions with the various stocks, nor efforts made to assist the growers in standardizing the varieties grown. Plantations consist of a mixture of varieties. The number of varieties is very considerable, and little account is taken as to the types actually used for wine making. Within the past year, however, steps have been taken to secure the services of a fully trained oenologist to organize properly the supplies of grafted plants to growers, and to endeavour to secure plantations of some uniformity of type in place of the mixture which at present exist. This is a move in the right direction and should in course of time effect a very desired improvement. Steps have also been taken to have a Maltese officer trained for taking over the work of the specialist who has been engaged on a short term contract for the initiation of this work of re-organization of vine-growing. Varying opinions are held in regard to the production of wine in both Malta and Gozo, and in respect of the quality of the local wines. There are those who hold that the locally brewed beer from imported materials will replace home-grown wine, but there are others who state that in southern European countries wine is preferred to beer. With this latter view, I am in entire agreement, and as the cultivation of the vine is essential to the agriculture of Malta, and as there are possibilities that lands at present not cultivated might be brought under vine culture, I have no hesitation in supporting the work that is under contemplation for the improvement of the wine industry, and agree that steps should be taken further to protect it against cheap imported wines made from dried fruit and sugar. There are considerable imports of such wines, which are of inferior quality. A few of the wineries are up-to-date, but the majority are primitive and capable of very considerable improvement. It is unlikely that Malta or Gozo will be able to produce wines equal in quality to well-recognized brands of wines prepared from fresh fruit in the better known wine-producing countries of Europe, but there is no reason why improvements should not be effected and a very useful class of wine developed for general use locally. If the local production could be made slightly more profitable by a check on the importations of wines made from dried and not fresh fruit, considerable stimulus could be given to wine

production in these Islands, and a measure of re-organization of cultivation and of improvement in methods of wine-making more readily effected. As stated previously, I consider the work which has been done by the Department of Agriculture during the past 14 years has been of material assistance to this branch of agriculture, and I anticipate that further improvements will result from the efforts now being made by officers skilled in viticulture and wine-making. Table grapes are also produced in considerable quantity, and supplies of these are at times cheap. They are mixed with other classes in the making of wine, and growers at present pay less regard to quality than to quantity of produce per acre. They are interested mainly in the production of the largest weight per unit of land cultivated, and not in the quality of their produce or in its suitability for the purposes of the markets to which it is supplied. A small export trade in fresh grapes could be built up with the United Kingdom, if standardization of qualities and methods of packing were adopted. The cultivation of table grapes on first-class land has every prospect of being profitable if an export trade can be built up.

ANIMAL INDUSTRIES.

13. Animal husbandry forms a most important feature of Maltese agriculture. This is not at first apparent, as few animals are to be seen in the fields. It is only after visits to farms that the importance of this branch of agriculture can be fully realised. The animals are stall-fed, and cattle, for example, are rarely allowed out of their abodes or stalls. The only animals to be seen outside during the season when crops are growing are horses, mules, and donkeys used for transport, goats which provide the milk supply of the population, and some sheep. Each homestead, however, has its cow, cattle being fattened, pigs being bred and fattened, turkeys, poultry and some rabbits. In Gozo the animal industry plays a relatively more important part than in Malta. This is because there has been little development of the market-garden industry, whereas in Malta it has been highly developed. In the latter island, market-garden crops constitute the main money crops of the farmer, whilst in Gozo fattened animals, poultry and eggs at the present time form the chief sale products of the farms. Locally bred bulls are fattened for sale in Gozo, but in Malta the animals being fattened are usually imported. Cows' or sheep's milk is made into cheese, and poultry and eggs are shipped from Gozo to Malta for sale in large numbers. Some butter is also made but only very small quantities.

14. Goats constitute the most important stock in the island. In numbers they are greater than any other class of stock and they provide the milk supply of the population. The herds of milch goats are better housed than any other stock. This is doubtless partly on account of the profits which can be secured, but it is due more particularly to the control measures to safeguard public health which have been taken by the Public Health Department, in view of the presence of undulant fever in the herds of the islands. Special regulations are prescribed for the housing of goats and for their passage along the roads and streets. Attempts are made to trace the origin of all human cases of undulant fever, and milking herds from which cases have originated are thoroughly inspected and the infected animals are culled from them for slaughter. Independently of cases traced from human cases of fever, the milking herds are regularly inspected by sanitary inspectors and any animals showing infection are removed and slaughtered. By these measures a number of infected animals are annually removed from the herds, but others escape notice, as milch goats when infected become dry, and they are then removed from the milking herds and sent to country districts to herds which are being run with male animals. The milking herds of goats are well kept, and well fed on rations consisting chiefly of crushed beans and sulla hay. The feeding of goats is well understood, but the methods of breeding are still far from satisfactory. What the Public Health Department have accomplished in systematizing the milking herds in the interests of public health, it should be possible for the Agricultural Department to accomplish in improving

breeding. The Maltese population has a decided preference for goats' milk rather than cows' milk, and the goat is much better suited to the physical conditions of the islands than the cow. In the interests of public health no effort should be spared in the provision of milk the quality of which is beyond dispute. Two proposals in this connection have been made, one for the production of pasteurized goats' milk at central dairies for eventual distribution from door to door, and the other for the immunization of the herds against undulant fever. Both schemes are fraught with difficulties. The former can only be considered as a palliative, and can only safeguard those prepared to pay a higher price for their pasteurized milk. It will leave untouched the country districts, where the incidence of undulant fever is higher than amongst the more enlightened population of Valletta, and the poorer classes who cannot afford to pay the increased cost which is bound to result unless the scheme is largely subsidized from State funds. The proposals of the Committee which considered pasteurization are set out in Appendix "B" to the Report of the Public Health Department for 1932, in which details of the scheme, the methods of pasteurization and the finances involved are given. In the estimates of costs no account appears to have been taken of the costs of delivery from door to door, nor of the organization which such delivery would involve. There can be no doubt, however, that a supply of pasteurized milk from a central depot is bound to cost more than milk which is supplied direct to customers, as at present, on the doorsteps by the goat being milked into the owner's own receptacle. Such a scheme could clearly not solve the whole problem and would at best be a palliative and a safeguard only to the richer members of the community in the area served, unless the supply of milk direct from goats sent through the streets were absolutely prohibited. The proposals for immunization, should, if successful, render it possible in the course of some years to eliminate entirely the sources of undulant fever without interfering with the social habits of the people and without increasing the cost of their milk supply. Whether the excellent work performed by Sir Themistocles Zammit and Dr Debono, as detailed in their reports published in the "Lancet" (June 21st, 1930 and January 21st, 1933), have established without doubt that immunization is practicable, I must leave to authorities in human and animal pathology. It may be held that the numbers of animals used in the experiments were small, and that the period over which immunity persists has not yet been ascertained, but the results clearly point the way, and workers in other countries equally with the experimenters themselves have been convinced by them and are confident that immunization could be secured. Just as other animal diseases have been effectively controlled by immunization, there is every chance that the undulant fever in goats could similarly be controlled and eventually exterminated. A large scale attempt would be justified, and, if it is successful, immunization should be extended and made general and compulsory for all keepers of goats in these islands. When clean herds have been established, it should then be the policy of the Department of Agriculture to establish a scheme of selective breeding with a system of milk recording and the inauguration of a pedigree herd book for male stock.

15. In Malta there are two small dairies supplying sterilized or pasteurized cows' milk to Valletta, and a number of persons keep one or two cows for the supply of regular customers in Valletta and its suburbs. Cows' milk is also used to a very limited extent in some of the larger villages, but when a surplus of milk exists from the one or two cows kept, it is more generally mixed with sheep's milk and converted into soft cheese. Calves are reared for slaughter after fattening for supply to the local markets. Fattening of imported store cattle is, however, more general, particularly since the increased duty on imported fat cattle has been imposed. The store cattle are obtained principally from Turkey, Yugoslavia, Bulgaria, Tunis and Hungary. There are a miscellaneous mixture of types, some of them being excellent examples of the primitive progenitors of what are now recognised in the world as European breeds of cattle. These store cattle are stall-fed, mainly on cheap imported foods consisting of beans, maize and cotton seed. Occasionally, the surplus of the locally grown grain is utilized, but in general it is the green fodder (chiefly green barley and cactus), with surpluses of

cabbages, cauliflowers etc. and dried sulla, which constitute the main local contribution to the feed given. The animals when fat are sold for slaughter, and at the present time this side of Maltese agriculture is profitable. This fattening of stock is not only of monetary advantage to the local agriculture, but it has another inestimable value in that larger quantities of farmyard manure are made available, for soils with a high lime content utilized for market garden crops cannot be over-supplied with this product. The true Maltese cattle resemble the Spanish stock. They are large-boned, leggy, and of fairly rapid growth when young. They however mature and fatten slowly, and command lower values than animals derived from more northern stock. The cows at present maintained are a miscellaneous mixture of races, and in many, traces of the Normandy breeds, and of the Shorthorn, Ayrshire, Friesian and Channel Islands breeds can be observed. In general, the characteristics of the Normandy breeds seem to predominate and a number of the cows resemble to a marked degree the *vache d'étable* of Mauritius. They are also stall-fed in dark, badly ventilated buildings, much in the same way as were cows in Mauritius some 20 years ago, and they rarely leave the buildings in which they are housed except when taken to service or for eventual slaughter. In the larger dairies concrete flooring is provided, but in the farmsteads irregularly paved flooring is the rule and drainage entirely lacking. The locally bred animals kept for fattening as well as the steers imported for this purpose are kept under similar conditions, and in general are not kept as clean as are the breeding stock. Bedding is of course scarce, and, in fact, consisted at the time of my visit almost entirely of such portions of the dry forage which had remained uneaten. The cattle houses are roughly cleaned daily, but their general condition is far from satisfactory.

16. Swine are housed under much the same conditions, and pig-breeding or fattening has recently shown a marked extension. There is a live interest amongst farmers in pig-breeding and feeding, and a demand for boars of imported stock. Importations have been made from time to time by private enterprise, but within the past few months the Government has made importations from England of Large White, Middle White, Berkshire and Gloucester Saddlebacks on the advice of Mr. Blackshaw, Dairy Commissioner to the English Ministry of Agriculture and Fisheries. A number of boars have been located in the country districts, and it is proposed to make further importations. There is little doubt that this policy is justified, and will find favour and support from the farmers. Considerable improvement can be effected in the local swine for the fat pork markets, and it is possible that in time the production of bacon for local consumption may become practicable. Concentration on pig rearing seems to be desirable, for cereal growing must remain an essential part of Maltese agriculture, and it may in time become not only necessary but more profitable to convert the grain into human food through animals. At present swine are being fed on imported chick-peas as well as on local grain, and brans and pollards from the local flour mills.

17. Poultry, turkeys and guinea fowls are kept on the farms, much in the way poultry were kept in the farmyards of England some forty or fifty years ago. They find their food from the refuse of the home and of the fields. Specialized poultry farming has not yet started, although there is a large local demand for both poultry and eggs. During the past five years there has been an average import of 375,000 dozen eggs and the imports have shown yearly increases. In 1929, the import was 148,000 dozen valued at £7,957, whereas in 1933 the imports amounted to 659,762 dozen valued at £18,645. The fowls are a mixed lot, and generally very undersized. Private individuals have imported stock from Australia, England and other countries, and eggs and birds have been sold from such importations. In the farmyards, occasional signs of such importations can be seen, but the general effects have not as yet been large. There is room for very considerable improvement, and with concentration and organization under experienced guidance, there is no reason why the poultry industry of the islands should not occupy a place of very considerable importance. The whole industry, if it may be so called, is at present unorganized and years behind the times. Private individuals point to the laudable efforts which they have made in this direction, but their experience has unfortunately not been widely disseminated, and it is only by

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State action that progressive development and organization will be achieved and the dissemination of knowledge amongst the farmers accomplished. Those officially charged with the work of developing a poultry industry should, however, make every endeavour to profit by the valuable experiences already gained by private importers of pedigree stock, in respect of breeds which have proved suitable to the climatic conditions, and of feeding and housing. Imported White Leghorns and Rhode Island Reds have given good results in Malta, whilst Light Sussex, in view of their success elsewhere under tropical conditions, would also warrant serious trial.

18. Rabbits are also kept on most farms, and find a ready sale. They are, however, undersized, and could be improved by crossing with imported stock.

19. Sheep are maintained for the production of milk to be made into cheese. The local breed is of little value for the production of mutton or of wool, and it is difficult to see how sheep rearing for the supply of meat at prices which would compare with those for the imported chilled article could be undertaken. Improvements as far as meat production is concerned might be effected by crossing the local breeds with imported hardy breeds of quick maturity, but this work could for the present be left to private enterprise, as the chances of establishing an industry of any importance in the production of lamb or mutton are remote.

EXPORTS.

20. The exports for the Maltese islands during the past six years are set out in detail in the tables attached as Appendix "4". They may be summarized in the following table of average yearly values :—

	Total	Average yearly value of exports.
<i>Animal Products.</i>	£22,100	
<i>Vegetable Products.</i>		
Potatoes	£107,306	
Cumin seed	13,151	
Onions	9,770	
Cotton	3,213	
Bran	2,382	
Other	170	
Total		£135,992
<i>Fruits.</i>		
Oranges	£53	
Other	24	
Total		£77
<i>Canned Tomato Products.</i>		
Total		£120
Grand Total		£158,289

21. In brief, the main exports are as follows :—

		Average Quantities.	Average annual value of exports.
Potatoes (tons)		11,027	£107,306
Hides and Skins (cwts.)		6,690	17,091
Cumin Seed ,,		6,507	13,151
Onions ,,		52,785	9,770
Tallow ,,		2,676	3,656
Cotton ,,		861	3,213
Bran ,,		9,250	2,382

22. The potato exports for 1933 were only slightly below the average in quantity, but the values were only about 75% of the averages of the previous five years. The exports of onions and cotton were less than one-half of the average, whilst the export of cumin seed was about 80% of the average of previous years. The exports of bran, however, showed an increase of 40%, and of these bran exports 50% went to the United Kingdom.

THE PRODUCTION AND EXPORT OF POTATOES.

23. As has been previously stated, potatoes now constitute the main export from these islands. These exports are derived almost entirely from production in the Island of Malta, as the cultivation of potatoes in Gozo is limited to local requirements. Exports are chiefly from the spring crop which is grown from imported seed, but exports of the winter crop grown from locally-saved seed occur to a small extent. The spring crop begins in the early part of April and extends to the middle or end of June, whilst the winter crop becomes available in December-January. Some of these potatoes may be held over for export even to the end of March, but they naturally have neither the freshness nor appearance of new potatoes known as "scrapers". There is also a small summer crop on irrigated lands, but no part of this is exported. The exports of the past six years have averaged 11,000 tons, with an export in 1929 of 13,483 tons. The chief importing countries, in order of importance, on the averages of the past five years are Holland, Ceylon, Germany, the United Kingdom, Tunis, and Italy. The average export to Holland has been about 7,000 tons per annum, and this market has absorbed slightly over 60% of the total exports. The German market during the past two years has shown a marked decline, as also has the market in Italy. The Ceylon market has been developed recently, and is of importance. It absorbed 1,799 tons in 1930 and 1,048 tons in 1933, and could probably be developed further as the annual import of potatoes into Ceylon from all sources was 10,736 tons in 1932. A market in Bombay could also be developed, as considerable quantities of potatoes from East Africa find ready acceptance in this market. The United Kingdom market took considerably larger quantities in 1932 than in the previous years. In that year it absorbed 14% of the crop exported, but there was a decline in 1933. More exacting import regulations have been made by the Netherlands in regard to grading. Limitation of sizes has been imposed and this will result in the large-sized tubers being non-acceptable in this market. It was also proposed that a crisis tax of 1.25 guilders per 100 kilos should be imposed. The trade with the Netherlands markets will in consequence be restricted.

