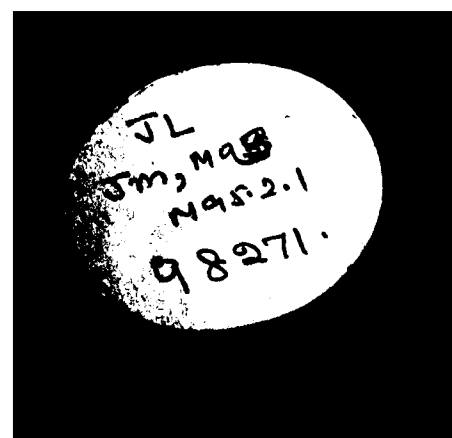




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[No. 1.

BEE-KEEPING IN RUSSIA.

A Report issued by the Russian Ministry of Crown Domains contains some interesting information relating to the progress of bee-keeping in Russia in Europe. As early as the thirteenth century the production of honey and wax appears to have been a prominent rural industry in the principality of Moscow. Indeed, apiculture was then regarded as of great importance to the economy of the country, and the products of the bee-keeper served not only for home consumption, but figured in the records of articles exported to Western Europe. In the sixteenth century, Russian wax is said to have been exported to England from the White Sea. The trade flourished until the beginning of the eighteenth century, when the imposition of certain fiscal duties by Peter the Great led to a decline of the bee-keeping industry.

It seems that bee-culture is practised at the present time throughout European Russia and in many parts of Siberia, but it does not form an important branch of the occupations of the people. Some localities in Osetie and Abkhasia in the Caucasus, and in the government of Ufa form an exception, for in these districts bee-culture is the principal industry of a considerable number of the population; even there, however, neither honey nor beeswax is produced in quantities sufficient to meet the demand.

Bees are bred in two different ways, viz., in the wild and domestic state. By the former method, their culture is very simple: a swarm of wild bees settles in the hollow of a tree, generally prepared beforehand in such a way as to facilitate the removal of the honey. Hollow pieces of timber are sometimes fastened to the trees, and the wild bees hive therein. Wild apiculture is practised to a large extent in the



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governments of Kazan, Viatka, Perm, Ufa, and on the lower slopes of the Ural mountains, where extensive forests still exist. In these localities, bees are bred by the Slavonic and other Russian people. The culture of bees in modern hives is developed in the central non-Chernoziom, Beloroussk, and Litovsk governments. In the two latter regions, owing to the presence of a great number of lime trees, the best honey called *lipovits* (lime-tree honey) is produced. In the Chernoziom region, apiculture is principally developed in Little Russia and in the south-western governments, especially in Tchernigov, Poltava, and Ekaterinoslav. The industry has attained its greatest development in the southern part of the government of Tchernigov, near Batourin and Konotop.

The peasant bee keepers usually employ hives made of well-hollowed trunks. At the lower end, the hive is open and fixed to a piece of board. The upper end is sometimes the continuation of the trunk, and sometimes a separate attachment, made of wood or of clay, which can be taken off when desirable. In the interior of these rude hives small crossbars are fixed to sustain the comb.

Section hives are principally used by estate owners and amateurs. Improved beehives are, however, being introduced even among peasants, especially in the west and south-west of Russia, in the governments of Podolsk, Volynsk, and Vistula. Of the improved hives, the most popular are those made on the English and American systems, but others of Russian manufacture are also used.

Artificial wax is comparatively a novelty in Russia, and is made in very small quantities. Very few persons manufacture it for sale.

The sowing of melliferous flowers for bees is very little practised by Russian bee-keepers. The bees generally gather honey from the flowers in the surrounding fields and, in the neighbourhood of forests, from various trees, especially the lime. Buckwheat, which is cultivated all over Russia, especially on peasants' farms, gives abundant and excellent material for honey. In the government of Tchernigov, for example, buckwheat is the principal food for bees, and if that cereal fails the bees do not thrive. Generally the abundance or scarcity of honey depends upon the condition of field crops, and upon the length of time the crops are in blossom. In seasons of drought, as in the years 1890 and 1891, the bees are artificially fed from the beginning of summer, and the yields of honey and wax are then very small.

Honey and wax are gathered in different ways. From the common hives they are taken out by killing the bees, or by a method called *podreznoi*. By the first method all the bees in the hive are suffocated by smoke, and then the honey, the wax, and the bees are raked out with a hook *en masse* into receptacles. Honey extracted in this way, called *sirtsevoi* or

bochechnoi, cannot be immediately used for food, but it is first sent to factories to be prepared. By the second method which is used for procuring honey in the comb, the bees are first expelled, in a manner dependent upon the construction of the hive, and then the honey is extracted. Sometimes the honey is removed from the hives after stupefying the bees with smoke, care being taken not to kill the swarm. In hives of improved construction, the honey is gathered either in the comb, or in a pure state, the honey in the latter case running down into specially prepared apparatus attached to the hives.

There are no data showing definitely the development of apiculture in Russia. It would appear, however, that, notwithstanding the decline of the industry, it is still practised, to a considerable extent, in the Empire.

From such information as is available, it is estimated that Russia possesses not less than 2,000,000 hives. It is calculated by some authorities that the quantity of wax produced yearly averages from 64,000 cwts. to 96,000 cwts., while the annual production of honey is estimated at about 321,000 cwts.

At the present time, Russian apiculture is admittedly in a state of transition, owing to the changes in the natural and economical conditions of Russia. It is no longer possible to pursue the industry according to primitive methods, without knowledge and without expense, as there are no extensive forests for wild apiculture, owing to the increasing areas of tilled lands. It has been found necessary to introduce the sowing of melliferous plants and to increase the productiveness of the bees, as the prices of honey and wax, owing to the competition of substitutes, have fallen greatly in recent years. But the population, not being specially skilled in apiculture, do not readily adapt themselves to the new methods, and are said to lose greatly in consequence, as the industry is a very profitable one, and, if practised scientifically, might again form an important branch in the rural economy of Russia.

The Imperial Economical Society of Russia is endeavouring to promote the development of bee-culture by publishing and distributing information relating to the industry. The same body has also established a school of apiculture at Tver.

ASSESSMENTS TO INCOME TAX (SCHEDULE B.)
AND THE TITHE ACT OF 1891.

The Board of Agriculture consider it desirable to give publicity to the following extracts from correspondence between the Board and the Commissioners of Inland Revenue on the subject of Assessments to Income Tax, Schedule B., and the Tithe Act of 1891:—

Extract from a letter, dated 30th January 1895, from the Secretary of the Board of Agriculture to the Secretary of the Board of Inland Revenue.