24. Considerable concern was being expressed at the time of my visit about these Netherlands regulations, and many exporters stated that trade with Holland would be impossible and that other markets would have to be found. It was also felt in certain quarters that the farmers of Malta would not find markets for this year's crops, and that they would face ruin if the disposal of their main money crop was found to be impossible. Representations have, however, been made to the Netherlands authorities, and some alleviation of the difficulties has been agreed to as it is proposed to forgo, as a temporary measure, the collection of crisis tax of 1.25 guilders per 100 kilos. The United Kingdom with its preferential markets should, however, offer considerable possibilities if the right kinds of potato are grown, and if consignments are free from the tuber moth. Malta producers ought in future years to be able to find in that market the place which they have formerly filled in the markets of the Netherlands, if their produce is ready in time to reach the early markets and to escape difficulties on account of the potato tuber moth. The duties at present chargeable in the United Kingdom on imports of potatoes from foreign countries are as follows:—

November 1st to June 30th	£4. 13. 4. per ton
July 1st to August 31st	£2. 0. 0. „ „
September 1st to October 31st	£1. 0. 0. „ „

whilst imports from countries within the British Commonwealth, with the exception of the Irish Free State, are free. During the season when Malta producers should be exporting potatoes, they would accordingly find in the United Kingdom market a preference of £4. 13 4. per ton on their exports. The imports of early potatoes into the United Kingdom during the months of April to August used to average 260,000 tons per annum, of which an average of 50,000 tons per annum came from the Channel Islands and the balance from foreign sources. There was a considerable fall in 1933 and it is expected that the imports during the present year will be maintained at the 1933 figure viz. about 100,000 tons. In order that the position of the supplies of early potatoes to the United Kingdom market may be made clear the following summary may be of value. Fuller particulars can be secured from Bulletins 9 and 34 in the Economic Series issued by the Ministry of Agriculture and Fisheries:—*

THE MARKET FOR EARLY POTATOES IN THE UNITED KINGDOM.

25. Early potatoes grown in *Guernsey* begin to arrive in noticeable quantities early in April. These are then followed by supplies from the Canary Islands and Algeria, and later from Spain. The Spanish supplies arrive about the middle of April, and at about this time the Scilly Islands begin to send consignments, and Jersey and France somewhat later. In May, home supplies commence from Cornwall, and by the beginning of June the supply of home-grown "new" potatoes assumes importance. Dutch earlies arrive in the middle of June, and from then onwards the home supplies increase rapidly, especially from the Bedfordshire area for the requirements of the south of England, and from the lighter lands of Lincolnshire and the Lancashire-Cheshire area for the north.

26. New potatoes from the *Canary Islands* are imported by shipping firms which handle the fruit trade of these islands; they are sold outright to wholesale merchants, who in their turn dispose of them on commission.

27. New potatoes from *Guernsey* are sent by the growers direct to the commission salesmen who handle their tomatoes. British potato merchants visit *Spain* and establish a seasonal wholesale market at Mattoro about the middle of April. Purchases are made from local growers, or from co-operative societies. These merchants handle about one-half of the exports to the United Kingdom, the other half being sent direct on commission.

28. The St. Malo market is the largest and best organized in *France*. The season begins early in May. The growers come to the market place with cartloads of baskets of potatoes. Each basket contains 52 kilos nett, and "mids" or "smalls" are packed separately. The "mids" or "smalls" represent 10% of the crop and are sold at half the price realised for the standard quality. The town of St. Malo supplies the site for the market, undertakes the ordering of the business, and charges the growers a levy on each load. The merchants undertake to buy only on the market place, and all the buying is done by French merchants on instructions from the English buyers. Any grower who is found with a basket containing less than 52 kilos is liable to have his load confiscated. The prices vary from day to day, and even from hour to hour. The buying prices are averaged from the day's transaction, and telegrams are sent to buyers in the United Kingdom of the "expect prices".

29. At St. Helier in *Jersey* there is also a wholesale market. The growers bring in their potatoes packed loosely in barrels. The load passes over the weigh-bridge, and when a "deal" is concluded between merchant and grower, the price is written on the weigh-bridge ticket and initialled. The potatoes are then taken into the packing warehouse. Here the "mids" in the load are weighed and marked on the weigh-bridge ticket. The potatoes are then emptied into the merchants' containers,

*Economic Series No. 9 Report on the Marketing of Potatoes in England and Wales.
Economic Series No. 34 Report on the Organization of Potato Marketing.

and the grower returns to the weigh-bridge, where his cart and empty barrels are weighed and the tare marked on the ticket. This is presented to the merchant, who pays the amount due,—“mids” being allowed for at half price. The merchants then average their daily prices and send “expect price” notices to the buyers in the United Kingdom.

30. The *Scilly Islands* market direct through Commission agents. Growers in Cornwall also market on commission, as do growers of early potatoes in other parts of the United Kingdom.

31. In the trade for early potatoes, little regard is at present paid to the particular variety grown. They are classed as either “rounds” or “Kidneys”, coupled with the name of their place or country of origin, such as Jersey, St. Malo, Canaries, Spanish, Cornish, etc. The kidney-shaped varieties with shallow eyes are the most favoured, and the markets in the north of England are much more particular in this respect than those of the south. White-fleshed varieties are required. Spain and Algeria grow chiefly the Royal Kidney, the Channel Islands a local strain known as Jersey Royal together with Sharpe’s Express and Duke of York from imported seed. The Scilly Islands grow Dargill Early, which withstands satisfactorily winds heavily charged with saline moisture, and a selected line of the same variety known as Mitchell’s Advance. Cornwall and Devon also grow Dargill Early as well as Duke of York, May Queen and Sharpe’s Express. The chief earlies in Cheshire are May Queen and Success.

32. When the market in new potatoes begins, it is customary for growers to put on the market everything lifted from the fields, but within a short time “mids” or “smalls” are put on the market in separate containers, and these are indicated so that merchants may sort them out easily. In general there is at the present time no standardization of sizes for new potatoes in the United Kingdom.

GRADING.

33. Grading of early potatoes consists chiefly of picking out the undersized, damaged and “green” tubers. It is, however, expected that some standardization of sizes will shortly be adopted. Bermuda has, in fact, adopted standardization for the Canadian market with considerable success during the past three years. In Bermuda there are very stringent regulations controlling the import of seed for sowing, the limitation of varieties of seed allowed to be imported, and the grading of exports. These are packed to a considerable extent under Government supervision in a Government Packing House, and exports so packed have commanded an increasingly favourable reception in Canadian markets. Potatoes for export from Bermuda are graded according to sizes into four grades having a minimum of $1\frac{1}{4}$ inches in diameter for the lowest grade, $1\frac{1}{2}$ inches for the next grade, $1\frac{3}{4}$ inches for the next higher grade and $2\frac{1}{4}$ inches for the highest grade. In Italy also the national market system has been established, and all potatoes exported between specified dates,—varying according to the growing district but in general extending from the middle of April to the middle of July—have to be graded. Official standards have been laid down. These prescribe standards of quality, uniformity of type, minimum weight of tubers, and methods of packing and marking. The minimum weight of tubers allowed varies from seven-tenths of an ounce to one ounce according to the time of season and district. Tolerances are allowed for undersized and damaged tubers, and for earth and other foreign matters. The containers may be sacks of 25, 30 and 50 kilos gross weight, or baskets of approved form. They must be marked with the type of potato—long yellow, round yellow, long white, round white or mixed,—and, when the national mark is used, with the name and address of the exporter. The National Export Institute may inspect consignments at all or any of certain points between the farm and the port, and there is thus complete control of export of early potatoes from Italy. During the past few years there has been a most marked change in the quality of the exports from Italy. Vegetable products received from

Italy some years ago in the United Kingdom were inferior in quality and ungraded, whereas now they are amongst the best which are received. A determined effort has been made to ensure that the produce exported from Italy shall be worthy of the country, and the change that has taken place in the past few years has been a remarkable achievement.

34. In Holland the whole of the export of early potatoes is submitted to the inspection of the Export Control Bureau, and in respect of each consignment a certificate of quality guarantee in conformity with standards is issued. In the case of early potatoes sizes are prescribed for large and small yellow fleshed and for large white potatoes.

35. In Malta, the Potato Export Industry (Emergency) Ordinance of 1930 prescribes that exports must be licensed by the Superintendent of Agriculture, and conditions as to quality, packing etc. are attached to the licence. Containers of export potatoes are liable to inspection and for certain countries must bear the official seal of the Department of Agriculture before shipment is allowed. I was able to examine the present system in operation, and it is clear that further improvements are necessary if the good name of high quality Malta potatoes is to be safeguarded.

36. Regulatory schemes and organizations are increasing in all countries. They are designed to enhance the reputation and increase the competitive power of the particular commodity of the particular country concerned, and, if the reputation of a high-grade article is to be maintained, there should be no risk of the confusion of high quality supplies with unregulated or inferior produce. We have only to look at what is being attempted in the United States of America and in many countries in Europe to appreciate the enormous changes that are taking place in regard to regulatory services. Very marked changes are taking place in the United Kingdom as the result of the schemes instituted under the Marketing Acts. In Holland, the Export Control Bureau, a non-trading body with an official of the Department of Agriculture as chairman of its executive council, aims at directing the export trade in such a way as to guarantee to foreign purchasers the quality, grade, packing, measurement, and weight of first class Netherlands produce. Each member or exporter is allotted a number which must be printed on every official label bearing the brand of the organization. Numerous other instances could be given.

37. In Malta some measure of regulation has been achieved, but I have been afforded evidence which shows that buyers in the Netherlands markets have in a number of cases not been satisfied with the grading of the produce sent there nor with its quality. Control schemes either by economic or statutory compulsion are being adopted in world trade to-day. Unregulated trade cannot expect to prosper, and the lesson of the present depression for agricultural products has clearly been to emphasize that it is necessary to standardize and organise. Grading is of value to both the producer and the consumer, and producers are unlikely to hold export markets unless their exports are of a quality which is a credit not only to themselves but to their country. Better grading of the exports from Malta is required and attention to this matter will assist marketing and place a check upon unfair practices between sellers and buyers.

PACKAGES.

38. In the trade in early potatoes greater attention to standardized packages is also necessary. In fact, it is recognized as being the most urgent improvement required. Early potatoes are fairly perishable, and should be placed on the market as soon as possible after they are dug. The great diversity in the type of containers for new potatoes causes confusion in the markets, and necessitates re-weighings by railway companies, merchants and retail buyers. Accounting is made more difficult and marketing is also made slower and more costly. Packages of varying sorts and sizes cause delays, particularly when weighings and check weighings have to be undertaken. The containers for early potatoes include barrels of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1cwt. capacity, hampers and

baskets and boxes. There has in recent years been some increase in the supplies arriving on the English markets in boxes. The earliest potatoes from the Scilly Islands are packed in small tomato boxes each containing 14 lbs., and later in boxes containing 28 lbs. each. Potatoes from the Canaries are also marketed in boxes and packed in peat moss. The nett weight of such boxes is 72 lbs. Spanish potatoes from Valencia are packed in boxes with a gross weight of 130 lbs., and potatoes from Cherbourg in boxes of 1 cwt. The advantage of the box is that uniform weights can be more readily ensured, and it is estimated that the cost of boxes in which potatoes are exported from the Scilly Islands is from 16s./8d. to £1 per ton of potatoes.

39. It seems clear that within a few years the more progressive suppliers will be sending their produce to the United Kingdom to an increasing extent in non-returnable boxes of standard size. No standards have yet been established, but the nett weights should for the convenience of marketing be multiples of 14 lbs., and it may be expected that markets will more and more tend to favour the smaller rather than the larger packages. This trend of the northern markets should not be overlooked by those concerned with the export of potatoes from Malta.

EXISTING SYSTEM IN MALTA.

40. In Malta, the system obtaining in the export of potatoes is that the exporting merchant receives telegraphic requests from abroad for supplies, which he communicates to one or more middlemen, notifying the price he is prepared to pay. These middlemen treat with the farmers, and secure at a rate below that quoted by the exporter, whose agent he has been called upon to serve.

41. The rates paid to the grower may be well below the indicated price, and the middleman is not obliged to deliver to the exporter who first approached him, if he can find another exporter who will take delivery at a higher price.

42. When a deal is effected, the middleman secures packages from the exporter, transports them to the grower, and may or may not see the actual lifting and grading. The filled packages are then transported to the port, and from the consignment a certain percentage is inspected, and if this is passed for export, the packages are marked and for certain countries sealed by the Government Inspectors. In the case of packages found to be filled with potatoes not up to standard, it is impossible under the present system to ascertain by whom they were packed or the farm from which they originated. It is therefore necessary to devise some system whereby the packer shall be registered and his number stamped on the container, so that any produce which does not conform to the standards prescribed by Government grading regulations may be traceable to the party responsible for the packing.

43. From accounts which have been given to me it would appear that the control of the market especially for export is largely in the hands of the middlemen traders, to whom the farmer is not infrequently indebted for supplies of seed etc.

44. There is a current belief that many individuals earn their living by over-reaching others in bargaining. This is not to the advantage of the trade, and it is the duty of the State to see that a more clearly defined marketing procedure is made possible. To-day the essence of good business must be service, and, unless a producer does in fact provide the consumer with a commodity of guaranteed quality, he is bound to suffer elimination. In small countries, a regulatory marketing service is better performed by the State, and in the majority of countries within the British Commonwealth regulatory services connected with the marketing of agricultural products have been constituted, and many of these are working efficiently with advantage to the producers. Grading is most economically performed in the producing area, but in all cases this is not possible and in many countries centralized packing stations have been established. In this way the quality of the exported produce can best be guaranteed, and the regulation of standard methods of packing ensured. Standardization of packing involves the regulation of the type of packing, the weight of produce contained in the package, the method of packing and labelling. The

essential to success is that each package shall be marked in such a way that the origin of its contents can at once be traced.

AGRICULTURE PRODUCE LEGISLATION.

45. In certain countries, Agricultural Produce legislation has been established which prescribes that every person carrying on the trade or business of buying or selling (including middlemen), or of buying or exporting agricultural produce, shall be required to take out licences. Such licences are annual, and have to be published for general information. The licensing authority may withhold the issue of licences, and the applicant is given a certificate in writing of such refusal. Every licensed produce dealer is required to affix a notice board to his premises with the words "Licensed to deal in Agricultural Produce", his name in full, and the number and class of his licence. Such produce dealers have to keep books in the prescribed form, giving the date of each purchase, its description, weight, quantity purchased, and the price paid for the same. Power is also given to appoint inspectors of produce and to define their duties and to appoint store houses or places where the work of inspection, classification, grading and marketing of specified agricultural products intended for export may be performed.

46. As far as the export trade of Malta is concerned, it would seem desirable at present to concentrate on improving the existing system so as to confine export to licensed exporters, to provide that grading shall be done or supervised by licensed graders or packers, that all packages shall be marked with identification marks of the packers, and that if the produce falls below grade, the merchant should have a legal claim against the packer.

47. In brief, I would recommend that legislation should provide for the following:—

- (i) An Agricultural Produce Ordinance.
- (ii) The Ordinance should be short and the Executive Authority given powers to make regulations under it and power to apply its provisions by order to any agricultural product which it is deemed fit to include within the scope of the Ordinance (potatoes and onions might be dealt with in the first instance).
- (iii) Inspectors appointed by the Government would be appointed to exercise power of inspection under the Ordinance and a chief inspector should also be designated.
- (iv) The duties of an inspector should be defined by the Regulations.
- (v) The control of imports of seed for articles intended for export should be provided for. (This might be done by permits from the Superintendent of Agriculture).
- (vi) Exporters and commission agents should be licensed and an export control warehouse provided for.
- (vii) Packers should also be licensed and controlled and the establishment of licensed packing houses provided for.
- (viii) Packing houses when erected should be constructed and equipped in accordance with the regulations.
- (ix) Persons in control of licensed packing houses should also be licensed and in possession of certificates of competency issued by the approved authority.
- (x) Licences for travelling buyers (brokers) should also be provided for.
- (xi) Licences should be renewable annually and provision should be made for their being revoked by breaches of the regulations with a right of appeal to the Executive Authority.
- (xii) Weights of packages and of consignments should be those of licensed weighers.
- (xiii) Power should be given for the collection of fees for the inspection of exported produce.

- (xiv) Penalties for breaches of the Ordinance and its Regulations should be provided for.
- (xv) The Regulations would define the grades and methods of packing prescribed and places at which inspection should take place. (Grade definitions should be made only after close and careful study of the trade requirements of the chief importing countries).

48. The acceptance of these recommendations would entail the revision and extension of the existing Malta law XIV of 1930 and the regulations made thereunder. The lines on which provision might be made for the grading of potatoes were discussed with the Superintendent of Agriculture. In regard to onions, the grades prescribed by Bermuda may be of interest:—

Onions, Special No. 1. Sound, bright, well-shaped and properly cured onions which are practically free from varietal mixtures, splits, bottlenecks or scullions, and other defects. Minimum diameter, $2\frac{1}{4}$ inches.

Onions, No. 1. Of similar quality to Special No. 1, but of smaller size. Minimum diameter, $1\frac{7}{8}$ inches.

Onions, No. 2. Of similar quality to Special No. 1, but of smaller size. Minimum diameter, $1\frac{1}{2}$ inches.

CONTROL OVER SEED USED FOR THE PRODUCTION OF EXPORT PRODUCE.

49. The exports of potatoes are mainly from the spring crop. These are grown from imported seed and at the present time the Champion is the standard variety grown, with small quantities of Invincible and Up-to-date. Imports of potatoes between November 15th and March 15th are considered to be seed potatoes, and every consignment has to be accompanied by a certificate from the Department of Agriculture of the country of origin showing the variety and district in which it is grown, and confirming that it is true to type up to 97%, and free generally from disease. The imports for the present season were as follows:—

Champion	...	...	...	...	...	30,766	bags
Up-to-date	...	...	...	...	...	4,845	,,
Invincible	...	...	...	...	...	4,019	,,
Royal Kidney	...	...	...	...	...	101	,,
Majestic	...	...	...	...	...	66	,,
Arran Banner	...	...	...	...	...	155	,,
Alpha	...	...	...	...	...	125	,,
Sharpe's Express	...	...	...	...	...	5	,,
Others	...	...	...	...	...	9 $\frac{1}{2}$,,

Total 40,091 $\frac{1}{2}$ bags or roughly 4,000
tons.

The greater portion of the imports were from Northern Ireland, the total imports from Scotland amounting to 150 $\frac{1}{2}$ bags, from England 115 bags, from Holland 126 bags, and from the Irish Free State 15 bags. Consignments have to be sealed by the Agricultural authority of the country of origin. Consignments which are unaccompanied by the certificates referred to above, or unsealed, are only released after inspection by the Department of Agriculture in Malta on their being found free from disease generally and 97% pure to type.

50. A closer control over the imports of seed potatoes is, however, necessary. Such imports should be subject to permits previously obtained from the Department of Agriculture which should satisfy itself that the supplies are being secured through reliable sources from areas not infected with the wart disease, and free from the Colorado beetle. The introduction of either wart disease or the Colorado beetle into Malta would be fatal to its export trade in potatoes, and the measures designed to

prevent their introduction should be effective and must be rigidly enforced. For this reason, the establishment of a permit system for the importation of seed potatoes seems to be desirable, and no imports should be permitted from areas affected with wart disease or from areas within 100 kilometres of areas where the Colorado beetle exists. Combined with such a system could also be introduced regulations defining the sizes under which potatoes would be admitted free of duty for the purpose of use as seed.

51. Bermuda has adopted the regulation of imports of seed potatoes and the existing regulations of the Bermuda Board of Agriculture may be of interest.

"1. All potatoes imported shall be subject to inspection by the Department of Agriculture.

NOTIFICATION OF INTENTION TO IMPORT.

"2. Every importer of seed potatoes shall notify the Director of Agriculture of his intention to import seed potatoes, and shall furnish full information regarding the origin, certification and other particulars relating to the seed potatoes he desires to import. If such information is satisfactory, a permit to import, in the form prescribed by Schedule A, shall be issued by the Director of Agriculture, to be attached to bill of lading after the signature of the exporter is attached, but the possession of such permit shall not sanction the use of such potatoes as seed potatoes unless all the requirements of these Bye-Laws are fulfilled.

"3. Every importer shall satisfy the Director of Agriculture that the seed potatoes imported into these Islands:—

- (a) Are the produce of approved strains.
- (b) Are true to variety and free from an undue quantity of diseases that would seriously prejudice their value for seed purposes.
- (c) Were not seriously injured by insects when inspected.
- (d) Are from fields which contained less than 15 per cent. misses and were not adjacent to fields of diseased potatoes.
- (e) Were field inspected and certified by a duly recognised authority.
- (f) Were inspected after harvest (if such inspection were required) and found to be free from serious tuber diseases.

"4. On every certificate of inspection shall appear the name of the grower.

"5. Copy of certificate of inspection shall be submitted to the Director of Agriculture, or attached to bills of lading or to the barrels or bags containing the potatoes.

"6. Every barrel or other package of seed potatoes shall be so marked or labelled as to clearly indicate the nature of the potatoes contained therein.

"7. Garnet and Triumph seed potatoes which have failed to pass field inspection to the satisfaction of the Director of Agriculture shall not be imported into or landed in these Islands for any purpose.

DECLARATION OF USE.

"8. Every importer of seed potatoes shall sign a declaration in the form prescribed by Schedule B, that the seed potatoes imported by him were imported for that purpose only, and the Inspector of Produce shall countersign such declaration after securing satisfactory evidence that the potatoes are seed potatoes within the meaning of these Bye-Laws.

IMPORTATION OF POTATOES FROM QUARANTINED AREAS PROHIBITED EXCEPT ACCOMPANIED BY ADDITIONAL CERTIFICATE.

"9. No potatoes shall be permitted to be imported into these Islands from any area which shall be under plant quarantine, unless each consignment is accompanied by a certificate from a duly recognised government authority that such potatoes are free from black wart or other serious plant disease or plant pest and each packet shall have plainly marked thereon, or on a label affixed thereon, the number of the certificate under which it is so certified.

"10. Any barrel or package found to contain one or more potatoes with black wart or any other disease or insect pest, the presence of which in these Islands would be likely, in the opinion of the Director of Agriculture, to seriously prejudice the interests of the potato growers of these Islands, shall, together with all its contents, be destroyed or dealt with as the Director of Agriculture shall determine.

UNFIT FOR PLANTING.

"11. Seed potatoes shall be considered to be unfit for planting if:—

- (a) Affected to an undue extent with common scab, or rhizoctonia, or fusarium rot, or late blight rot or any other tuber disease or any pest.

- (b) Smaller than 1½ inches in diameter or larger than 12 ounces in weight.
- (c) Including an undue amount of foreign varieties.
- (d) Including an undue amount of tubers which are malformed or badly damaged by sunburn or cuts or other cause.

"12. When a barrel or package of seed potatoes is found to contain any potatoes unfit for planting, the Inspector of Produce shall have the right to order that they be sorted and again submitted to him for inspection after all potatoes unfit for planting have been discarded.

"13. Discarded potatoes of any of these classes shall not be sold except under such conditions as the Board shall determine.

DISPOSAL OF POTATOES IMPORTED CONTRARY TO BYE-LAWS.

"14. The Board may require the importer of any potatoes imported with respect to which these Bye-Laws have not been complied with to export the same within a time to be prescribed by the Board, and the failure of the importer to export such potatoes accordingly shall constitute a breach of these Bye-Laws, and after such failure the Board may direct such potatoes to be destroyed or otherwise disposed of.

ILLEGAL SALE OF POTATOES.

"15. Any importer or dealer who shall knowingly sell table potatoes for seed purposes shall be guilty of an offence against these Bye-Laws.

"16. Any importer or dealer who shall knowingly sell seed potatoes for table use without the written permission of the Board, and without paying into the Public Treasury any import duty to which table potatoes may be subject, shall be guilty of an offence against these Bye-Laws.

"17. The foregoing Bye-Laws shall not prevent the Board from importing seed potatoes for experimental purposes, the importation of which would otherwise be contrary to these Bye-Laws."

THE HOME MARKET FOR AGRICULTURAL PRODUCE.

52. The export markets are, however, of very considerably less importance to producers in Malta than the home market. Certain estimates of the total value of agricultural produce have been made, but I find myself unable to accept them even as an approximation. Exports amount in value only to an average of £150,000. Home consumption of agricultural produce is not less than six times the value of the exports and there is thus an important market in Malta itself for all classes of agricultural and market-garden produce. At times, there are gluts and low prices, whilst at others there are shortages of supplies. In regard to vegetables, the farmer delivers to wholesalers on consignment or outright sale and these supply to stall keepers in central markets, to shopkeepers or to itinerant hawkers who make petty sales from door to door. In certain cases the larger farmers supply direct to the stall keepers in the central markets. One large central market exists in Valletta for all classes of goods and a market for fruit and vegetables exists at Cospicua. Morning markets for fruits and vegetables also exist at Floriana and Hamrun. Cattle and swine are disposed of for slaughter to dealers, and eggs, poultry and rabbits to itinerant hawkers or higglers. There is no differentiation in respect of quality, no attention is paid to grading, and there is little organization. The consuming public is at present not discriminating in its purchases and but little effort has been made to effect that classification which has been the feature of agricultural market organization throughout many countries of the world in recent years. It has been proposed that a national mark scheme should be evolved on the usual optional basis, but it would be difficult to prescribe standards for grades except for eggs, potatoes, onions and tomatoes. Some differentiation has begun since the marking of imported eggs was made compulsory under Act XXX of 1933, but at present no grading is attempted. It is probable that grading schemes could with advantage be started, and the producers and consumers thereby educated to the advantages of grading eggs according to size or weight. With potatoes, grading will have to be effected for the export markets and the adoption of grades for the home trade also seems desirable. The same applies to tomatoes. Eventually after a period of education for both the consumer and the producer, a system of recognized grades could be established under a national mark scheme. The first essential, however, is to work out a suitable scheme

of grades, and then attempt to bring producers and enterprising sellers together for a genuine and extended trial. It is possible that the contractors to the Imperial forces at Malta would be capable of providing machinery for such trials, and so act as that essential large unit upon which national mark produce can alone be successfully built up. Such marks cannot be successfully established when producers are small and unorganized and when sales are largely effected by itinerant hawkers who sell from door to door. The national mark schemes have effected enormous improvements in many countries, but they were not launched until after a very close study had been made of market conditions and possibilities. A genuine desire for graded produce and a willingness to pay higher prices for the higher grades is essential to success. An attempt to establish grades in a number of selected farm products in Malta is, however, well worth while. At present wholesalers have to buy produce presented to them with large attractive specimens on the top of the packages and inferior rubbish below. I personally saw a number of such instances during my visits to wholesalers and under such a method of trade it is not surprising that the prices paid to the farmers are on the average very low.

53. As far as the marketing of animals is concerned centralized slaughter has been provided. All large animals are slaughtered in the abattoirs at Marsa in Malta and Victoria in Gozo. These are under Government Veterinary supervision. I visited the one at Marsa. It is well arranged and equipped and all meat is carefully inspected and stamped before being passed for consumption. In connection with the abattoirs a suggestion that I would make in the interests of agriculture is that consideration should be given as to whether some development could not be encouraged for the preparation of meat and blood meals for use as fertilizers. At present there is much waste of animal products suitable for being converted into organic fertilizers.

CANNING.

54. Visits were also paid to three canneries in Malta. Two of these were mainly concerned with the canning of tomatoes and with subsidiary interests in the canning of peas and the preparation of cauliflower and onion pickles. These preparations are mainly supplied to the Naval forces stationed at Malta and contracts for such supplies are entered into. The third cannery had in the past been interested in the preparation of various kinds of bottled goods such as anchovies, olives, capers, potted meats, pickles, etc., but steps were being taken to install during this year a modern canning plant for canning tomatoes and other vegetable products, and it is expected that the full equipment will be ready for the tomato season commencing in June.

55. The canned tomato products of Malta are of high quality and are appreciated in the Services. An export of 600 cases of peeled tomatoes is shortly to be made to Liverpool by one cannery, so that they may be clear of all stocks when the present year's canning season begins.

56. There would appear to be no reason why a further development of canning should not take place. Tomatoes grow luxuriantly in the islands and at the height of the season prices compare with those prevailing in other countries where large canning industries have been built up. The processes of canning are well understood and the need for the production of an article uniform in quality and of a high grade is appreciated. The main difficulty at the present time is the ungraded condition of the supplies sent in from the farms to the canneries and the unorganized state of these supplies. With organization, there is every possibility that a good export trade could be built up, and that it would provide an additional outlet to the growers for their products. At present, peeled tomatoes are the main products, but smaller quantities of tomato purée are also being made. The possibilities of the United Kingdom market should not be overlooked. The imports of canned tomatoes into the United Kingdom for the fiscal year 1933-34 were 854,327 cases. Of these, 601,387 were cases of canned tomatoes containing generally No. 2½ size cans, 24 to a case and 252,940 cases of purée, and paste principally in 5 kilo cans, 10 to a case. Approximately

one-half of the above imports came from Italy, one-third from Spain, and the remainder from Canada, the United States, Germany, France and Russia. Prices are competitive, but at the prices which prevailed last year for tomatoes it would appear that there is a prospect that Malta produce should be able to find a place in this market and that it also ought to be possible to develop a trade with Bombay, Ceylon, and, possibly, elsewhere in the East. Consideration might also be given to the production of canned beans in tomato sauce, if the desired type of bean can be shown, after trial, to be capable of being grown in the Maltese islands.

57. The United Kingdom also imports principally from Holland very large quantities of cauliflowers preserved in brine and if careful selection is adopted and a good product is produced there should be a possibility of competing in this market. Firm heads free from leaves and any excess of stalk are insisted upon and a high quality is necessary. Some cauliflowers in brine have been exported from Malta to Holland, but no trial of the United Kingdom market has yet been attempted. There is also a growing market in the East for canned cauliflowers if a high quality product were turned out and maintained. The canning of cauliflower is not, however, without difficulties, as it is essential that the white colour and a firm texture should be retained.

58. It is doubtful if there would be any prospect of an export trade with the United Kingdom with canned peas as the pea canning industry in this country is making such rapid strides, but it is possible that export markets in the East could be found. At one factory visited a small order had recently been received from Tanganyika and it is to Empire countries east of Suez that the canneries of Malta might look with advantage for new markets for their products.

POSSIBLE DEVELOPMENTS.

59. Reference has been made above to possible new outlets for canned products. For the home market the supply of eggs is below requirements, and prices at certain times of the year are high. There would in consequence be ample possibility for the further development of poultry and when grading systems have been established, an export trade might be developed.

60. Similarly tomatoes command high prices at certain seasons. To produce tomatoes in the season of high prices should be the aim of producers and assistance in this direction should be rendered by the Department of Agriculture. It is possible that by means of protection by glass earlier crops could be raised. There is not only a local market for early crops, but there is also a season in the United Kingdom which provides possibilities for an export market if the correct types are grown. The present duties on foreign grown tomatoes are as follows:—

June 1st to July 31st	...	...	...	2d. per lb.
August 1st to October 31st	...	...	...	1d. per lb.
November 1st to May 31st	...	...	...	10% ad valorem.

Tomatoes from Empire sources except the Irish Free State are admitted free of duty. There is therefore a time during June and July when Empire grown tomatoes have a high preferential admission to the United Kingdom markets, and I have been informed that certain early districts in Malta should have supplies available for such a market. For exports to the United Kingdom, however, very careful grading and packing is essential and unless it is attained, disappointment is certain to result. A useful industry in graded fresh tomatoes has recently been built up between certain of the West Indian Colonies and Canada, and this development has been greatly assisted by the establishment in the first instance of Government Packing Houses under the control of officers experienced in this class of work. The Canadian markets have been carefully studied and their requirements ascertained. Any development of a tomato export trade for Malta would also necessitate that the requirements of the United Kingdom markets as to varieties, grades and packs should be closely studied,

and that Government assistance in the nature of a packing house and expert guidance should be provided.

61. It is also worth investigating whether Malta could not supply the demand in the United Kingdom for early supplies of green peas, lettuces, vegetable marrows, etc. in place of those now received from Southern European countries. Considerable supplies of such products come into the United Kingdom markets from Italy.