“The Board would take this opportunity of enquiring . . . whether, in the case of lands bearing a Tithe Rentcharge assessed separately to Income Tax (Schedule A.), the amount to be assessed to Income Tax (Schedule B.) must necessarily be arrived at by adding the Tithe Rentcharge to the amount at which the lands are assessed to Income Tax (Schedule A.), or whether it is not the duty of the General Commissioners to ascertain the annual value of the lands, according to the rules provided in the Income Tax Acts, to assess the same both to Schedules A. and B., and then to allow, in the case of Schedule A., a deduction for the amount of the Tithe Rentcharge assessed separately on the owner thereof, which conceivably may exceed the annual value as ascertained.

“The addition for the purposes of assessment to Income Tax (Schedule B.) of the amount of the Tithe Rentcharge to the amount at which the lands, apart from the Rentcharge, are assessed to Income Tax (Schedule A.) is, as the Board are given to understand, the practice recognised in the General Instructions to Surveyors of Taxes, and it is doubtless a convenient one from a revenue point of view, but it results in the consequence that the assessment to Income Tax (Schedule B.) can never be less than the amount of the Tithe Rentcharge, whatever the annual value of the lands may be.

“Moreover, the Tithe Rentcharge is to a greater or less extent made the measure of itself, inasmuch as its remission depends upon the assessment to Income Tax (Schedule B.), whilst the latter depends in part, or it may be wholly, upon the amount of the Tithe Rentcharge.

“It is, of course, the case that until recently no one was prejudiced by the existing practice, but now that in certain districts the amount of the Tithe Rentcharge in many instances approaches and sometimes exceeds the annual value of the

lands, the question becomes of importance, especially in cases where the extent of the relief to which the Tithepayer is entitled under the Act of 1891 is affected. The Board would therefore ask the Board of Inland Revenue to take the matter into consideration, and, if they deem it necessary, to issue such instructions on the subject as will secure the making of the assessments to Income Tax (Schedule B.) in such a way as will enable Tithepayers to obtain the full measure of relief which the law allows them.”

Extract from a letter, dated 5th March 1895, from the Secretary of the Board of Inland Revenue to the Secretary of the Board of Agriculture.

“With regard to the enquiries in . . . your letter, I am to observe that it is of course the duty of the General Commissioners to ascertain the annual value of land, inclusive of tithe, according to the rules of the Income Tax Acts, and that the amount of the Schedule B. assessment is not necessarily arrived at by adding the Tithe Rentcharge to the amount at which land, apart from the Tithe Rentcharge, is assessable under Schedule A. Where land is let, and the Commissioners are satisfied that the rent paid represents the full annual value, inclusive of the Tithe Rentcharge, and where the Tithe Rentcharge is separately assessed on the Titheowner, the Schedule A. assessment is made upon the rent, less the tithe, and the Schedule B. assessment upon the full inclusive amount of the rent. Where land is in the hands of the owner, and there is consequently no rent to guide the surveyor as to the annual value, and where the annual value cannot be otherwise ascertained, it is the practice to make the assessments (subject, of course, to the usual appeal to the District Commissioners) upon the annual value entered in the poor rate; and as this value does not, as a rule, include the Tithe Rentcharge, in all such cases, the Schedule B. assessment must necessarily exceed the Schedule A. assessment by the amount of the Tithe Rentcharge.

“The Board think that the Surveyors, who are not experts in the valuation of land, already possess, in view of the existing state of agriculture, all the discretionary power which it is desirable they should exercise in the making of the Schedule A. and B. assessments; and it would not, in their opinion, be expedient to issue any fresh instructions to them in the direction indicated in the concluding part of your letter. The interests involved as between the Titheowner and Landowner in connection with the annual values assessed under Schedule B. are so important, that in all doubtful cases, where abnormally low rents or values are returned far below the estimated rentals in the poor rate, the acceptance of which by the Surveyor would affect the amount of Tithe Rentcharge to be paid under the provisions

of the Tithe Act, the question (of the annual value) should not be settled off-hand by the Surveyor, but should be left for the determination of the District Commissioners on appeal in the manner provided by the Income Tax Acts.

"The Board do not think that the Tithe Act of 1891 is inoperative—if it be inoperative—to any appreciable extent through the fault of their Surveyors, but that this is due either to an imperfect knowledge by owners and occupiers of lands of the provision of the Act, or to an unwillingness on their part to take the steps necessary to obtain relief."

CO-OPERATION AMONGST IRISH FARMERS.

The Board of Agriculture have recently received from the Secretary of the Irish Agricultural Organisation Society some information relating to the progress of co-operation amongst Irish farmers.

The co-operative movement in the rural districts of Ireland may be said to have sprung into existence in 1890. In that year, the Hon. Horace Plunkett read a paper at the Co-operative Congress in Glasgow advocating the application of co-operative principles to Irish industries, and a resolution was subsequently passed authorising the Co-operative Union to spend a sum of money in aid of the promotion of co-operation in Ireland. As a beginning of this work, farmers in the dairying districts of Munster were invited to furnish a practical example of the benefits of co-operation by associating in the establishment of creameries, and an organising agent, appointed by the Union, visited Ireland to demonstrate by lectures and otherwise the advantages connected with the formation of such co-operative societies, and to afford advice and information to persons interested in the movement. By the end of 1893, twenty-five co-operative dairy societies were in existence. In the same year, a conference was held at Limerick, at which it was decided to form a federation of these associations for the joint sale of their produce under the name of the Irish Co-operative Agency. In 1894, the co-operative movement received a further stimulus by the establishment of the Irish Agricultural Organisation Society.

One of the great preliminary difficulties experienced by the promoters of the co-operative movement in Ireland was the reluctance of farmers to invest their capital in the erection of creameries. Few of the dairy societies started with sufficient share capital to cover all their outlay in buildings and machinery. In many instances, credit was obtained from the contractors, or the extra capital required was raised by means of a loan from a local bank.

The shares in the Irish co-operative creameries are owned, for the most part, by the members. In some cases, persons who do not keep cows hold shares, but they have become shareholders to help the associations as local institutions rather than for the purpose of investment. Shares are usually taken up by farmers in proportion to the number of cows they keep, at the rate of 1*l.* for each animal. This arrangement, however, is not uniform in all the societies. It is the practice to pay for the shares by instalments, generally of five shillings at a time. After the creamery has been started, these instalments are frequently paid in

milk, either by way of a reduced price being allowed for the whole of the milk delivered, or by the member delivering a certain quantity free of charge, until the call on the share is paid up. The liability of the farmers is, in all cases, limited to the amount of their shares.