62. Globe artichokes are also a standard crop in these islands. They are not largely consumed in England at the present time, but an increasing demand is taking place, and when one has regard to the change that has taken place in regard to the taste in England in respect of grape-fruit, the possibilities of a trade in artichokes should not be dismissed as impossible if attention is given to grading and packing and to the quality and form of presentation of the article.

63. The chief market for onions is in Holland, with Italy second, Tunis third, and the United Kingdom fourth. The dark skinned varieties are mainly grown and the volume of export and prices depend largely upon the production in Egypt and Spain. Ceylon should be explored as a market for Malta's onions as the imports of onions into Ceylon in 1932 amounted to 25,169 tons. The United Kingdom also imports onions to an annual average value of about £2,000,000. Onions from Empire sources enjoy a preference of 10%, and if straw-coloured onions of the "up-to-date" type could be grown at competitive prices, there should be an ample market available provided that suitable grading and packing were regularized.

64. Cumin seed is another important agricultural export from these islands, but I was surprised to find that exports of this commodity were not finding their way to Eastern markets. Ceylon, for instance, imported in 1932 a total of 12,491 cwts. of cumin seed. There should be a market here for produce from Malta.

65. All classes of vegetables grown in Malta readily produce viable seed. Throughout the farms, a number of plants are left for the production of seed, and a common sight at certain periods of the year are numbers of flowering cauliflowers, kohlrabi, and other vegetable crops which are being retained for seed production. The seed trade of the United Kingdom imports quantities of seed from Italy and Hungary for supply to growers in the United Kingdom and elsewhere. This trade requires graded seed of high quality and guaranteed purity as to type and germinative capacity. It is possible that Malta, provided that proper organization were established, might supply seed which is at present being secured from foreign sources. This could not be done by the small holders themselves, and its possibility could only be tested and its organization undertaken by the Department of Agriculture. Small quantities of Malta-raised seed have been supplied on request to a number of countries, but no attempt has been made to ascertain if a wider trade could be established or organized.

66. At the present time large seed firms in the United Kingdom make contracts with growers in Italy and Hungary for the growing of seed from the supplies which they issue to the growers. These contracts are either at a fixed rate per acre or at an agreed price per lb. for the seed furnished by the grower from his crop. Inspections as to purity are made by or on behalf of the buying firms and the business is generally recognised as being of greater profit to the grower than the production of crops for sale. Attempts are being made to find areas within the Empire suitable for this production of seed. Trials are at present being made in South Africa, but Malta also offers definite possibilities. The essentials to success are suitable land, security against drought, adequate sunshine for ripening the seed, and an interest by the growers themselves in supplying a product of high quality and guaranteed purity. If trials were attempted, only those types required by the trade of the importing country would have to be grown for the production of seed for export, and all exports would have to be guaranteed as being true to type. Trial alone would demonstrate whether such a business could be established with profit to the producers, but every indication points to Malta being well suited for this seed production and to some of its farmers occupying

eventually an important place in the Empire's agriculture. The first trials could be made on the Government Experimental Farm and in association with a small number of progressive farmers.

MARKET INTELLIGENCE.

67. At the present time there is no system of market intelligence, and neither exporters, middlemen, nor farmers have any clear idea of the values ruling for produce, for either the export market or for the more important home market. It is clear that the methods of marketing in Malta should be modernized, and brought into line with the systems in practice elsewhere. A definite system of market intelligence should be established whereby the ruling prices at defined centres may be made available to producers either by notification at the Police stations or Central Markets. Such a system should lead in due course to the development of organized produce exchanges which arrange for full publicity as to the quantity and quality and prices of goods sold by private treaty.

CO-OPERATIVE ASSOCIATIONS.

68. This leads to the consideration of the lack of associations of growers for dealing direct with exporters, markets, etc. Some move in this direction has been made recently, but as far as could be gathered from the promoters the proposed co-operative movement has no clearly defined objective. The promoters clearly contemplated far too much at the initial stages. Financial resources were also lacking and their proposed operations were to cover too large a field.

69. Co-operative organizations must have from the outset well defined and limited objectives and large trading operations should only be attempted after experience has been gained. Such organizations require guidance at the outset from persons experienced in co-operative work, and to make attempts unguided is certain to result in disappointment and probably in failure. A study of the experiences of producers co-operative associations, of which there are many examples in the Empire, would be commended to those interested in the establishment of producers co-operative societies in Malta.

70. It is essential that the foundations should be soundly laid and that growth should be from small beginnings. In producers' associations, the reliability and loyalty of contracting members must be assured, since so many co-operative organizations have foundered by reason of the disloyalty of their members when the latter can be enticed, and in some cases obliged, to sell their produce otherwise than through their association.

71. It seems desirable that attempts should first be directed towards modernizing the existing system of trade before endeavouring to build up large co-operative organizations. Produce such as new potatoes fluctuates rapidly in price, and, without adequate financial resources, an organization could easily founder unless it had been built upon sound foundations by producers who were not indebted to middlemen or moneylenders.

72. In any case, it is essential that contributing members and the general public with which the association deals should be safeguarded by statute. The difficulties of co-operative marketing are considerable and all societies should be subject to proper registration, supervision and audit control under a co-operative societies ordinance.

73. The first need at the moment is to establish a satisfactory system of grading and marketing, and, after this has been established, attention might be given to the formation of co-operative groups of producers for the supply direct to exporters of produce of guaranteed quality and grading, and to home markets when supplies in bulk are required. All such co-operative undertakings should be required to register under a co-operative societies ordinance.

74. In all co-operative undertakings, it is essential that the members should not be widely scattered, that adequate finance is available and that businesslike methods

are employed in the management of their affairs. Unless these essentials are adhered to there can be no development of a sound co-operative system.

THE MAIN PROBLEMS.

75. It was represented to me from many quarters that the main agricultural problems in Malta were associated with land tenure and the need for credit facilities. It is clear that the existing order of things is far from well and that many permanent works of improvement are being held up. In consequence development is being retarded. Such matters require very close and detailed investigation. They are interwoven and bound up with the basic laws of inheritance, social customs, etc. Even when they are tackled by means of broad lines of agrarian policy it is years before the effect of such policy becomes noticeable.

76. I was informed that approximately one-third of the land is owned by the State, another third by the Church and the balance is privately held. About one-fifth to one quarter is the freehold of farmers farming their own lands. Much of the property has been divided under the existing laws of inheritance into small units, and the farming of lands under lease has also in certain cases been divided into shares. Property is also owned collectively by descendants from an earlier sole owner and rents from such lands are divided amongst the present-day owners. Lands which are leased by the farmers account for the bulk of production. The customary period for a lease is four years but leases may be renewed for a further period of four years. Under such conditions permanent improvements such as the sinking of wells is unlikely to be undertaken by the tenants, especially when there is no provision for compensation for improvements. Some Government lands of poor quality requiring considerable improvements are leased on long terms so that development may be encouraged. Extension and permanent works of improvement are not to be expected when tenancies are for short periods, unless such improvements are effected by the landlords themselves or in co-operation between landlord and tenant. Whether the consolidation of lands at present held in common ownership by the descendants of a sole owner into freeholds by means of a purchase scheme is possible or practicable could only be decided after a full and comprehensive examination. It has been represented to me that such action would be a definite step forward and would encourage permanent improvements to be undertaken. Such freeholds would, however, under existing laws, become divided in one generation and whether the results which would be achieved would warrant the expenditure which might be involved in expropriation could only be decided after close study.

77. Rents are at present reported to be high when consideration is given to the value of agricultural commodities. They were raised during and after the War and have not yet readjusted themselves to present-day conditions. If tenancies are, however, short, adjustment is bound to take place if the principal landlords cannot agree to an all-round reduction on the existing terms of contracts, in consequence of the fall in values of agricultural produce.

78. I would, however, recommend that the whole question of land tenure, compensation for improvements etc. be examined in detail by a locally appointed Commission.

79. The establishment of an Agricultural Bank has also been advocated, but there has been considerable confusion as to the operations such a Bank should undertake and between long term credit for land purchase or for permanent improvements and short term credit on crop privileges for every day working expenses. The small farmers rarely have banking accounts and carry on financial operations through the wholesalers to whom they supply their produce for sale on commission or direct sale and from whom they secure domestic and agricultural supplies. Many of the transactions are on credit, and accounts are rarely rendered or closed. There is little doubt that such a system requires to be modernized and that wholesalers should be required by law to keep accounts and submit regular statements to their clients.



80. Finance for short term credit should be provided through co-operative credit societies, but the existing law limiting interest rates to 6% would make any rapid advance in this direction impossible except by means of the collective savings of the farmer members themselves. Such societies should be permitted, however, only if formed under statutory registration and subject to Government inspection and audit. Without proper supervision and guidance from a Government officer specially charged with such supervision, sound progress could not be made, and even with it progress would have to be slow and built up step by step on solid foundations.

81. The provision of easy credit by means of an Agricultural Bank would be fatal and the most that I could recommend at present would be that consideration be given to the issue of long term loans by the Government on adequately secured freehold properties for definite approved projects of development.

82. The further development of irrigation is required if production is to be increased. The undue stimulation of such increased production is, however, not desirable until markets have been found for produce in excess of that already being raised. The most urgent and immediate necessity of Malta's agriculture is without question associated with the marketing of produce. Under existing economic conditions, the farmer must be assisted in the marketing of produce he at present produces before any marked increase of further production is encouraged. It may be asked, as has been done in several other countries, why farmers should be encouraged to grow more before they have learned how to market most profitably the produce they already have. The proper and efficient organization of marketing of produce for export markets is essential and for the home market desirable.

83. The next most important requirement is the general improvement of live stock and the development particularly of pig rearing for the local market, poultry for the supply of meat and eggs for the local market and possibly at some later date for the production of eggs for export. In this development, the Government Experimental and Live Stock Farm will be required to play an important part, and its proper equipment is a matter of urgency. In the live stock section, concentration should be directed firstly on the poultry section, secondly on the section to be devoted to pigs and thirdly to the proposed dairy.

84. In making reference above to the order of procedure in development of the Stock Farm, I have not overlooked the importance of the goat in the agriculture of the country and its population. If "clean" herds of these animals were available, there would be no hesitation in recommending that improvement by selection and breeding should be undertaken at once, and that this should from the first be the main work of the live stock section of the farm. Unfortunately, undulant fever occurs amongst the herds of goats in the islands and in consequence breeding work must be dependent upon the establishment of clean herds. If the work of immunization can be pushed further and herds secured against attack from undulant fever, selection and breeding work with goats should be undertaken.

85. The immunization of goats against undulant fever is most desirable not only in the interests of Public Health but also of their owners, and a large scheme to test its practicability should be undertaken. If the protection of goats from undulant fever by immunization can be established, milk recording should be started without delay, and selection of types commenced, so that the valuable strain of goats in Malta may be further improved. Even at the present time with little conscious selection a high standard of quality has been obtained. A small export trade could be established if stock certified immune to undulant fever could be built up. In the interests of agriculture, there is therefore a need for a large scale trial of immunization, and if this demonstrates that it is practicable, no measure designed to assist the people of Malta could have a greater value than the establishment of clean herds of goats.

86. Vocational education and training for the farmers and their families is also an essential to progress and success. Long courses would not be practicable and not fit in with the requirements of the farmers in regard to the working of their farms.

Farmers and their families are very poorly educated. In fact, the majority of them are still illiterate, and would be unable to profit from theoretical instruction. Special short courses of a practical character in live stock management; crop husbandry and spraying and the grading and packing of produce are required and these should be arranged when the Experimental and Live Stock Farm is in working order. They can be undertaken by the staff of the Farm when it is fully staffed. Such courses should be from the outset purged of theory and designed to assist the farmer in his everyday requirements. In arranging these courses, due regard should be given to the illiteracy of the farmers and the poor educational standards of their children. In arranging the courses, attention should be given to what the farmer and his family actually needs and some provision should be made for the teaching to the younger generation of reading, writing and simple accountancy. Farmers' courses could be for a few days' or even a week's duration, and for their sons courses of two and three months might be found to be practicable at periods when they can be best spared from work on their parents' farms. The sons of farmers should be expected to work on the experimental farm, and be credited with the value of their labour so rendered. Provision for suitable hostel accommodation should in consequence be made in the plans for the Experimental and Live Stock Farm for those attending the proposed Vocational School.

87. The present system of disposal of town and village refuse is far from satisfactory and if this could be converted into manure by the activated system, it would be advantageous for the farmers who cannot be over-supplied with organic fertilizer for use in growing market-garden crops. Such a system of the utilization of waste products has been extensively tested in India and is being increasingly adopted. A new up-to-date system is in use in Italy and the trial of an equipment on the Italian model might be established for Valletta. It could be extended to other townships if found to be satisfactory and if a sale for its products as manure can be found.

88. The other problems of importance which require to be tackled by the Department of Agriculture are (i) the systematic trial of varieties of potatoes suitable for the United Kingdom market, (ii) similar trials with onions and tomatoes and other vegetable crops, (iii) improvement of types of wheat and (iv) trials with artificial fertilizers. The arable portion of the Experimental Farm should be devoted to such trials, and arrangements should also be made for controlled trials on the farmers' holdings themselves.

THE DEPARTMENT OF AGRICULTURE.

89. The Department of Agriculture was formed in 1919-20, and its first Superintendent drew up proposals for its work and development. It was suggested that, in addition to the general supervision of the Public Gardens and Plantations, the Department should be responsible for dealing with Phytopathological matters conducting experimental investigation of agricultural problems. The occurrence of Phylloxera in the vineyards of Malta and Gozo in 1919 naturally drew attention to Phytopathological problems and in 1920 a Phytopathologist was added to the staff of the Department. This officer directed his attention in the first instance to the pests and diseases affecting the vines, and was entrusted for a time with the supervision of the nurseries of American vine stocks which had been established in both islands. He also was afforded an opportunity, with financial assistance from the Colonial Research Committee, to make a tour of inspection in the wine-growing districts of Spain, France, Portugal and Algeria, and his report was published in 1922 by the Malta Government.

90. The Phytopathologist's association with the projected improvement of wine growing in Malta, however, terminated shortly after his return from the tour of inspection in West Europe, and the nurseries of American vines for stock purposes were placed under the Superintendent of Public Gardens and Plantations. Steps

were taken to develop the investigational work of the Department, and, a number of introductions of varieties of wheat, potatoes and vegetables of various kinds were tried, but the Experimental Farm was not developed to any extent and data from properly designed experimental tests were not secured. The activities of the Department appear to have been largely applied to the maintenance of Public Gardens and Plantations, and this work absorbed the greater part of the funds made available to the Department by the Government of Malta. In fact, as recently as 1931-32 the Public Gardens and Plantations absorbed as much as £9,135 out of an expenditure (not including extraordinary expenditure) of £15,558. For the year 1934-35, however, additional funds will be available for work in connection with agricultural development, and the expenditure on agriculture proper as compared with expenditure on the maintenance of Public Gardens and Plantations will be in a higher proportion.

91. The Public Gardens and Plantations are well maintained and are widely appreciated by the public, but expenditure in excess of the present figure would not appear to be justified until adequate provision has been made for the development of the Experimental Farm and for meeting the requirements of the farmers by the further development of the agricultural branches of the Department. The Boschetto Public Garden, I would suggest, should be devoted exclusively to arboriculture, and labour should not continue to be employed on the cultivation of potatoes or other annual crops. Two officers were sent to be trained at the Royal Botanic Gardens, Kew, for supervisory work in connection with the Public Gardens and Plantations, but there is only a real need for one for duties as Assistant to the Superintendent. Consideration might be given to the transfer of one of these officers to another branch of the Department.

92. The Plant Pathologist is self-trained, and he has done useful work in connection with matters of plant pest and disease control and with advisory work. Identifications of fungus and insect pests are laboriously worked out in the island, whereas much time could be saved by reference to the Imperial Institutes of Entomology and Mycology to which the Government of Malta makes contributions. I was rather surprised to find that advantage had not been taken of services which could have been secured from these Institutes, for if this had been done more time would then have been available for investigational and culture work in the laboratory, and for visits to the farmers themselves.

93. Phytopathological inspections in connection with plant imports and exports naturally require the presence of the Phytopathologist in Valletta, but much of this work is largely seasonal, and a closer personal supervision of the subordinate officers working in the field is essential if satisfactory work is to be achieved. Control measures against plant pests and diseases are frequently carried out by the Phytopathological section of the Department on farms and in privately owned orchards, free of cost to the owners. This undoubtedly has an instructional value, but there would appear to be no reason why fees should not in a large majority of cases be charged, especially when plants in ornamental gardens or orchards are treated. In other cases the cost of the chemicals used might be charged for. Spraying campaigns, when carried out for demonstrational or instructional purposes, should be organized, but when treatment is given on request the cost should be at the charge of the individual and not at the cost of the public, unless the pest or disease is of an extremely dangerous nature and demands that action should be taken by the Department of Agriculture in the public interest in order to prevent its spread. I would, therefore, strongly recommend that the existing practices of the Phytopathological section of the Department should be reviewed, and that when work is carried out for private individuals, except when such work is part of an organized instructional campaign, or is of a nature demanded in the public interest, the cost, or at any rate the cost of the chemicals used, should be recoverable from the parties assisted.

94. Certain plant imports are subject to Phytopathological examinations, and some agricultural exports are also subject to inspection and certification before export.

A summary of the present regulations is given as Appendix I to this report. It has been the practice to accept certification in regard to certain imports, and where inspection is found necessary, no provision has as yet been made to provide a definite place of inspection. This is unsatisfactory, and makes the work of the Phytopathologist and his inspector difficult. In other Empire countries, it is usual to provide a definite building for the inspection, and disinfection or treatment when necessary, of all plant imports. This is usually provided on the Customs import wharf or within Customs premises, and definite times are allotted for the inspections. By such provision in Malta the work of the Phytopathologist would be facilitated, and in default of such provision it is unreasonable to expect that introductions of pests and diseases will not accidentally occur. Similarly, better arrangements are required for the examination of agricultural exports which require Phytopathological certificates. The deficiencies of the present system are recognised; and the draft of new Plant Protection legislation has been prepared. This I have undertaken to examine in consultation with the Directors of the Imperial Institute of Entomology and the Imperial Mycological Institute, and then advise the Malta Department of Agriculture on the action which should be taken.

95. The enactment of this new legislation cannot, however, be expected to effect marked improvements unless, as indicated above, provision is made for a satisfactory place for the inspection of imports and for the examinations of exports prior to certification. Certificates are designed to afford protection to importing countries against the introduction of plant pests and diseases, and to assist both exporters and importers in their trade. At best they cannot be accepted to afford a guarantee of an absolute character, and importing countries normally provide for the inspection of imports even if the imports are accompanied by certificates. This inspection is more detailed if the certificate is couched in general terms, and does not indicate how the inspection was made prior to its issue. The value of any certificate depends upon the efficiency of the organization responsible for its issue.

96. Imports of potatoes from Malta into the United Kingdom are now carefully inspected on account of the presence of the potato tuber moth in the islands. Potato moth was found at Glasgow and Leith in 1927 in certain consignments of Maltese potatoes which had been shipped without certificates, and the Importation of Potatoes (Malta) Order of 1927 was made by the United Kingdom Ministry of Agriculture, prohibiting the landing of potatoes from Malta unless they were accompanied by prescribed certificates. No further consignments of Maltese potatoes infested with this pest were discovered until June 1932, when living larvae were found in two certified consignments landed at London, and in May 1933 a consignment, which had been landed at Liverpool and subsequently railed to Scotland, was condemned by the Department of Agriculture for Scotland.

97. Potatoes, onions and cumin seed constitute the main export products of the Maltese Islands, and in respect of these commodities it is essential that the islands should be safeguarded against the introduction of dangerous pests or diseases, and that the exports should be of high quality and free from pests and diseases. If, for example, Wart disease of potatoes or the Colorado beetle were introduced, the export trade in potatoes would be killed within a very short time. The Phytopathological section of the Department is adequately staffed for the work it has to perform, and with the introduction of arrangements for the better organization of both imports and exports, the efficiency of its inspection duties at Valletta should be increased.

98. The separation of the work on vine nurseries from the section dealing with Public Gardens and Plantations was a sound decision, since it has enabled the Department to constitute a definite section to deal with problems connected with vine growing and wine making. It is only by this means that development will be achieved, and, as I have already indicated, I am satisfied that viticulture must continue to play an important part in the agriculture of the islands. The work has been placed under a trained Italian oenologist on a five years' contract pending the completion of the full

training of a Maltese in Italy in general agriculture and oenology. The plans for the future work of this section of the Department were discussed in detail, and I am satisfied that they are well conceived. It was gathered, however, that the full training of the Maltese at present in Italy would take five years, and I would, in consequence, recommend that consideration should be given to extending the contract with the present oenologist to enable his services to be at the disposal of the Department for a period of at least two years after the return of the Maltese student at present under training. Men trained in the sciences pertaining to agriculture are rarely fitted for taking charge of sections of departments of agriculture immediately after graduation. Post-graduate experience is essential, and if this can be gained under the guidance and direction of an experienced officer, it is of material advantage not only to the person concerned, but also to the community he is called upon to serve.

99. The initial work in laying down vine nurseries for the supply of American root stocks was well planned, but some of the original introductions have shown that they are likely to be of little value. These should be discarded, and a trial made with others which have been more recently evolved and proved of value in other wine-growing countries. Work should also be started on the study of the compatibility of the selected stock with the different varieties of grapes favoured in the Maltese islands. A careful investigation should be made of the relative value of the different varieties for (a) table purposes, and (b) for wine making with the object of securing plantations of uniform quality. There is much work to be done in what is almost a completely uninvestigated field, and after knowledge has been acquired during the next two or three years an experimental winery will probably be required, in order that accurate data based on detailed investigations may be available for the wine makers in the islands. The time hardly seems ripe at present for the establishment of an experimental winery but eventually its provision will be necessary, and I would suggest that consideration should be given in 1936 to this project.

100. For the next two years, field investigations, including the systematic recording of the data collected, will occupy the greater part of the attention of the oenologist, combined with such chemical investigations as may be required. The present provision for viticulture seems to be adequate.

101. The other section of the Department is that pertaining to the experimental farms, and although this activity is of the utmost importance in agricultural development, in Malta it is at the present time the least advanced. It is only in recent years that steps have been taken to provide for the training of an officer for the supervision of this work of the Department and even then arrangements were not made for the selected officer to secure post-graduate experience of an executive character. Funds made available for the development of the area secured for the experimental farm, were inadequate and the detailed recording of the results from the field experiments left much to be desired. The officer at present in charge of this section is also called upon to perform duties as agricultural organizer and to be responsible for work in connection with the inspection of export produce. Multifarious duties of the nature indicated above made it impossible for adequate attention to be given to the lay-out and design of experiments, and it was only during the past year that suitable provision of funds has been forthcoming for the work on the station. There is much capital expenditure still required, and in regard to this I am making special recommendations.

102. In 1930, the then Malta Government arranged for visits from Mr. H. W. Potts, of the Hawkesbury Agricultural College in New South Wales, and Mr. J. F. Blackshaw of the English Ministry of Agriculture and Fisheries. Little effect has so far been given to the recommendations made in their reports, but during the past year an attempt has been made to commence giving effect to the proposals suggested by Mr. Blackshaw, modified in such directions as local experience seemed to indicate. The proposals were fully discussed with the officers of the Department of Agriculture concerned, and there is little doubt that the provision of the capital equipment necessary for the development of the Experimental and Live Stock Farm should be

completed with the least possible delay. I indicated in Malta the general lay-out of the Farm which I would recommend. The Farm should be divided into two sections—one dealing with animal husbandry, and the other with crop husbandry. In the former, provision should be made for (a) poultry keeping, (b) pig breeding, (c) dairy farming and (d) goat breeding, when further investigations in the immunization of goat herds from undulant fever have been carried out. In the latter, provision should be made for (a) studies of crop husbandry, (b) implemental trials, (c) variety tests with wheat and the principal export crops, (d) fertilizer trials, (e) grading trials, and (f) the production of high grade seed guaranteed true to type.

103. Housing accommodation should be provided at the Farm for the use of farmers' sons taking short practical courses at such times as they can be most conveniently spared from the farms. These courses should be essentially practical, and theoretical instruction should be limited and directed towards giving the students some elementary knowledge of reading, writing, and simple accountancy associated with their vocational occupation. The work of the Farm should also be linked with instructional work amongst the farmers themselves and with varietal and fertilizer trials on the farms. Eventually two agricultural instructors for this work will be required—one for Malta, and one for Gozo,—but it would be useless to contemplate such appointments until the Farm has been running for some time and has sufficient material available to enable authoritative instruction to be given to the farmers, or until the instructors have had a thorough training on the Farm itself. If the full equipment of the Farm can be completed within the next two years, the appointment of agricultural instructors for itinerant work amongst the farmers might be contemplated two years later and provision made for the candidates to have at least two years training on the Farm prior to their selection for appointment. These instructors should be interchangeable with the Field Foreman or one of the Live Stockmen, so that after periods on itinerant work they may be brought back for further duty at the Headquarters Farm. A subsidiary Government Farm in Gozo will also be required, but this need not be elaborate and can be stocked from the main Farm in Malta after it has been established for a few years.

104. The staff eventually required by the Experimental and Live Stock Farms section of the Department will be as follows:—

	Director	
	Dairyman (now under training)	
of equal	} Poultryman	
status.		} Field Foreman for crop experiments
	Storekeeper	
	Clerk and Crop Recorder	
	Junior Foreman	
	2 Watchers.	
	Agricultural Instructors	
	2—one for Malta	} Field Foreman grade.
	one for Gozo	

For the Stock Farm, Gozo, when established, there will be required 1 Manager=Dairyman grade.

105. In personal emoluments the Central Farm will cost £1,150 to £1,200 per annum, rising by reason of increments to £1,500 per annum, and the maintenance provision required will be £2,500 to £3,000 per annum of which £2,000 should be recoverable as revenue from sale of crops and stock and from fees on account of services by stud animals. The two agricultural instructors will cost £240 rising to £340 per annum in personal emoluments and will require provision for travelling and for expenditure on fertilizer and varietal trials on the farms. An annual provision of £500 under the head "Other Charges" should be adequate for this work. The capital cost of the subsidiary farm which will be required in Gozo cannot easily be estimated at this stage, but its maintenance should not exceed £345 rising to £415 in

personal emoluments, with £1,000 per annum for other charges of which fully half should be recoverable from sales and fees.

106. Such importance is attached to the proper organization and development of this section of the Department that I would recommend that an experienced live stock officer should be secured on a short term agreement of five years to act as adviser in animal husbandry to the Department of Agriculture and to the head of this section. It is on the work of this section of the Department that sound agricultural development must be based, and it is bound to become the most important section of the Department. Its head should eventually hold the position in the Department next to that of the Superintendent of Agriculture, and I am confident that the officer who has been selected for this position would value assistance from an experienced adviser during the early years of organization. Such an adviser should preferably be experienced in live stock husbandry and poultry management, and should be entrusted with advising as to the development of the work on the Central Farm in its initial years of establishment, and as to live stock schemes amongst the farmers. In laying down the foundations of an agricultural policy based upon the work of a Central Farm, it is essential that experienced advice should be available. The selection of such an adviser will require care, since, although it is desirable that his position in the Department of Agriculture should be purely advisory in character, it is at the same time essential that he should so command the confidence of the Department that his advice will be continuously sought and acted upon. With such experienced advice at the disposal of the Department, it should be possible for the Experimental Farm's section to accomplish within 5 years what otherwise could only be expected from it in double that time, and in view of the long delays which have occurred in making provision for this essential section of the Department, I am satisfied that it would be in the best interests of the agricultural community for every effort to be made to recover the time which has been lost, and I recommend that application should be made for a grant from the Colonial Development Fund towards the capital expenditure required and the cost of the proposed Live Stock Adviser. It is estimated that a sum of £18,000 would be required for capital expenditure and a further sum of £4,000 spread over 5 years for the services of the adviser in animal husbandry.

107. With the establishment on a proper footing of these Experimental Farm and Agricultural Instruction activities, the work now undertaken by the present head of this section in connection with Produce Inspection would have to be re-organized. So backward is the present state of market organization that a separate section of the Department is essential for dealing with produce grading, marketing, etc. if there is to be any assurance to the producer that he will receive a price commensurate with the value of the produce raised and to the consumer that he will receive value for money paid. So much requires to be done that I recommend that the Government of Malta secure the services of an officer experienced in market organization for a period of five years to advise the Department on the steps which should be taken to improve the internal marketing systems, and to act as controller of the exports shipped to overseas markets. I would further recommend that during this period, the officer in question should also be charged with the training of a Maltese officer in duties pertaining to market organization, produce inspection etc. Assistance from the Colonial Development Fund might be sought towards defraying the cost of his services if local funds could be provided for the salary of the Maltese officer to be trained in market organization. It is estimated that provision in the order of £4,000 would be required for the services of the adviser in market organization for five years, £1,000 for the equipment of a model packing house, and a sum of £2,000 as a revolving fund for encouraging exports to the United Kingdom market.

108. The establishment of a laboratory section of the Department to deal with agricultural chemistry is also advised. This section should deal with all chemical questions relating to agriculture and wine making. Separate laboratories for agrarian

chemistry and oenological chemistry are unnecessary. The present oenologist can undertake the chemical investigations required in connexion with wine making, and provision has been made in the 1934-35 budget for the necessary initial equipment. In due course, however, this work should be transferred to a chemistry section of the Department. The officer selected for chemical duties will, however, require a full training in both agricultural and oenological chemistry, and it is unlikely that this could be secured in less than a period of four years. Provision for the establishment of the necessary laboratory and its equipment will, therefore, not be required until 1937-38, or even a year later.

109. After the most careful consideration, I have come unhesitatingly to the conclusion that the aim of those responsible for the organization of the Department of Agriculture along lines best suited for the needs of the Maltese islands should, however, be to provide for the following:—

Superintendent of Agriculture. An officer of organizing and administrative ability.

A Section dealing with Experimental Farms and Agricultural Instruction, with an experienced officer attached as adviser for a period of five years.

A Section dealing with Market Organization and Produce Inspection, with an experienced officer attached as adviser for a period of five years.

A Section dealing with Viticulture.

A Section dealing with Plant Pathology.

A Section dealing with Agricultural Chemistry, and

A Section dealing with Public Gardens and Plantations.

Financial provision, excluding provision for advisers on short term contracts for the above, would amount to about £15,000 per annum for agriculture, and £10,000 for the upkeep of Public Gardens and Plantations, the details of which would be as follows:—

	Personal Emoluments	O.C.
Administration and General Office	£1,600	£1,500
Experimental Farms and Agricultural Instruction ...	2,250	4,000
Market Organization and Produce Inspection	700	900
Viticulture	650	700
Plant Pathology	650	700
Agricultural Chemistry	650	700
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Gardens and Plantations	6,000	4,000

A revenue of £3,000 should be recoverable from sales from the Experimental Farms, fees for live stock services, produce inspection, etc.

OTHER MATTERS SUBMITTED FOR CONSIDERATION.

110. The Government of Malta and its Department of Agriculture submitted during my stay in the Island a number of questions affecting agriculture on which advice was desired. The chief of these questions and the conclusions arrived at are summarized below.