The dairy societies are registered under the Industrial and Provident Societies' Act, and their operations are conducted under rules drawn up in conformity with the provisions of that Act. When they were first started the claim to a share of the profits of non-members supplying milk to the creameries was ignored. Most of the societies have now adopted special rules which provide, after the payment of interest on the share capital of 5 per cent. per annum, and after provision has been made for certain charges and for the reduction in value of the fixed stock and plant, that not less than ten per cent. of the profits shall be allotted to the employes of the creamery in proportion to the wages earned by them respectively during the period to which the division of the profits relates. The remaining profits are appropriated to the individuals from whom the society has purchased milk, in proportion to the value of the milk supplied by each during the same period, but an individual who is not a member receives a sum equal to only one half the amount to which he would have been entitled as a member. The difference between the half and full value of the dividend is placed to the reserve fund. It should be noted, however, that all payments of profits to individuals who supply milk are made by shares, or payments on account of shares, which are appropriated to the persons respectively entitled thereto, so that in this way every person supplying milk to the creamery eventually becomes automatically a member of the co-operative society. The share of profits falling to the employes is not paid in cash, it is accumulated as a loan in the society, bearing such interest as may be determined at the general meeting, and can be withdrawn only in case of distress or on leaving the employment of the society.

The special object of the co-operative creameries is to carry on the trade of dairymen and general dealers in farm produce, both wholesale and retail, as well as the manufacture of butter and cheese.

It may be of interest to describe shortly the way in which an Irish creamery is worked. As a general rule, the management is entrusted to a president or chairman, and a number of committeemen, usually from four to eight, elected by the members of the society. The ordinary working staff consists of a manager, a dairymaid and assistant, a man or boy to help in the dairy, and a man to look after the engines. Every shareholder has a voice and vote in the society. If the committee do not give satisfaction in the discharge of their duties the shareholders can call a meeting and, when necessary, replace them.

In the summer, the farmers send their milk to the creamery twice a day; in the spring and autumn, once a day; and in the winter, every alternate day. The cream is extracted by centrifugal separators. The process of butter-making is very similar to the Danish system. The cream stands from twenty-four to thirty-six hours to ripen after it is separated. In some dairies it is refrigerated as it comes from the separators. It is then placed in *Schwartz* cans and kept at a certain temperature until the lactic ferment is formed in the cream. When the cream is ripe for churning, it is thoroughly mixed and put into the churn, and as soon as the butter comes, a very small quantity of cold water is added to the churn, which is slowly revolved in order to free the butter from the buttermilk. The butter is then taken out, lightly sprinkled with very fine dry salt, and placed on a butter worker, through which it is passed two or three times. It is then allowed to stand for some time and again passed through the worker, when it is finally packed in casks and boxes for the market. The butter is not washed. The milk is paid for according to its per-centage of butter fat. In 1894, the average price was about 3½d. per gallon, the separated milk and buttermilk being returned free to the farmers.

The sale of the butter produced in the co-operative creameries is largely conducted through the Irish Co-operative Agency Society. The commission charged on sales effected in this way is 2½ per cent. In 1894, the butter sold realised an average price of nearly 10½d. per lb. as compared with 11½d. in 1893.

The following comparative statement, showing the results of the working of 30 of the co-operative dairy societies in 1893 and 1894, has been extracted from a report recently issued by the Irish Agricultural Organisation Society:—

	Share Capital paid up.	Loan Capital.	Value of Buildings and Plant after Depreciation.	Milk Received.			Butter Produced.			Working Expenses.	Amount allowed for Depreciation.	Net Profit
				Quantity.	Amount Paid.	Average Price per Gall.	Quantity.	Amount realised by Sales.	Average Price per lb.			
	£	£	£	Thou- sands of Gallons.	£	Pence	Thou- sands of lbs.	£	Pence	£	£	£
1893	13,895	7,746	24,871	7,575	123,780	3.92	2,935	140,780	11.51	13,293	2,173	1,242
1894	15,468	6,061	25,266	9,014	132,555	3.53	3,567	151,852	10.22	15,398	2,271	1,992

In 1894, the number of members on the registers of the societies included in the above statement was 1,641, and the number of cows supplying milk to the creameries was 20,714.

As an example of the growing popularity of co-operation amongst Irish farmers, it may be observed that since 1891 50 co-operative dairy societies have been opened, and of

this number 34 were established in the 15 months ending March 31st, 1895. There are now in operation 67 of these organisations, with a membership of 3,800 farmers. The remarkable development, which has taken place so recently, has been due, to a great extent, to the efforts of the Irish Agricultural Organisation Society. This propagandist body, which may be regarded as the organising centre of agricultural co-operation in Ireland, has been constituted solely "to improve the condition of the agricultural population by teaching the principles and methods of co-operation as applicable to farming and the allied industries; to promote industrial organisation for any purposes which may appear to be beneficial; and generally to counsel and advise those engaged in agricultural pursuits." The activity of this society has not been solely confined to the furtherance of co-operative dairying. Within the short period during which it has been in existence, it has succeeded in forming 10 associations of farmers for the joint purchase of farming requirements; and in opening, as an experiment, a small co-operative credit bank.

Briefly, the functions of the Joint Purchase Associations are to carry on the occupations of commission agents; wholesale and retail dealers in farm and garden produce, seeds, artificial manures, feeding stuffs, agricultural implements and machinery; exporters and importers of live stock; and general dealers in any other class of goods the committee may select. Members of the associations are expected to pay a sum equal to 2½ per cent. on the value of their purchases. These payments are placed to an insurance fund, and in the event of any member failing to pay his account for goods within the prescribed time, it is discharged by the society out of this fund, and the defaulter is expelled from the society.

No credit is allowed to any member for purchases of feeding stuffs, manures, seeds, or implements, except at the discretion of the committee, who must be satisfied of the solvency of the applicant. The committee may at their discretion refuse credit to any applicant, unless two members of the said committee become personally liable for the amount.

No member can receive any credit for goods purchased through or from the society, the value of which exceeds the amount paid up on his share or shares, except with the approval of the Committee. Credit is not allowed for any time exceeding one month, save in the purchase of artificial manures.

The operations of the associations consist, as is the case with similar organisations in France,* for the most part in the purchase of manures and feeding stuffs on behalf of the members; but some of them have already turned their attention to other classes of business. Thus, one association has bought a short-horn bull, two stallions, a steam threshing machine and a traction engine. It has also hired a large disused mill for the

* Cf., Vol. I., No. 1, p. 7 of the Journal of the Board of Agriculture.

storage of corn grown by members, and has undertaken the sale of their wool.

Some of the Joint Purchase Societies buy for cash, and others for credit. Those buying for credit give security to the manufacturer for the payment of their accounts. In these cases a committee is formed of the largest shareholders and the most solvent farmers in the parish. These men give their individual and joint security to the manufacturer that the accounts shall be paid. In addition, a deposit varying from 2½ per cent. to 5 per cent. of the value of the goods bought is deposited by each purchasing member over and above the actual cost of his purchase, and this is held over until the end of the year, when the accounts become due, as an insurance fund against bad debts.

A recent and interesting example of the many useful purposes to which the principles of co-operation have been applied in Ireland is furnished by the Doneraile Bank in the county of Cork. According to the Annual Report, 1895, of the Irish Agricultural Organisation Society, this bank was started as an experiment in February last under the management of a local committee of farmers and labourers, and has already lent upwards of 100£ in small sums. The capital has been subscribed by members, or borrowed from persons interested in the experiment on the joint security of the shareholders. Loans not exceeding 50£ and bearing interest at the rate of 6 per cent. are advanced for an unlimited period and for any purpose which will, in the opinion of the committee, either render a profit or effect a saving to the borrower. Each member applying for a loan has to find two sureties. As a further security against loss, only temperate and industrious persons of good character are admitted as members.