111. *Soil.* Malta is not blessed with an over-abundance of soil, and naturally it is of importance that action should be taken for the conservation of what is available, and for ensuring that it is put to the best advantage. During the past few years, there has been a building boom in Valletta and its neighbouring suburbs. A considerable quantity of good fertile soil has been and is being buried in these building operations, and it is clear that steps should be taken by the Government to ensure that before buildings are begun the soil on the building lots should be removed

and not allowed to be buried. Owners should be given the opportunity of disposing of the soil to farmers or possessors of gardens and orchards who may be desirous of securing it for addition to their fields or gardens, and, failing such disposal by private treaty, should be compelled to transport it to easily accessible areas set aside by the Government for improvement. In the selection of these areas, care must be exercised, as it would be useless to have the soil dumped on sloping hard rock from which it would be washed by the first rain storm. There are areas of broken rock which are capable of reclamation if soil can be transported to them, and it is such areas which should be selected and if necessary terraced for the receipt of soil from building lots which cannot be disposed of by private treaty. A carefully considered scheme should make it possible for the Government, in the interests of the community, to safeguard them against the waste which is at present taking place by the burial of valuable fertile and productive soil beneath buildings which are being erected within the vicinity of Valletta.

112. *Fertilizers and insecticides.* Proposals have been made for legislation to control the sale of fertilizers and insecticides, and to provide checks against fraud. A draft bill based on the English and Italian laws has been drafted, and my advice in regard to this matter was sought. It is, of course, recognised in all progressive countries that legislation is necessary to safeguard the agricultural interests against fraud in respect of the fertilizers, fungicides and insecticides which they use. The legislation is complicated and requires provision for analytical examinations etc. As far as could be ascertained, the imports of fertilizers into Malta amounted last year to about 100 tons, and it was, therefore, clear that complicated legislation, requiring considerable expenditure on staff, would not be warranted. It was further felt that it would be useless to introduce legislation on the lines suggested before the staff necessary for its effective operation was available. A much simpler system could be evolved than that contemplated, whereby all imports of fertilizers, fungicides and insecticides are required to be accompanied with analytical certificates, all sales limited to licensed sellers, and all issues permitted only in sealed bags or containers. Some sections of the Cyprus Law No. 21 of 1922 might be given consideration in this connexion.

113. *Plant Disease Legislation.* The need for improved legislation for Plant Protection has been recognised. Draft legislation and regulations have been prepared, and I have undertaken to examine these in consultation with the Directors of the Imperial Institutes of Mycology and Entomology, and then advise further. Steps have already been taken to secure the observations of the two Institutes referred to above on the drafts prepared in Malta.

114. *Export wharf and warehouse.* The necessity for the provision of a warehouse through which all exports of agricultural produce shall pass was also considered. Such provision is essential if orderly inspection and certification of exports is to be achieved. It is, therefore, recommended that early steps should be taken to provide for this very necessary requirement, for without an enclosed export wharf and warehouse, the proposals made for the improvement of the grading of export produce will be made difficult and possibly rendered ineffective.

115. *National Mark Scheme.* Reference has been made previously to the proposals which have been elaborated in regard to a suggested national mark scheme. These proposals follow along the lines of similar schemes which have been adopted with beneficial effect in the United Kingdom and Italy. In due course, action on similar lines—especially in respect of eggs, potatoes, onions and tomatoes—might be useful in Malta, but until the preliminary spade work in connexion with grading and marketing has been done, and the acceptance of graded produce by the consumers in Malta is assured, it is rather premature to consider the inauguration of a national mark scheme even on an optional basis. One or two years' work will be required with the organization of marketing recommended earlier in this report before conditions will be ripe for the launching of a national mark scheme. I would, therefore, suggest

that further action in connexion with this scheme be postponed until the foundations of improved marketing schemes have been securely laid.

116. *Live stock improvement schemes.* These proposals provide for the location in the country districts of premium bulls and boars with the object of stimulating and assisting the improvement of live stock. A beginning has this year been made with the location of imported pedigree boars with farmers in Gozo, and further action along the same lines is contemplated during the financial year 1934-35. Provision has been taken in the Estimates for an extraordinary expenditure of £1,000 for the purchase of pedigree stock for loan to farmers. This action should materially assist in effecting an improvement in live stock, but the danger from disease should not be under-estimated. Highly bred animals imported to conditions dissimilar from those to which they are accustomed and to foods which differ from those to which they are used, often suffer seriously from disease. Losses amongst such imported animals are often heavy, and it is necessary to recognise that this danger from disease is a real one. Periods of acclimatization at a central station may be desirable before widespread dissemination in country districts is given effect to, and the supply should be limited to those farmers who can be relied upon to tend the animals carefully and seek early assistance should symptoms of disease appear. If attention is given to these matters, the premium boar scheme should be effective, and steps might be taken to give legislative effect to this scheme. The premium bull scheme is not so urgent, and it might be postponed until experience has been gained at the Experimental and Live Stock Farm with the requirements of imported pedigree cattle under Malta conditions. Piroplasmosis was reported by the Government Veterinary Surgeon to be common, and in consequence there might be considerable danger of losing valuable animals if they are sent to the country districts to conditions which are generally unfavourable for the requirements of highly bred animals. It would be far wiser to gain experience with the premium boar scheme before launching the premium bull scheme, the prospects of which do not seem to be as favourable.

117. *Veterinary Services.* This leads to the question of provision for Veterinary Services. At present, these services are provided in the Public Health Department, and it has been urged in some quarters that they should be transferred to the Agricultural Department. The main contention used by those who favour such a course is that this is the custom in certain other parts of the Empire. In deciding, however, to which Department the veterinary services should be attached if a separate service is not provided, due regard must be given to the duties which the veterinary officers are called upon to perform. At present in Malta, over seventy per cent. of the time of the Veterinary Officers is taken up with meat inspection at the two central abattoirs, and another 10 per cent. of the time is taken with the inspection of imports of live animals. Diseases in the country districts are mainly traced from the abattoirs, although there are a few instances of farmers notifying outbreaks of diseases and seeking advice. It is clear that the main duties of the Veterinary Officers are connected with Public Health matters, and no case can at present be made out for the transfer of the officers concerned from the Public Health Department. Instances have occurred where a similar policy has been adopted in other parts of the Empire until a change of functions or an increase of establishment has indicated that other arrangements are more desirable. With the stocking of the Government Experimental and Live Stock Farm, provision will, however, have to be made for the regular inspection of the stock by a Veterinary Officer. Routine monthly inspections will have to be provided for, and attention at such other times as occasion may demand. Government animals on loan to farmers in country districts should also be subject to quarterly inspections, and on occasions when diseases occur. It is desirable that provision for such inspections be arranged for at an early date. It is anticipated that during the next two or three years, these inspections of Government live stock should be well within the capacity of the existing cadre of Veterinary Officers when brought up to strength,

but if occurrences of diseases amongst pedigree stock are more frequent than is at present anticipated, it may be necessary to contemplate an increase in the strength of Veterinary Officers by at least one for service mainly in the country districts. If the suggested scheme for the immunization of goats against undulant fever indicates after the first stage that it will be necessary for the Government of Malta to carry on beyond the 5 years contemplated under the scheme, steps should be taken to have an officer trained in Veterinary Pathology so that he may eventually be available for the continuance of the work connected with the immunization of goats, for investigations into animal diseases, and for duty amongst the farmers' stock. For the present, however, the addition of a further Veterinary Officer is unnecessary if adequate arrangements are made for the regular veterinary inspection of Government stock.

CONCLUSIONS.

118. After a thorough and careful review of present-day conditions of agriculture in Malta, the following conclusions are arrived at:--

(1) Increased production and development is mainly dependent upon increased supplies of water for irrigation being made available. These may be supplied from reservoirs or from underground sources. An investigation of the matter by Government would be justified, but it should not be overlooked that any additional water made available would have to be at a price which is economic to the growers. Many of the reasonably accessible underground water supplies have already been made use of, and the sinking of additional wells in such areas may result only in robbing the existing wells of their present supplies. Deeper supplies may be tapped if boring operations are carried out, but the cost of raising such deeper supplies may easily be greater than the value of the water to the producers. A further development of the system of reservoirs, so that conservation of storm water which at present runs to waste may be effected, seems to warrant very careful examination by engineering authorities.

(2) The present system of land tenure involving as it does short leases, is not designed to encourage permanent improvements and development. Under the existing laws of inheritance also sub-division of lands is taking place to an extent that holdings are tending in certain instances to become uneconomic.

(3) Rents at present seem to be high when consideration is given to the fall in the prices of agricultural commodities during the past year. Readjustment under the prevailing systems of 4-yearly tenancies is bound to take place within the next year or two, but an all-round reduction of rents is a matter worthy of investigation.

(4) Homesteads and farm buildings generally appear to be in an unsatisfactory and in many instances an insanitary condition. Landlords and tenants appear to pay but little regard to the proper maintenance of buildings, and this is a matter which requires investigation.

(5) Cultivation methods are generally satisfactory, but knowledge of the use of fertilizers is still scanty. Some improvement of the implements used should be possible.

(6) Methods of marketing are in need of complete re-organization. Definite recommendations in this regard are made. The registration of middlemen and travelling hawkers is advised, and all middlemen should be required to keep books which should be subject to inspection. The inspection of exported agricultural produce also requires overhaul and improvement.

(7) Much time is at present lost by farmers in the transport of their produce to the wholesalers and markets. Consideration should be given to whether collective transport arrangements could be encouraged to replace the existing individualistic arrangements.

(8) Farmers and their families are inadequately educated, and progress in considerably retarded thereby. Proposals for the provision of vocational training of

farmers' sons are made. This should be provided at the Government Experimental and Live Stock Farm, and the courses should be of short duration and essentially practical in scope.

(9) The cultivation of cereals is essential to the agriculture of the country.

(10) Greater attention should be given to the development of animal husbandry, and considerable scope offers in pig breeding and fattening, and with poultry. Proposals for the capital equipment of the central experimental station and live stock farm are made. This equipment should be completed with the least possible delay. The live stock scheme for placing premium boars in the country districts has approval.

(11) The selection and breeding of goats should be undertaken by the Department, but this work is dependent upon immunization against undulant fever being effective. Proposals for a scheme of further immunization investigation are made.

(12) Viticulture is essential for the second-class lands, and its further development should be possible if steps can be taken to make it possible for the locally produced wine to compete on more favourable terms with imported wine made from dried fruit.

(13) There are possibilities of development of the growing of tomatoes and early vegetables for the early markets of the United Kingdom, and this matter is one worthy of close investigation.

(14) A market for early potatoes and onions should also be possible in the United Kingdom if the required types of produce for this market are grown, and attention is given to grading and packing.

(15) It should also be possible to build up markets in the East for export products. There should be possibilities of an increased trade with Ceylon.

(16) The possibility of establishing a trade in high-quality seeds with the seed houses in the United Kingdom is worthy of careful investigation.

(17) Additional supplies of manure are required for the fields. Town and village refuse and waste could be converted into organic manures and the possibility of producing a blood manure from the waste of the abattoirs is worthy of investigation.

(18) The further development of the Department of Agriculture is dealt with in some detail, and the necessity for experienced advisers in Market Organization and on Live Stock are indicated.

SUMMARY OF RECOMMENDATIONS.

119. The chief recommendations made may be summarized as follows:—

(1) That immediate steps be taken to effect the re-organization of the existing methods of marketing and that an application be made for financial assistance from the Colonial Development Fund in order that the services of an experienced adviser on market organization may be secured for a period of five years (Para. 107).

(2) That the early completion of the Government Experimental and Live Stock Farm be undertaken, and that an application be made for financial assistance from the Colonial Development Fund towards the capital expenditure required, and for securing the services of an experienced adviser in animal husbandry for a period of five years. (Para. 106).

(3) That a vocational agricultural school be established at the Government Experimental and Live Stock Farm. (Para. 103).

(4) That a large scale investigation be made into the immunization of goats against undulant fever, and that financial assistance be sought from the Colonial Development Fund for part of the expenditure involved. If the first stage of these investigations is successful, a subsequent programme of at least three years field work is envisaged, and selection and breeding work with goats at the Government Experimental and Live Stock Farm should be made practicable. (Para. 85).

(5) That a trial be made at Valletta with the activation treatment of household and street waste in order that they may be converted into organic manures for farmers, and that a loan be secured if necessary for this trial from the Colonial Development Fund. (Para. 87).

(6) That an investigation be made as to whether the animal products now allowed to waste at the Abattoirs cannot be converted into organic manures for use by farmers. (Para. 53).

(7) That an investigation be made by engineering authorities in order to ascertain if the further development of water supplies for irrigation can be economically effected. (Para. 119).

(8) That a local Commission be appointed to enquire into the prevailing system of land tenure in order to ascertain if works of permanent improvement on the farms can be encouraged. (Para. 119).

(9) That an Agricultural Produce Ordinance be introduced to assist market organization, and the grading and marking of agricultural produce exported or supplied to the home markets. (Para. 47).

(10) That the Plant Protection legislation be revised. (Para. 94).

(11) That the Department of Agriculture be further developed so that greater assistance may be made available for the farming community. (Paras. 89-109).

23rd April, 1934.

F. A. STOCKDALE.

APPENDIX I.

*Existing Phytopathological Regulations in Malta.**Imports.*

Prohibitions and restrictions on the imports or live plants and plant produce into Malta are at present as follows:—

Prohibitions.

All vines and cuttings of vines, fresh grapes, fruits packed in vine leaves, grapes in a semi-raisin state and musk or juice of grapes containing husks or stalks of the fruit.

(Government Notice No. 21 of the 30th January, 1914, as amended by Government Notice No. 448 of the 24th October, 1933).

All trees and shrubs, cuttings, tubers, bulbs and flowering roots, tomatoes and raw vegetables from European France (France and Corsica) and North America (Panama Canal to Canada).

(Government Notices No. 229 of the 11th September, 1922, No. 175 of the 28th July, 1923 and No. 175 of the 1st August, 1932, as amended by No. 70 of the 14th February, 1934).

All potatoes from ports of Northern Africa.

(Government Notice No. 236 of the 27th August, 1924).

All fresh fruit and all live plants or parts of plants, except tubers, roots and seeds from Hungary, Austria and Roumania.

(Government Notice No. 40 of the 24th January, 1933).

Restrictions.

For potatoes: A declaration by the shipper naming the place of origin and a certificate from the Department of Agriculture of the country of origin stating that the district where the potatoes were grown is free from Wart Disease. (Government Notice No. 21 of the 30th January, 1914). All potatoes coming from Belgium and Luxemburg are subject to inspection for the Colorado Beetle. (Government Notice No. 70 of the 14th February, 1934).

For plants, roots and garden soil from ports in the Mediterranean: An anti-phyloxeric certificate. (Government Notice No. 21 of the 30th January, 1914). By special authority we are now releasing these imports after inspection when not accompanied by the prescribed certificate.

For citrus fruit: Inspection by the Department of Agriculture. (Government Notice No. 21 of the 30th January, 1914, as amended by Government Notice No. 307 of the 18th December, 1923).

All live plants: and parts thereof, except seeds, coming from or trans-shipped at a port in Great Britain, shall be examined before they can be delivered. (Government Notice No. 387 of the 20th September, 1933, as amended by Government Notice No. 502 of the 29th November, 1933).

Exemptions.

Imports made by the Department of Agriculture.

(Government Notice No. 352 of the 3rd September, 1927).

Exports.