In conclusion, it may be noted that the latest reports as to the progress of co-operation amongst Irish farmers indicate that the movement is rapidly growing in public favour. And it is maintained by the organisers of the movement that it has been the means of bringing many advantages within the reach of the poorer members of the rural community.

CATTLE RAISING IN THE ARGENTINE REPUBLIC.

The remarkable and rapid development of the cultivation of wheat in the Argentine Republic appears to have had no deterrent effect on the progress of the pastoral industry in that country. Notwithstanding the fact that agriculture occupies a large extent of land every year, particularly in those provinces where stock raising is so largely practised, meat products still constitute, in the opinion of Mr. Gastrell, Her Majesty's Vice-Consul at Buenos Ayres, the principal wealth of the Republic. According to official estimates published by the Argentine Government in 1889, the numbers of live stock in the country at that time included 21,963,930 cattle, 66,701,097 sheep, and 4,263,000 horses. In 1894, the number of cattle in the Republic was calculated to be approximately 25,000,000, while of sheep and horses there were estimated to be 80,000,000 and 5,000,000 head respectively. While directing attention to the untrustworthy character of the available statistics of live stock, Mr. Gastrell states that the provinces which contain the largest stocks of cattle are Buenos Ayres, Entre Rios, Corrientes, Santa Fé, and Cordoba, but there is no scarcity of cattle in the more distant territories.

The numbers of horned cattle, horses, and sheep in the five provinces named are given in the latest official returns as follows:—

Provinces.	Horned Cattle.	Horses.	Sheep.
Buenos Ayres - - -	9,602,274	1,855,426	55,397,881
Entre Rios - - -	4,120,068	719,510	4,901,123
Corrientes - - -	1,841,366	258,696	611,085
Santa Fé - - -	2,328,443	527,536	2,977,382
Cordoba - - -	2,110,513	403,879	2,355,030

The cattle are said to consist for the greater part of the old race of the country, which seems to owe its origin to Flanders, and is something like the famous Durham or shorthorn breed. But for many years the Argentine breeders have been introducing the best kind of bulls and cows from Europe, and have in this way increased the quality and value of the stock in the country.

Hitherto the exports of live cattle from Argentina have consisted mainly of consignments to countries in the South American continent, but attention has recently been directed to the possibility of developing the trade with Europe and particularly with the United Kingdom. The following statement shows the total number of cattle exported in the five years

ending with 1894, together with the number of Argentine cattle returned by the Board of Customs as having been landed in Great Britain:—

Year.	Number of Cattle exported from Argentina.	Number of Argentine Cattle imported into the United Kingdom.
1890 - - -	150,003	653
1891 - - -	171,105	4,190
1892 - - -	125,458	3,500
1893 - - -	201,645	6,884
1894 - - -	220,490	9,546

In the three months ended March last, 5,005 head of cattle from Argentina were received in this country, as compared with an entry of 3,174 head in the first quarter of 1894.

Besides the trade in live cattle, large quantities of beef preserved in various ways are exported from the Republic, of which the larger portion is shipped to Cuba and Brazil in the form of jerked beef or "tasajo."

The prospect of a greater development of the trade in Argentine live cattle is referred to in a recent number of the *South American Journal* in the following words:—

"Up to lately, attention was practically limited to the refining of the native cattle, whilst the fattening was trusted entirely to the native prairie grasses, the consequence being that a steady supply of fat cattle could not be counted on for export all the year round, and but comparatively few were sent to England. The Argentines were satisfied with their dried beef trade with Brazil and Cuba, which enabled them to dispose of about 1,000,000 beasts per annum. Now that the estancieros or ranchmen are growing Shorthorns, Herefords, Polled Angus, &c., by the 100,000, and that graziers are laying down thousands of acres of alfalfa grass (lucerne) to fatten them, a rapid augmentation of the meat trade is being effected by the exportation of live stock to Brazil, Chili, and England, Belgium, France, and Germany taking some also."

The cattle in the Republic are to a large extent fattened on alfalfa, either in the form of pasture or in a dried form as hay. In 1893, the estimated area under this crop was reported to be about 3,000,000 acres.

In a report published by the Foreign Office in 1893, it is stated that four acres of good alfalfa are considered to carry two animals in winter and four in summer; but these numbers may be largely increased after heavy rain. Alfalfa appears to be particularly suited to a great part of the Republic owing to its not requiring much surface damp or rain. Its roots penetrate deeply into the soil even to the extent of 15 feet, so that the plant depends more upon the moisture of the subsoil than on the weather conditions for its nourishment. With a suitable subsoil

good crops of alfalfa have been obtained for 20 years in succession, yielding five cuttings and upwards annually. The cost of laying down an acre of alfalfa has been estimated by a practical grower of the crop at nearly 10s., assuming the paper dollar to be of the value of 1s. 4d. When it is laid down with wheat the cost is largely reduced.

In addition to the benefits to be derived from the abundance of cheap and excellent forage in the shape of alfalfa, the pastoralist in the Argentine Republic possesses a further advantage in the circumstance that, owing to the favourable climate of the country, cattle require neither housing nor hand feeding.

Steers exported to Europe are usually over 1,320 lbs. live weight, while those sent to Brazil weigh on the average 1,100 lbs. It is recognised by exporters that it is above all necessary that cattle shipped to European ports should arrive in prime condition, and efforts are being made to secure better accommodation and attendance on ships engaged in this trade. In a recent number of *La Agricultura*, it is stated that the Argentine Minister of Finance has already convened a meeting of the representatives of the principal firms engaged in the export trade in live stock to consider a draft code of regulations relating to the transport of animals by sea. At this meeting it was unanimously agreed that the regulations should provide that every vessel employed in carrying cattle should be properly equipped with the necessary fittings; that there should be four cattlemen for each 100 head of cattle on board; that there should be a sufficient supply of water provided at the rate of 12 gallons for each full-grown beast and 6 gallons for each calf, daily; and that no animal affected with any contagious disease, or suspected to be so infected, should be taken on board. The voyage to Europe by the cattle ships is calculated to occupy 28 days.

DANISH BACON FACTORIES.

One of the features of the development of the agricultural industry in Denmark has been the rapid growth of an export trade in bacon and hams. Prior to the year 1887-88 the annual consignments of these products from Danish ports had never exceeded 300,000 cwts., but in that year the shipments amounted in weight to nearly 600,000 cwts., and they have since increased to over 800,000 cwts. in 1893-94.

It is noteworthy that the sudden augmentation in 1887-88 was coincident with the establishment of co-operative bacon factories in Denmark. The first organisation of this kind was formed in 1887 by a number of farmers in the district of Horsens. In view of the success which had already attended the application of co-operative principles to the dairy industry, the new venture was regarded with much interest by the agricultural community, and companies were hastily formed in several districts for the erection of similar establishments. The closing of the German ports to live swine from Denmark in the winter of 1887-88 afforded a further impetus to the movement, and bacon factories sprang up rapidly in all parts of the country. There are now 34 of these establishments in operation, of which number 17 have been erected by co-operative associations of farmers.

In the case of the factories established by the farmers' associations, the funds for the erection of the necessary buildings were generally derived from a loan effected on the security of the founders, each member being expected to become a guarantor for an amount not exceeding 50*l.*, the sum guaranteed by each individual determining the extent of his ownership in the concern. The administration of the association is vested in a council elected by the members. The employes usually consist of a manager, a bookkeeper, and a cashier.

The regulations of the different co-operative bacon factories agree very much in their general principles. It is usually stipulated that the members of the association shall deliver all their saleable swine to the factory for a period of seven years, except in the case of removal from the district. This stipulation, however, does not apply to boars, to sows in farrow, or to young pigs under 56 lbs. (in some cases 112 lbs.) live weight, nor does it extend to pigs sold by a member to his labourers, or consumed in his own house. A corresponding obligation is nearly always imposed on the association to accept all the healthy swine consigned by a member to the factory.

A member may purchase any number of pigs from another member of the association, and send them to the factory, provided he has fattened them for a period varying from 20 to

30 days before delivery. But he is not allowed to send in one year more than 10 pigs purchased from non-members. The association usually defrays the expenses incurred in conveying the swine from the nearest railway station to the factory; all other charges for carriage are paid by the consignors. On removal to the factory, the pigs are divided into classes according to quality, the values of the different classes being fixed weekly by the council on the advice of the manager. In some cases the prices are paid by dead weight, but in the older establishments, payment by live weight is still the practice. The offal is generally sold to the members of the association, or to the general public at the current prices of the day.

The regulations do not, as a rule, contain any restrictions on the methods of feeding swine intended for the factories. Sometimes, however, the employment of fish and fish cake is prohibited, as is also the use of a ration containing more than 50 per cent. of maize.

Whenever it is found that the supply of swine is falling off, the manager of the factory is empowered to purchase pigs from non-members of the association at a price fixed weekly by the council, and posted up for the information of members.

At the close of the year the profits arising from the operations of the association are distributed amongst the members, after provision has been made for the payment of the working expenses, the allocation of a certain sum to the reserve fund, and the part repayment of loans. Each member receives a share of the profits in proportion to the weight of pork he has delivered during the year. The amount carried to the reserve fund is determined annually by the council.

In some of the Danish co-operative bacon factories it is the practice to elect the members of the council as representatives of the members residing in different parishes. Thus, in the rules of the Eabjerg factory, it is provided that any parish in which 10 members of the association reside may be represented by a delegate on the council. The president is chosen by the council from amongst themselves.

According to the latest information contained in the *Tidskrift for Landokonomi*, the managing committee of the co-operative bacon factories in Denmark have recently combined for the maintenance of their general interests. The practice of the associations to accept any number of swine consigned to the factories by their members has been found to operate prejudicially to the bacon trade by rendering the supply unsteady. In some seasons a serious fall in price has been experienced, owing to the markets being overstocked with factory bacon; while, on the other hand, it has frequently happened that, when prices were at a remunerative level, the associations have derived little benefit therefrom, because their members were unable to supply a sufficient number of swine to meet the demand. Steps have already been taken, by the joint committees of the factories, to

remedy these disadvantages, and more attention is being directed to the production of a good class of bacon pig, particularly of that type which finds most favour in the British markets.

The total number of swine in Denmark in 1893 was 829,000, and of this number, nearly 400,000 were owned by farmers in Jutland. The most popular classes of pigs are descended from the large and medium white Yorkshire breed. It was formerly the custom of many Danish farmers to purchase their breeding swine from England, and the best herds are still maintained by the frequent introduction of fresh English blood.

The quantities and values of Danish bacon imported into the United Kingdom during the five years 1890-94 have been as under:—

					Quantities.	Values.
					Cwt.	£
1890	-	-	-	-	470,047	1,846,385
1891	-	-	-	-	583,408	1,590,349
1892	-	-	-	-	675,882	1,931,396
1893	-	-	-	-	719,124	2,171,299
1894	-	-	-	-	766,828	2,189,690

The value per cwt. according to the above figures has ranged from 2*l.* 12*s.* 9*d.* in 1891 to 3*l.* 0*s.* 4*d.* in 1893.

THE DAIRY INDUSTRY IN QUEENSLAND.

The recently published Annual Report of the Department of Agriculture of Queensland for the year 1893-94 contains an interesting statement by Mr. Mahon, the manager, of the Government Travelling Dairy, on the position of the dairying industry in the colony.

In this statement it is shown that, although the home supply of butter and cheese is not sufficient to meet the requirements, the imports of these products into Queensland are decreasing. The decline is particularly noticeable in the case of cheese, as appears from the following table:—

	Quantities imported.				
	1889.	1890.	1891.	1892.	1893.
Butter	lbs. 781,442	lbs. 366,317	lbs. 313,419	lbs. 131,395	lbs. 271,106
Cheese	1,274,310	1,106,762	971,869	700,305	662,081

A travelling dairy was at work in the colony during the year under review, and 276 pupils passed through a course of instruction. When the travelling dairy was first instituted two objects were in contemplation, viz., the provision of instruction in the latest methods of dairying; and the establishment of co-operative factories for the manipulation of milk in large quantities, with a view to the possibilities of an export trade. It is maintained that there can be no doubt that these objects have been to a great extent accomplished. A great improvement is stated to have been observed in the quality of the butter and cheese locally prepared, while a number of butter and cheese factories have been started where, but for the encouragement and assistance afforded by the travelling dairies, there was no prospect of their establishment. These factories, however, are not worked on co-operative lines, but are owned for the most part by companies who purchase the milk outright.

Although an export trade has not yet been realised, the establishment of butter and cheese factories is pointed to as evidence of the near approach of the time when a market outside the borders of the colony will be wanted, and when it will be necessary to provide facilities for storing and exporting these perishable commodities. It is recognised that, if a successful export trade is to be established, it will be absolutely necessary to provide against the export of inferior articles in order to preserve a good reputation for the produce of Queensland.

It seems that at the present time no branch of farming in Queensland offers better prospects than dairying, which it is expected will be considerably developed. Arable farming is not now found to be a profitable undertaking owing to the low prices of cereals.

In May 1894, there were 16 cheese and butter factories and 13 creameries in full swing, an increase of eight factories and eight creameries during the year. Of these, only four factories and one creamery were worked on the co-operative factory system.