The requirements of other countries in regard to plants and agricultural produce shipped from Malta and to the certificate accompanying the consignment are as follows:—

- For England and Wales, Scotland and Northern Ireland. As laid down in the form of certificate prescribed in the 2nd Schedule of the Importation of Plants Order of 1933.
- For Italy (potatoes and onions and plants for propagation). That the consignment consists of produce of the Maltese Islands and is free from dangerous pests and diseases.
- For Switzerland (potatoes only). As for Italy.
- For Belgium (potatoes only). That the potatoes are packed in new containers and free from Wart Disease (*Synchytrium endobioticum*) and the Colorado Beetle (*Doryphora decemlineata*).
- For Denmark and for Sweden (potatoes and onions). That they are packed in new containers to which the Departmental seal has been attached and that they are free from Wart Disease (*Synchytrium endobioticum*) and the Colorado Beetle (*Doryphora decemlineata*).
- For Germany (potatoes only). That the potatoes, on inspection, were found to be free from Wart Disease, that the potatoes were cropped from districts not infected by Wart Disease, and that within 2 kilometres from these districts Wart Disease does not exist.
- That the containers have not been used before.
- That every package has been sealed with the official seal.
- The net weight of the consignment should also be stated.
- For Austria, Hungary and Jugoslavia (potatoes only). That the potatoes are local produce, and that Wart Disease of Potatoes (*Synchytrium endobioticum*) and the Colorado Beetle (*Doryphora decemlineata*) do not exist in the Maltese Islands.
- (Note : The Austrian Government further requires that every year on or about the 1st of December the Malta Government should notify to the Austrian Ministry for Foreign Affairs the name of the Officer who is placed in charge of these certificates for the following year).
- For Norway (potatoes only). That the potatoes are packed in new containers and free from Wart Disease (*Synchytrium endobioticum*) and the Potato Moth (*Phthorimaea operculella*).
- Tunisia (all roots and rooted plants). That they are free from the Phylloxera of the Vine (*P. vastatrix*).
- France (all plants). That the plants are free from *Phylloxera vastatrix* and *Aulacaspis pentagona*.
- Greece (potatoes only). That the potatoes are free from injurious diseases and pests and particularly from *Doryphora (Leptinotarsa) decemlineata* and *Synchytrium endobioticum*.
- Holland (potatoes only). That the potatoes are free from *Synchytrium endobioticum*, *Rhagoletis cerasi* and *Leptinotarsa decemlineata*.
- British India (potatoes only). That the potatoes are local produce and that Wart Disease of Potatoes (*Synchytrium endobioticum*) and the Colorado Beetle (*Doryphora decemlineata*) do not exist in the Maltese Islands.

The importation of plants in any of these countries, other than those specified in this list, is free, unless prohibited from all places for phytopathological or commercial reasons, except in the case of Greece and British India.

In Greece the importation of plants is permitted if the plants are grown not less than 10 kilometres from the nearest vine.

In British India plants are submitted to fumigation with hydrocyanic gas on arrival.

APPENDIX II.

Return showing the Quantities and Value of Eggs imported into Malta during the five years ended 31st December, 1933.

Countries of origin	1929		1930		1931		1932		1933		Total Imports		Average Yearly Imports	
	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value
	Dozen	£	Dozen	£	Dozen	£	Dozen	£	Dozen	£	Dozen	£	Dozen	£
Egypt	95,710	4,482	77,320	3,088	153,560	5,175	240,260	7,345	357,260	8,035	924,110	28,125	184,822	5,625
France	3,500	259	—	—	—	—	—	—	—	—	3,500	259	700	51·8
Algiers	4,666	320	720	48	—	—	—	—	—	—	5,386	368	1,077·2	73·6
Morocco... ..	6,600	712	20,400	1,302	25,920	1,177	3,600	225	—	—	56,520	3,416	11,304	683·2
Syria	11,160	625	43,700	1,827	30,000	1,108	4,500	90	—	—	89,360	3,650	17,872	730
Tunis	2,160	135	420	24	—	—	—	—	—	—	2,580	159	516	31·8
Italy	10,160	642	45,720	1,866	101,270	3,512	97,800	2,985	63,900	1,427	318,850	10,432	63,770	2,086·4
Libya	10,020	615	38,340	2,207	74,030	3,350	26,470	1,395	23,640	953	172,500	8,520	34,500	1,704
Smyrna	3,600	137	—	—	—	—	—	—	—	—	3,600	137	720	27·4
H. M. Ships' Stores	500	30	—	—	—	—	—	—	—	—	500	30	100	6
Belgium... ..	—	—	3,000	60	—	—	8,920	466	—	—	11,920	526	2,384	105·2
Greece	—	—	—	—	6,600	215	—	—	—	—	6,600	215	1,320	43
Scala Nuova ...	—	—	—	—	2,120	58	—	—	—	—	2,120	58	424	11·6
Turkey	—	—	—	—	9,600	252	46,785	1,593	72,520	2,892	128,855	4,737	25,771	947·4
United Kingdom ...	—	—	—	—	—	—	8	3	42	21	50	24	10	4·8
Bulgaria... ..	—	—	—	—	—	—	100	4	3,360	133	3,460	137	692	27·4
Spain	—	—	—	—	—	—	6,000	100	—	—	6,000	100	1,200	20
Albania	—	—	—	—	—	—	—	—	35,760	1,487	35,760	1,487	7,152	297·4
Yugo-Slavia	—	—	—	—	—	—	—	—	103,280	3,697	103,280	3,697	20,656	739·4
Total	148,076	7,957	229,620	10,422	403,100	14,847	434,393	14,206	659,762	18,645	1,874,951	66,077	374,990·2	13,215·4
	1929		1930		1931		1932		1933		Total		Average :	
	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	}	
	Dozen	£	Dozen	£	Dozen	£	Dozen	£	Dozen	£	Dozen	£	374,990 Dozen.	
	148,076	7,957	229,620	10,422	403,100	14,847	434,393	14,206	659,762	18,645	1,874,951	66,077		

Kind of animal	Countries of Origin	IMPORTS																		Total Value	Average Yearly Value
		1929			1930			1931			1932			1933							
		No.	Weight	Value	No.	Weight	Value	No.	Weight	Value	No.	Weight	Value	No.		Weight		Value			
														Store	Fattened	Store	Fattened	Store	Fattened		
	Cwts.	£		Cwts.	£		Cwts.	£		Cwts.	£			Cwts.	Cwts.	£	£	£	£		
— Bullocks, Store and Fattened.	Albania ...	726	2,266	3,052	271	1,403	2,350	14	63	72	71	190	295	—	—	—	—	—	—	5,769	1,153.8
	France ...	37	499	1,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,000	200
	Algiers ...	1,040	4,821	9,339	1,151	5,602	11,647	—	—	—	—	—	—	155	—	759	—	1,030	—	22,016	4,403.2
	Tunis ...	6,375	35,159	64,700	5,608	29,856	52,638	1,980	9,509	16,357	1,945	10,497	15,239	463	128	2,149	869	2,914	1,331	153,179	30,635.8
	Russia ...	300	2,777	5,555	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5,555	1,111
	Yugo-Slavia	5,008	25,646	50,337	2,093	10,637	19,762	1,290	8,084	14,027	1,784	13,356	17,372	3,597	841	22,450	5,715	25,295	7,387	134,180	26,836
	Italy... ..	—	—	—	117	598	1,081	165	806	1,587	404	1,973	2,941	—	—	—	—	—	—	5,609	1,121.8
	Morocco ...	—	—	—	205	1,277	2,200	101	714	909	—	—	—	—	—	—	—	—	—	3,109	621.8
	Smyrna ...	—	—	—	2,332	12,723	20,304	—	—	—	—	—	—	—	—	—	—	—	—	20,304	4,060.8
	Turkey ...	—	—	—	250	1,319	2,300	8,670	43,190	68,204	6,593	34,797	49,222	8,547	2,091	40,174	8,244	51,128	15,378	186,232	37,246.4
	Cyprus ...	—	—	—	—	—	—	547	3,334	5,655	1	6	9	—	—	—	—	—	—	5,664	1,132.8
	Libya ...	—	—	—	—	—	—	94	425	644	—	—	—	—	—	—	—	—	—	644	128.8
	Scala Nuova	—	—	—	—	—	—	522	2,548	3,990	—	—	—	—	—	—	—	—	—	3,990	798
	Syria ...	—	—	—	—	—	—	293	1,389	2,150	160	785	940	—	—	—	—	—	—	3,090	618
	Austria ...	—	—	—	—	—	—	—	—	—	56	526	720	—	—	—	—	—	—	720	144
	Bulgaria ...	—	—	—	—	—	—	—	—	—	318	1,794	2,350	577	44	3,418	434	3,614	520	6,484	1,296.8
	Hungary ...	—	—	—	—	—	—	—	—	—	1,271	10,884	13,744	404	—	3,790	—	4,150	—	17,894	3,578.8
	Roumania	—	—	—	—	—	—	—	—	—	151	1,232	1,580	122	—	1,101	—	1,250	—	2,830	566
U. Kingdom	—	—	—	—	—	—	—	—	—	—	—	—	5	—	38	—	136	—	136	27.2	
Denmark...	—	—	—	—	—	—	—	—	—	—	—	—	38	—	374	—	360	—	360	72	
Total...	13,486	71,168	133,983	12,027	63,415	112,232	13,676	70,062	113,595	12,754	76,040	104,412	13,908	3,104	74,253	15,262	89,877	24,616	578,765	115,753	

Discrimination between store and fattened Bullocks from 15th June to 31st December, 1933.

Kind of Animal	Countries of Origin	IMPORTS															Total Value	Average Yearly Value	
		1929			1930			1931			1932			1933					
		No.	Weight	Value	No.	Weight	Value	No.	Weight	Value	No.	Weight	Value	No.	Weight	Value			
			Cwts.	£		Cwts.	£		Cwts.	£		Cwts.	£		Cwts.	£	£	£	
Fowls and Poultry	United Kingdom	—	—	16	—	—	—	—	—	122	—	—	33	—	—	122	293	58·6	
	Albania	—	—	54	—	—	—	—	—	—	—	—	—	—	—	40	94	18·8	
	Italy ...	—	—	44	—	—	—	—	—	12	—	—	—	—	—	17	73	14·6	
	Tunis ...	—	—	—	—	—	3	—	—	—	—	—	8	—	—	76	87	17·4	
	Egypt ...	—	—	—	—	—	—	—	—	8	—	—	—	—	—	—	8	1·6	
	Turkey...	—	—	—	—	—	—	—	—	214	—	—	74	—	—	99	387	77·4	
	Australia	—	—	—	—	—	—	—	—	—	—	—	18	—	—	—	18	3·6	
	Roumania	—	—	—	—	—	—	—	—	—	—	—	81	—	—	8	89	17·8	
	Bulgaria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	14	2·8	
	Yugoslavia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28	28	5·6	
	Total ...	—	—	114	—	—	3	—	—	356	—	—	214	—	—	404	1,091	218·2	
Sheep and Swine	Albania ...	188	224	605	170	146	380	5	2	3	303	290	799	—	—	—	1,787	357·4	
	Russia ...	50	52	104	—	—	—	—	—	—	—	—	—	—	—	—	104	20·8	
	Tunis ...	530	421	1,206	283	227	419	—	—	—	23	9	18	—	—	—	1,643	328·6	
	Yugoslavia ...	1,549	1,704	4,683	102	117	117	100	160	261	713	562	1,019	215	179	260	6,340	1,268	
	Algiers...	—	—	—	53	47	75	—	—	—	—	—	—	—	—	—	75	15	
	Libya ...	—	—	—	6	5	7	763	529	631	—	—	—	—	—	—	638	127·6	
	Smyrna ...	—	—	—	24	24	19	—	—	—	—	—	—	—	—	—	19	3·8	
	United Kingdom	—	—	—	—	—	—	4	3	160	2	7	11	2	5	30	201	40·2	
	Cyprus...	—	—	—	—	—	—	219	397	830	—	—	—	—	—	—	—	830	166
	Turkey...	—	—	—	—	—	—	25	17	29	59	57	67	49	27	34	130	26	
	Bulgaria	—	—	—	—	—	—	—	—	—	148	387	870	284	277	425	1,295	259	
	Greece...	—	—	—	—	—	—	—	—	—	2,218	2,427	6,404	4,174	4,832	10,165	16,569	3,313·8	
	Syria ...	—	—	—	—	—	—	—	—	—	—	—	—	25	18	21	21	4·2	
	Total ...	2,317	2,401	6,598	638	566	1,017	1,116	1,108	1,914	3,463	3,739	9,188	4,749	5,338	10,935	29,652	5,930·4	
Donkeys ...	Italy ...	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	2	·4	
	Tunis ...	118	—	111	253	—	305	422	—	738	199	—	260	201	—	268	1,682	336·4	
	Libya ...	—	—	—	10	—	19	38	—	49	—	—	—	—	—	—	68	13·6	
	Albania ...	—	—	—	—	—	—	7	—	5	—	—	—	—	—	—	5	1	
	Turkey...	—	—	—	—	—	—	12	—	22	—	—	—	—	—	—	22	4·4	
Total ...	119	—	113	263	—	324	479	—	814	199	—	260	201	—	268	1,779	355·8		

APPENDIX III.—cont.

Return of live animals imported into Malta during the five years ended 31st December, 1933.

Kind of animal	Countries of Origin	1929		1930		1931		1932		1933		Total Value	Average Yearly Value
		No.	Value	No.	Value	No.	Value	No.	Value	No.	Value		
Horses	United Kingdom	2	60	4	177	15	1,175	3	190	15	2,430	4,032	806.4
	Albania	87	640	35	220	102	935	82	556	47	263	2,614	522.8
	Algiers	3	55	—	—	—	—	—	—	1	6	61	12.2
	Italy	4	40	—	—	5	58	—	—	—	—	98	19.6
	Tunis	133	2,129	311	4,249	377	4,495	219	2,794	419	3,709	17,376	3,475.2
	Yugoslavia ...	93	791	75	553	31	217	—	—	27	166	1,727	345.4
	Libya	—	—	31	438	107	973	—	—	—	—	1,411	282.2
	Army & Navy Dept.	—	—	3	47	—	—	—	—	—	—	47	9.4
	Cyprus	—	—	—	—	23	163	—	—	—	—	163	32.6
	Turkey	—	—	—	—	51	394	4	45	5	50	489	97.8
	Gibraltar ...	—	—	—	—	—	—	4	270	3	170	440	88
	Egypt	—	—	—	—	—	—	—	—	1	60	60	12
	Roumania ...	—	—	—	—	—	—	—	—	10	200	200	40
	Total		322	3,715	459	5,684	711	8,410	312	3,855	528	7,054	28,718	5,743.6
Mules	Tunis	55	720	60	708	119	1,290	147	1,419	160	1,182	5,319	1,063.8
	Yugoslavia ...	5	50	—	—	—	—	—	—	—	—	50	10
	Libya	—	—	1	15	15	156	—	—	—	—	171	34.2
	Cyprus	—	—	—	—	1	9	—	—	—	—	9	1.8
	Turkey	—	—	—	—	—	—	—	—	1	12	12	2.4
Total		60	770	61	723	135	1,455	147	1,419	161	1,194	5,561	1,112.2
Unenumerated ...	United Kingdom	—	242	—	139	—	45	—	46	—	2,357	2,829	565.8
	Canada	—	7	—	—	—	—	—	—	—	—	7	1.4
	Italy	—	149	—	122	—	79	—	118	—	99	567	113.4
	Tunis	—	99	—	41	—	103	—	41	—	108	392	78.4
	Yugoslavia ...	—	93	—	29	—	—	—	—	—	—	122	24.4
	Gibraltar ...	—	—	—	12	—	—	—	—	—	—	12	2.4
	Libya	—	—	—	—	—	14	—	—	—	—	14	2.8
	Ex baggage ...	—	—	—	—	—	—	—	64	—	36	100	20
Roumania ...	—	—	—	—	—	—	—	—	—	10	10	2	
Total		—	590	—	343	—	241	—	269	—	2,610	4,053	810.6

APPENDIX IV.

Return showing Quantities and Values of Agricultural Exports during the years 1928-33.