The manager of the travelling dairy points out the danger of blending and exporting inferior grades of butter. This, he says, is sure to happen unless some arrangement is made to class and brand the butter before it leaves the colony. A quantity of inferior butter shipped in the infancy of the trade would, he adds, be the ruin of the industry for a number of years. Now that dairying has become one of the most important industries in the colony, and has engaged the attention of farmers and stock-owners everywhere, Mr. Mahon fails to see why immediate steps should not be taken to encourage an export trade. He thinks that an increasing demand at home and an unlimited market abroad must give confidence to those about to enter the business, and although some predict that the export trade is likely to be overdone, Mr. Mahon feels certain that the foreign demand will more than keep pace with the increasing production.

The evils which at present threaten the dairying industry Queensland are stated to be:—(1) want of co-operation; (2) want of attention with regard to the breed of cattle kept for dairying purposes; (3) the defective system of milking; and (4) a most important matter—want of energy in conserving fodder for a time of need.

ANTHRAX.

In April last the Board of Agriculture published the following observations, in the form of a leaflet, for the information of stock owners:—

Anthrax is due to the existence in the blood of a minute rod (bacillus anthracis), which is one of a large family of fungi, and grows from spores or seeds.

Any substance which is brought on to a farm may act as a carrier of the infecting agent: fodder, litter, manure, whether from home or foreign sources, may contain the spores. A water-course may carry the poison. In fact, the channels through which the infecting agent may be conveyed to the susceptible animal are beyond calculation.

Diseased animals do not transmit the infection to others in the ordinary way by association. The organism on which the disease depends must be introduced into the blood through a wound however small, or an abrasion however slight, before the affection can be communicated, and it may be said without exaggeration that the carcass of an animal, dead of anthrax, is more dangerous than a living diseased animal.

Symptoms and Post-mortem Appearances of Anthrax.

In most cases, the first sign of an outbreak of anthrax or splenic-fever is the discovery of a dead animal in the pasture or byre. Probably the animal was left a few hours before in apparent health; at least there was nothing to attract attention, or give any warning of the approaching catastrophe. Occasionally, and in the case of sheep not uncommonly, there are certain premonitory symptoms of an attack of anthrax which can be recognised by an expert. The affected animal is dull, and disinclined to move. If one of a herd or flock is attacked the fact is indicated by the separation of the sick animal from the rest. Close observation will enable the observer to detect an occasional shiver, which seems to pass rapidly over the body, and then ceases. Sometimes a little blood is discharged from the nose and also with the faeces, while from time to time the animal will cease to feed, and stand with the head bent towards the ground. On closer inspection, especially in the case of swine, it will often be found that there is a good deal of swelling under the throat, extending down the neck; and the swollen part will at first be tender to the touch, and hot, but as the disease goes on it becomes insensitve, cold, and clammy. The shivering fits now become more frequent, and perhaps, while these signs are being noted, the animal will suddenly roll over on its side, and, after a few violent struggles, expire.

According to the severity and suddenness of the attack, the post-mortem appearances will vary in degree, but they are tolerably uniform in kind. Under the skin there are usually patches of effused blood, and a considerable quantity of viscid serous fluid will be seen in those parts which were swollen during life. If the cavities of the chest and abdomen are examined, some red serous fluid generally escapes. The spleen is enlarged to three or four times its proper size and is of a deep purple or black colour, soft and easily broken down. Effused blood is also found in masses under the kidneys, and red patches are seen in various parts of the serous membranes. The lining membrane of the intestines is often congested, and the contents are generally mixed with blood; sometimes, indeed, the intestinal canal is almost filled with that fluid.

The symptoms and post-mortem appearances which have been described may, as a rule, be accepted as evidence of the existence of anthrax. But it is very desirable to avoid opening the carcass of an animal which has died of anthrax. The bacillus may be detected by putting a drop of blood from the ear or foot on a glass slide, covering it with a piece of thin glass, and examining it with a magnifying power of at least 400 diameters. The thin rods will appear like short pieces of fine thread crossing each other in every direction, and enclosing the blood corpuscles. This examination may be conducted in the shed or pasture, but in the laboratory staining processes are employed.

Procedure.

The healthy animals on the pasture or other place where the outbreak occurred should be moved under proper restrictions to a convenient place for isolation, and should be examined by a veterinary surgeon every day for a week. If a rise of temperature is discovered in any of the isolated animals they should, as far as practicable, be removed from the rest of the herd until they have recovered.

Slaughter, by a Local Authority, of healthy animals in contact is only justifiable under special circumstances, i.e., where the animals are fat and fit for the butcher, or where the animals are few in number and of little value, or in outbreaks where the disease is spreading rapidly and there are no means of proper isolation.

Antiseptics, such as hyposulphite of soda, have been administered to the in-contact animals with apparent advantage. Medical treatment of animals should, however, only be carried out under the advice and direction of a veterinary surgeon, and with regard to this and other preventive measures it may be said that it is impossible to determine the degree of efficacy which they possess, owing to the fact that anthrax frequently ceases after the loss of a single animal.

Inoculation on the system recommended by M. Pasteur, could not be adopted except by an expert accustomed to operate,

but the results of the operation in this country and elsewhere have not been of such a nature as would warrant the Board in recommending it to stock owners as a means of dealing with outbreaks of anthrax.

Disposal of Carcasses.

Carcasses of animals that have died or been slaughtered affected with or suspected of anthrax should be dealt with by the Local Authority in accordance with the following provisions:—

Either the Local Authority should cause the carcase to be buried as soon as possible in its skin in some convenient or suitable place removed from any dwelling-house and at such a distance from any well or watercourse as will preclude any risk of the contamination of the water therein, and at a depth of not less than six feet below the surface of the earth, having a layer of lime not less than one foot deep beneath, and a similar layer of lime above, the carcase.

Or the Local Authority may, if authorised by licence of the Board, cause the carcase to be destroyed, under the inspection of the Local Authority, in the mode following: The carcase should be disinfected, and should then be taken, in charge of an officer of the Local Authority, to a horse-slaughterer's or knacker's yard approved for the purpose by the Board, or other place so approved, and should be there destroyed by exposure to a high temperature, or by chemical agents.

Before a carcase is removed for burial or destruction as above suggested it should be covered with quicklime. In no case should the skin of the carcase be cut, nor should anything be done to cause the effusion of blood.

It is most important that the carcasses should be left uncut, as the bacillus of anthrax disappears when kept from contact with air. Any method, therefore, of destroying or disposing of the carcasses which involves skinning or cutting up should be avoided. The disease is likely to be spread thereby and, in addition, people engaged in such work run a very serious risk of being inoculated with the disease.

Cleansing and Disinfection.

The following are the provisions of the Anthrax Order of 1895 as regards the cleansing and disinfection of premises in which cases of anthrax have occurred:—

The Local Authority shall at their own expense cause to be cleansed and disinfected in the mode provided by this Article—

all those parts of any shed, stable, building, or other place in which a diseased or suspected animal has been kept or has died or been slaughtered;

every utensil, pen, hurdle, or other thing used for or about any diseased or suspected animal;

every van, cart, or other vehicle used for carrying any diseased or suspected animal on land otherwise than on a railway.

The mode of the cleansing and disinfection of such shed, stable, building, or other place, or the part thereof, shall be as follows:—

All those parts aforesaid of the shed, stable, building, or other place, shall be swept out, and all litter, dung, or other thing that has been in contact with, or used about, any diseased or suspected animal, shall be effectually removed therefrom: then

The floor and all other parts of the shed, stable, building, or other place with which the diseased or suspected animal or its droppings or any discharge from the mouth or nostrils of the animal has come in contact, shall be, as far as practicable, thoroughly washed or scrubbed or scoured with water: then

The same parts of the shed, stable, building, or other place shall be washed over with limewash made of freshly burnt lime and water, and containing in each gallon of limewash four ounces of chloride of lime or half a pint of commercial carbolic acid, the limewash being prepared immediately before use;

Except that where any place as aforesaid is not capable of being so cleansed and disinfected, it shall be sufficient if such place be cleansed and disinfected as far as practicable;

The mode of the cleansing and disinfection of such utensil, pen, hurdle, or other thing, and such van, cart, or other vehicle aforesaid, shall be as follows:—

Each utensil, pen, hurdle, or other thing, van, cart, or other vehicle, shall be thoroughly scraped, and all litter, dung, sawdust, or other thing shall be effectually removed therefrom: then

It shall be thoroughly washed or scrubbed or scoured with water: then

It shall be washed over with limewash made of freshly burnt lime and water, and containing in each gallon of limewash four ounces of chloride of lime or half a pint of commercial carbolic acid, the limewash being prepared immediately before use.

All litter, dung, or other thing that has been removed from any such shed, stable, building, place, van, cart, or vehicle as aforesaid, shall be forthwith burnt or otherwise destroyed or disinfected to the satisfaction of an inspector of the local authority.

In regard to the disinfection of fields and like places in which animals affected with anthrax have died or been slaughtered, there are serious difficulties which cannot be completely removed. A top-dressing of lime is the most simple method which can be employed, and after a month or six weeks the lands may be restocked. But it must be understood that a certain degree of risk is incurred even after a much longer interval, and occasionally it has been found impossible to render contaminated land safe. In the majority of cases, however, the plan suggested will be effectual.

REPORTS ON FOREIGN CROPS.

CROPS IN AUSTRIA.

In a report issued by the Austrian Ministry of Agriculture it is stated that autumn-sown grains were generally in good condition in Austria in the month of April, but in many districts, particularly in Bohemia and Galicia, the crops had been killed out by night frosts, this being more frequently the case with rye than with wheat, rape, or clover.

The spring sowings were reported to be much delayed owing to the unfavourable weather. Operations were begun in the more favoured districts early in April, but for the most part little was done until the second or third week in that month.

Sugar-beet and potatoes will be grown on areas considerably smaller than those of previous seasons.

Meadows were in a very fair condition and a good crop of grass was expected.

Orchards had been injured by the weight of the snow in many districts, and complaints of damage done by hares were received from numerous localities. In most of the warmer districts of the central and southern parts of the Empire, fruit trees were already in blossom. Vines were reported to have come well through the winter.

CROPS IN DENMARK.

According to the *Ugeskrift for Landmænd* the condition of winter grains in Denmark in May was very satisfactory except in a few districts, both rye and wheat presenting on the whole a healthy and flourishing appearance.

Owing to the forwardness of the season, it is stated that in many districts cows were put out to grass early in May. Meadows and pastures appeared to be in excellent condition everywhere. The sowing of roots was in full swing so far as sugar-beet, swedes, and mangolds were concerned.

CROPS IN FRANCE.

From information published in the *Journal d'Agriculture pratique* it seems that the state of the crops in France in the month of April was considered satisfactory. The severe winter does not appear to have injured cereals as much as was feared, except, perhaps, the later sowings, which were reported to have greatly suffered, especially in the districts which were not protected by snow.

The weather experienced in April was especially favourable to the oat and spring-wheat crops. But the cold period which followed the warm days of the early part of May did considerable injury to the crops in many parts of France.

CROPS IN GERMANY.

According to the official report as to the condition of crops in Germany in the middle of April last, autumn-sown grains had come badly through the winter, except in the southern districts. Rye had suffered considerably, a large portion of the crop on heavy soils having rotted under the snow, while night frosts in the early spring had also done much injury. Winter wheat and spelt had been less affected.

Spring sowings were reported to be much delayed in many districts by the sodden state of the soil, and only in a few localities had any progress been made. Clover and lucerne had come through the winter well, while meadows also presented a favourable appearance.

CROPS IN HUNGARY.

The reports published by the Hungarian Ministry of Agriculture relating to the condition of the crops on May 1st indicated that the night frosts and frequent wind storms had injured the young plants in many districts. Winter wheat presented a favourable appearance on the right of the Danube, but in Sieben-burgen and on both banks of the Theiss the crop had been seriously damaged. Rye had suffered considerably through the winter, and the crops will be barely up to the average. Winter barley was reported to promise an average crop on the whole.

WHEAT CROPS IN INDIA.

The Department of Revenue and Agriculture of the Government of India issued, on the 9th March last, a Second General Memorandum on the Wheat Crop for the season 1894-95.

In this Memorandum it was stated that prospects had not changed materially since the issue of the first general memorandum at the end of December 1894. The area sown in the Punjab was estimated at a slightly larger figure, and was believed to be very little less than the extensive area cropped last year. In Bengal and the North-Western Provinces the late rains had retarded sowings and the area under wheat was understood to be in these provinces some 2 and 8 per cent., respectively, below that of 1893-94. A contraction of sowings was also reported to have taken place in the Central Provinces and Bihar and in the southern districts of Bombay. In the north of Bombay, however, the area had expanded, wheat being largely substituted for

damaged cotton, and in Sind the plentiful flooding and rainfall of the year had raised the area under wheat to some 18 per cent. above that of the previous year.

In consequence of the excessive rainfall of the autumn and the prevalent cloudiness of the winter, the crop had in many parts of India been attacked by rust. No reports of the presence of this disease had been received from the Punjab or Bengal, but in various parts of Sind and Bombay, in the Berars and the North-Western Provinces, and more especially in the Central Provinces, the crop had been not a little damaged thereby.

The prospects in the Punjab were good, and in Bengal the outturn was expected to be little short of a full average. In Northern Bombay the outlook was good, and in Sind fair to good, but in Southern Bombay it was generally unpromising, and in Berar an 11-anna crop only was looked for. In the Central Provinces, where the attack of rust, though widespread and rapid, did not commence till late in the season, the early sowings were expected to give a 14 to 16-anna outturn, while it was anticipated that even the later crop, if duly favoured by weather, would probably not give less than a 12-anna yield. The estimates of outturn in the North-Western Provinces and Oudh ranged from a half crop in the east of the united provinces to a three-quarter crop in the west.