Article	Country of Final Destination		1928		1929		1930		1931		1932		1933	
			Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value
Animals living:—				£		£		£		£		£		£
Fowls Poultry	Libya	No.	370	83	630	156	88	18	...	...	...	...	...	...
Sheep and Swine	Libya	"	10	40	...	...	...	...	...	...	...	...	...	...
	Tunis ... ..	"	...	...	2	4	...	...	...	...	...	...	3	4
	Total		10	40	2	4	...	...	...	...	...	...	3	4
Cheese	Egypt	Cwts.	206	336	29	90	...	...	...	...	...	...	...	...
	Tunis	"	27	60	33	121	35	104	24	60	1	3	4	13
	Total		233	396	62	211	35	104	24	60	1	3	4	13
Eggs	Libya	Doz.	240	12	...	...	...	...	...	...	...	...	...	...
	United Kingdom ... ..	"	...	...	...	...	...	...	...	...	3,300	135	100	5
	Italy ... ..	"	...	...	...	...	...	...	...	...	60	3	...	...
	Total		240	12	...	...	...	...	...	...	3,360	138	100	5
Fruits (fresh or dried):—														
Oranges and Mandarines	United Kingdom	Doz.	8,398	553	7,981	505	6,832	408	1,324	82	1,209	91	6,492	234
	France	"	211	14	...	...	70	3	...	...	...	...	...	...
	Germany	"	5	1	...	...	...	...	...	...	...	...	...	...
	Norway ... ..	"	...	...	178	10	...	...	...	...	...	...	...	...
	Total		8,614	568	8,159	515	6,902	411	1,324	82	1,209	91	6,492	234
Other fruits	Egypt	Value	...	33	...	...	...	...	...	...	...	...	...	...
	Italy	"	...	234	...	...	...	67	...	90	...	...	...	...
	Libya	"	...	35	...	130	...	39	...	...	...	...	...	...
	Norway	"	...	17	...	...	...	...	...	...	...	...	...	...
	Tunis	"	...	47	...	...	...	10	...	42	...	...	...	...
	United Kingdom ... ..	"	...	...	...	...	...	...	...	...	...	93	...	...
	Total ... ..		...	366	...	130	...	116	...	132	...	93	...	...
Pulse:—														
Kidney Beans	Belgium	Cwts.	...	...	...	...	...	...	...	...	...	...	148	60
	Italy	"	10	4	...	...	...	...	...	...	...	...	...	...
	Libya	"	16	10	...	...	...	...	...	...	...	...	...	...
	Total		26	14	...	...	...	...	...	...	...	...	148	60
Tomato Sauce and extracts of tomatoes	Italy	Cwts.	1,953	2,225	48	50	...	...	...	...	...	...	...	...
	Tunis	"	91	232	165	229	...	...	6	8	...	...	...	...
	South America	"	171	352	...	...	...	...	...	...	...	...	...	...
	Brazil ... ..	"	...	...	...	...	955	807	...	...	...	...	...	...
	Spain ... ..	"	...	...	...	...	20	15	...	...	...	...	...	...
	Ceylon ... ..	"	...	...	...	...	...	...	2	3	...	...	...	...
	Cyprus ... ..	"	...	...	...	...	...	...	...	...	438	370	40	40
	Total		2,215	2,809	213	279	975	822	8	11	438	370	40	40

Article	Country of Final Destination		1928		1929		1930		1931		1932		1933	
			Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value
Vegetables:—				£		£		£		£		£		£
Garlic	Egypt	Cwts.	64	29	...	...	...	...	...	...	...	...	...	...
	Greece	"	640	275	...	...	...	...	...	...	...	...	...	...
	Tunis	"	163	50	213	62	...	...	...	18	9	87	39	
	Libya ... ..	"	...	...	46	16	...	...	...	...	...	...	...
	United Kingdom ...	"	...	...	...	...	...	...	...	120	70	...	...
	Belgium ... ..	"	...	...	...	...	...	...	...	10	5	...	...
	Total ... ..	...	867	354	259	78	...	...	...	148	84	87	39	
Onions	United Kingdom ...	Cwts.	3,802	587	2,420	435	5,385	663	7,096	1,442	12,498	3,064	2,510	414
	Trinidad	"	557	260	397	140	...	...	...	...	...	...	...	...
	Austria	"	669	230	2,280	340	4,321	658	...	...	...	...	...	...
	Belgium	"	1,588	446	2,939	549	400	60	1,326	400	1,027	442	3,055	132
	Denmark	"	97	15	544	103	146	14	94	25	...	...	...	...
	Germany	"	1,980	380	1,846	288	240	52	...	...	...	...	...	...
	Greece	"	365	79	...	...	...	...	...	...	...	...	...	...
	Hungary	"	400	160	...	...	...	...	...	...	...	...	...	...
	Italy	"	11,730	1,775	17,281	2,823	11,299	2,227	380	175	8,267	2,018	...	...
	Libya	"	2,047	608	2,124	530	2,140	318	590	129	130	27	867	162
	Netherlands	"	28,464	4,405	43,661	7,513	19,254	2,829	15,296	3,618	42,084	7,846	13,672	1,027
	Norway	"	677	173	384	66	545	115	316	82	841	186	452	88
	Sweden	"	221	85	...	...	...	...	...	...	...	...	...	...
	Tunis	"	9,902	1,920	9,125	2,653	6,145	1,451	3,812	913	3,447	872	3,281	537
	Cuba ... ..	"	...	...	296	62	...	...	...	...	...	...	...	...
	Total ... ..	...	62,499	11,123	83,297	15,502	49,875	8,387	28,910	6,784	63,294	14,455	23,837	2,360
Potatoes	United Kingdom ...	Tons.	792	11,756	239	2,891	...	...	496	5,172	1,448	14,701	648	6,842
	Belgium	"	65	924	331	3,275	16	100	164	1,520	310	3,612	665	3,938
	Germany	"	597	7,349	2,189	25,159	1,081	9,849	604	6,010	538	6,174	342	2,236
	Hungary	"	23	200	47	530	70	395	...	...	...	...	...	...
	Italy	"	378	5,474	1,214	14,134	514	4,965	300	3,714	296	3,581	169	1,666
	Netherlands	"	7,750	101,335	6,753	61,823	6,083	55,201	7,604	78,792	6,619	67,731	7,140	53,604
	Dutch West Indies	"	20	184	...	...	...	...	...	...	...	...	...	...
	Switzerland	"	58	661	39	390	46	390	38	345	61	645	54	442
	Tunis	"	8	85	1,832	12,554	772	4,330	...	...	411	2,647	102	460
	Ceylon ... ..	"	...	...	739	6,527	1,799	12,060	1,841	13,350	690	5,526	1,048	5,169
	Austria ... ..	"	...	...	60	770	10	55	...	...	20	180	...	...
	Denmark ... ..	"	...	...	1	10	...	...	...	...	...	...	...	...
	Egypt ... ..	"	...	...	4	22	50	413	...	...	...	...	...	...
	Greece ... ..	"	...	...	10	70	8	32	...	...	...	...	...	...
	Turkey ... ..	"	...	...	25	248	...	...	...	...	...	...	...	...
	British India ... ..	"	...	...	...	...	3	20	...	...	...	...	...	...
	Spain ... ..	"	...	...	...	...	...	...	895	6,332	...	...	...	...
	France ... ..	"	...	...	...	...	...	...	...	32	257	...	...	...
	Sudan ... ..	"	...	...	...	...	...	...	...	...	...	...	1	7
	Libya ... ..	"	...	...	...	...	...	...	...	...	...	...	1	4
	Total ... ..	...	9,691	127,968	13,483	128,403	10,452	87,810	11,942	115,235	10,425	105,054	10,170	79,368
Tomato	Italy	Tons.	...	...	...	...	...	...	...	...	...	...	...	8

Article	Country of Final Destination		1928		1929		1930		1931		1932		1933	
			Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value
Vegetables—cont. Other vegetables	United Kingdom ...	Tons	...	£	...	£	...	£	...	£	...	£	...	4
	Tunis ... ..	"	...	...	...	...	...	...	...	...	...	...	...	26
	Total ... ..	...	...	...	...	...	...	...	...	...	...	...	...	30
Bones and hoofs	United Kingdom ...	Cwts.	...	...	...	...	...	...	...	...	...	...	41	8
	France	"	660	163	159	45	...	...	...	...	...	...	...	...
	Germany	"	544	152	379	105	752	265	...	...	...	...	...	...
	Italy	"	488	162	2,494	791	1,417	441	410	87	102	18	4,450	960
	Netherlands ...	"	1,483	464	60	195	...	...	3,830	905	...	...	...	...
	Austria ... ..	"	...	...	318	55	...	...	...	...	...	...	...	...
Total ... ..	...	3,175	941	3,410	1,191	2,169	706	4,240	992	102	18	4,491	968	
Cotton (raw)	United Kingdom ...	Cwts.	35	212	...	...	...	...	...	...	...	...	149	349
	Greece	"	772	3,065	...	...	...	...	...	...	...	...	...	...
	Italy	"	2,966	11,571	846	3,169	...	...	...	...	...	...	314	687
	Spain	"	52	202	...	...	...	...	...	...	...	...	...	...
	Germany ... ..	"	...	...	...	...	...	...	...	...	...	...	34	20
Total ... ..	...	3,825	15,050	846	3,169	...	...	...	...	...	...	497	1,056	
Cumin seed	United Kingdom ...	Cwts.	100	255	225	565	50	150	...	...	140	182	100	229
	Trinidad	"	223	548	61	137	20	46	40	91	...	...	...	...
	Algiers	"	47	117	65	175	...	...	...	...	...	...	...	...
	Brazil	"	320	816	842	2,150	...	...	...	...	...	...	...	...
	Chili	"	598	1,620	312	881	197	565	282	431	502	739	90	125
	Egypt	"	301	668	750	2,000	46	120	845	1,232	502	612	806	930
	Germany	"	1,509	3,689	1,062	2,420	1,466	3,405	1,623	3,522	1,903	1,993	1,611	2,226
	Greece	"	40	98	...	...	...	...	...	...	...	...	...	...
	Italy	"	488	1,236	308	784	266	607	61	130	196	286	350	697
	Libya	"	61	91	42	78	59	103	34	34	...	...	10	16
	Netherlands ...	"	1,196	3,071	2,219	5,068	2,433	5,951	2,092	3,900	788	918	1,117	1,730
	Norway	"	120	296	70	167	140	326	116	213	50	67	110	240
	South America ...	"	200	340	100	240	...	...	...	...	...	...	...	...
	(country unspecified)	"	...	...	...	...	...	...	...	...	...	...	...	...
	Tunis	"	53	109	186	391	69	179	138	283	25	26	121	198
	U.S. America ...	"	407	925	205	575	...	...	102	200	...	...	255	461
	France ... ..	"	...	...	2,022	4,489	950	2,076	556	890	1,353	1,328	362	500
	Sweden ... ..	"	...	...	10	22	15	40	...	...	...	...	...	...
	Argentine Republic	"	...	...	...	...	639	1,657	427	761	596	839	163	260
	Peru ... ..	"	...	...	...	...	70	195	...	...	...	...	...	...
	Mexico ... ..	"	...	...	...	...	...	...	41	85	...	...	...	...
	Roumania ... ..	"	...	...	...	...	...	...	151	320	...	...	...	...
	Ceylon ... ..	"	...	...	...	...	...	...	...	...	382	554	...	...
	Bolivia ... ..	"	...	...	...	...	...	...	...	...	2	2	...	...
Portugal ... ..	"	...	...	...	...	...	...	...	...	100	141	...	...
Spain ... ..	"	...	...	...	...	...	...	103	200	100	110	102	100	
Belgium ... ..	"	...	...	...	...	...	...	...	...	...	...	21	30	
Denmark ... ..	"	...	...	...	...	...	...	...	...	...	...	10	15	
Total ... ..	...	5,663	13,879	8,479	20,742	6,420	15,450	6,611	12,292	6,639	7,797	5,228	7,757	

Article	Country of Final Destination		1928		1929		1930		1931		1932		1933	
			Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value
				£		£		£		£		£		£
Hides and Skins (raw or dried) ...	United Kingdom...	Cwts.	131	345	342	843	134	430	195	445	56	90	18	103
	Albania	"	30	101	...	...	...	...	...	...	...	...	...	...
	Belgium	"	76	644	102	845	12	27	...	...	16	190	21	267
	France	"	635	2,851	36	450	237	722	357	893	769	1,727	187	955
	Algiers	"	2	36	...	...	...	...	...	...	...	...	...	...
	Germany	"	114	598	63	89	...	...	276	756	19	20	5	15
	Greece	"	2,745	9,124	995	2,829	553	1,472	363	510	3,142	4,214	2,301	3,162
	Italy	"	2,121	10,798	1,033	7,734	7,436	18,822	4,938	11,918	3,614	6,502	4,524	7,681
	U.S. America ...	"	107	591	102	265	...	...	...	...	...	...	...	...
	Netherlands ...	"	...	...	...	...	15	65	3	15	...	...	...	...
	Turkey ... ..	"	...	...	...	...	243	405	754	1,163	391	501	290	427
	Syria ... ..	"	...	...	...	...	...	...	...	...	23	34	...	...
Spain ... ..	"	...	...	6	73	...	...	...	...	...	...	...	...
Libya ... ..	"	...	...	...	...	...	...	...	...	...	...	558	800	
Total			5,961	25,088	2,729	13,128	8,630	21,943	6,886	15,700	8,030	13,278	7,904	13,410
Tallow	Italy	Cwts.	2,120	3,875	2,800	4,580	987	1,411	4,094	4,394	2,716	3,369	2,294	2,838
	United Kingdom ...	"	...	...	...	...	...	...	1,017	1,428	...	...	6	7
	Netherlands ... ..	"	...	...	...	...	...	...	22	35	...	...	...	...
Total			2,120	3,875	2,800	4,580	987	1,411	5,133	5,857	2,716	3,369	2,300	2,845
Tar	Egypt	Cwts.	2,151	506	1,514	385	505	112	...	...	...	...	...	...
	Tunis	"	214	68	3	3	...	...	...	...	2,685	464	100	25
	Belgium ... ..	"	...	...	...	...	...	...	...	...	524	58	426	42
	Italy ... ..	"	...	...	...	...	...	...	...	...	...	...	20	5
Total			2,365	574	1,517	388	505	112	...	...	3,209	522	546	72
Horns and hoofs	France	Cwts.	...	...	...	...	...	...	...	...	157	50	...	...
	Italy ... ..	"	...	...	...	...	...	...	...	...	20	7	...	...
	Total ... ..			...	...	...	...	...	...	...	177	57	...	...
Squills	United Kingdom...	Cwts.	...	...	...	...	...	...	...	...	...	20	20	
Animals living :— Horses	Tunis	No.	17	375	5	54	1	12	4	230	...	...	1	20
	France ... ..	"	...	...	...	...	...	...	10	55	...	...	...	...
	Total			17	375	5	54	1	12	14	285	...	1	20
Donkeys	Tunis	No.	9	43	6	75	3	22	...	...	3	17	...	

Articles	Country of Final Destination		1928		1929		1930		1931		1932		1933	
			Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value	Quantities	Value
				£		£		£		£		£		£
Animals living—cont. Goats	Italy	No.	8	70	...	...	...	...	...	...	...	...	...	...
	Cyprus ... ..	"	...	...	...	...	12	35	...	...	...	...	...	...
	Total		8	70	...	...	12	35	...	...	...	...	...	...
Mules	Tunis	No.	57	756	33	320	26	351	7	65	...	...	...	...
	France ... ..	"	...	...	...	...	...	...	5	29	...	...	...	...
	Total		57	756	33	320	26	351	12	94	...	...	...	...
Foods for animals—Bran	United Kingdom	Cwts.	366	150	478	120	478	106	...	...	...	...	6,552	1,275
	Germany	"	6,100	1,966	1,600	440	...	...	...	...	...	...	...	...
	Italy	"	1,124	303	2,429	645	2,806	495	3,457	613	137	31	75	13
	Libya	"	6,939	2,058	3,391	1,035	3,516	780	2,829	700	6,140	1,858	3,586	801
	Tunis ... ..	"	...	...	...	...	...	...	...	...	338	85	...	...
	France ... ..	"	...	...	...	...	...	...	...	...	...	...	3,156	820
Total		14,529	4,477	7,898	2,240	6,800	1,381	6,286	1,313	6,615	1,974	13,369	2,909	
Grains—Barley	Italy	Cwts.	...	...	...	...	260	72	...	...	...	...	...	...
Pulse—Beans	Italy	Cwts.	15	15	...	...	39	45	...	...	40	50	47	45
	Libya	"	70	48	...	...	...	...	...	...	15	8	67	55
	Tunis	"	36	26	2	2	...	...	...	...	...	...	...	...
Total		121	89	2	2	39	45	...	...	55	58	114	100	
Wine in Bottles—(Still)	United Kingdom	Galls.	...	...	...	...	...	...	...	...	...	...	200	41
	Greece ... ..	"	...	...	...	...	...	...	...	...	...	...	21	18
	Turkey ... ..	"	...	...	...	...	...	...	...	...	...	...	12	13
Total ... ..		...	...	...	...	...	...	...	...	...	...	233	72	