CROPS IN ITALY.

In a report published by the Italian Ministry of Agriculture at the end of April, it was stated that the grain crops and grasses were in an excellent condition at that period. Heavy rains had impeded the sowing of buckwheat in many provinces. In some districts of Calabria and Sicily the young plants had suffered from drought.

CROPS IN ROUMANIA.

The condition of winter-sown grains in Roumania as reported by the *Curierul Financiar* at the end of April last was generally satisfactory. In some of the southern districts injury had been done by the floods and the melting of snow, but the inundations soon subsided and no serious loss is anticipated from this cause.

CROPS IN RUSSIA.

An official report upon the condition of crops in Russia on April 13th last indicated that wheat presented a favourable appearance. Spring frosts had given rise to some anxiety in some of the districts of the Volga and the Black Soil or Chernoziom region. In the Wisla Governments the crops had been

to some extent injured by heavy rains. At the date of the report the sowing of spring grains was not completed.

CROPS IN THE UNITED STATES.

The condition of winter wheat in the United States on the 1st day of May, as reported by the Statistician of the United States Department of Agriculture, averaged 82.9 per cent. for the whole country as against 81.4 in the previous month. This average is 1.5 better than that of May 1st, 1894, and 9.1 per cent. greater than that of the same date in 1893. For seven of the principal grain-producing States, the average for winter wheat was 82.3, the range being from 48 in Kansas to 97 in California. In the Southern States the average condition in May ranged from 55 in Texas to 93 in Alabama.

The average condition of winter rye, like that of wheat, had advanced nearly two points since April 1, being 88.7 as compared with 87.0 in the previous month, and 90.7 in May last year.

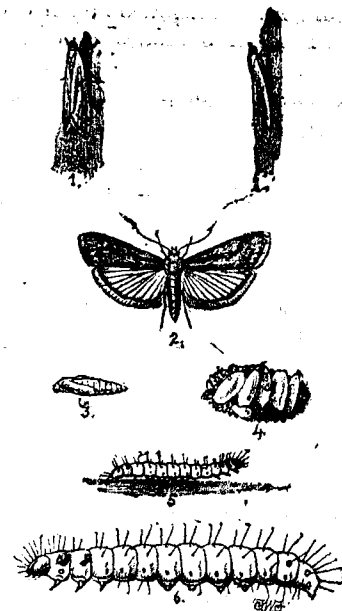
The prospects for rye throughout the rye belt were reported to be fair in May, except in New York, where the weather had been too dry, while in Minnesota and Kansas the crop had been considerably damaged by the severe winter and had not since recovered.

The average condition of winter barley was assessed at 94, against 62.3 and 88.6 in the month of May of the two preceding years. The condition was reported to be lowest in Texas, Indiana, and Iowa, and highest in New York, California, and Oregon.

The proportion of spring ploughing done on May 1 was returned at 82.8 against 83.5 and 73.4 on the same date in the two preceding years.

In his April report, the Statistician stated that the past winter had been a severe one for wheat. Seeding was accomplished at an average date, but in most of the large wheat-growing States the fall was droughty and unfavourable to germination and growth, or to the maintenance of the vitality of the plant. In the middle States, the winter was more favourable and there was ample snow protection. In the south, the winter was an unusually cold one and the plant suffered much from freezing. In the West, the conditions were not so uniform.

INJURIOUS INSECTS AND FUNGI.

THE FLOUR MOTH (*Ephestia Kühniella*, Zeller)*Ephestia Kühniella*.

1. Moth at rest. 2. Flying. 3. Pupa. 4. Grain spun up. 5. Larva.
6. Larva enlarged.

Figs. 1 to 5 inclusive, natural size.

This insect was first noticed in this country in 1887. It is said by some that it has been known longer in Europe than in America, while others assert, on the other hand, that it originated in America. For some time, this species was confounded in America with another species, *Ephestia interpunctella*, but in 1889, Professor Riley stated that there was no doubt of the presence of *Ephestia Kühniella* in North America for at least some years back. This insect appears to have been known on the Continent since 1836—known, that is, to the owners of corn stores and granaries and to millers as more or less troublesome—but not distinguished by entomologists as *Ephestia Kühniella* until 1877, when Zeller designated specimens submitted to him by Professor Kühn as *Ephestia Kühniella*. It was first identified in Great Britain in 1887, though for some time previously it had been doing harm in corn stores and flour mills, and its mischief had been mistaken for that of the Corn Wolf Moth, *Tinea granella*. In 1887, Mr. Barrett gave an interesting account in

the Entomologists' Monthly Magazine of *Ephestia Kühniella*, and stated that he had identified the larvæ of this species found in a bakery near Stony Stratford. Miss Ormerod, however, was the first economic entomologist who described this insect in elaborate detail, and gave exhaustive accounts of its injuries in flour mills and corn stores, with remedies and methods of prevention to be adopted against it.

Since 1887, this moth has been recognised as the author of material havoc in many flour mills in England, by clogging up the spouts of the elevators and parts of the milling machinery with the flour collected in masses by the webs of the larvæ. Great losses are incurred by the disarrangement and excessive wear and tear of parts of the machinery, and of the silks which are used for dressing, owing to the presence of the infested flour, which is transformed into a hard, felt-like substance. Besides this derangement and damage, much loss is sustained in a badly infested mill by the flour actually consumed by the larvæ, or that which is spoilt by their excrements and sticky webs.

In flour stores, considerable injury is frequently occasioned by the flour moth, especially where flour is stored for any time. Flour kept in sacks as imported is often greatly damaged, and the whole grain of wheat, barley, oats, or rye after lying long in infested stores has been found so matted together with the webs of the larvæ as to be almost useless. In France, the biscuits for the use of the soldiers have been seriously attacked in some of the dépôts. According to M. Danysz, who wrote an exhaustive treatise on this moth in 1893,* biscuits infested with these larvæ are injurious to health, and instances are given of pigs and fish having died after eating grain infested with the *Ephestia Kühniella* larvæ. He adds that it is extremely rare to find these biscuits free from infestation at the end of the period of 14 months, for which it is required that the biscuits should be kept before they are served out to the troops.

There has been a rapid increase in the infestation of mills and flour and corn stores in this and other countries, in consequence of the continuously increasing importation and movement of corn and flour between country and country and between localities in each country. The importation and transportation of flour in bags have especially tended to spread this pest throughout this country. Bags and sacks are well known to be the most fertile sources of this infestation, and flour bags particularly.

The modern systems of milling with the elaborate machinery, the continuous working of the mills, and the greater heat in them, have also materially conduced to the rapid propagation of this insect. At the same time, the difficulty of thorough and frequent cleansing and disinfesting mills has been considerably

* *Ephestia Kühniella*: Parasite des blés, des farines, et des biscuits. Histoire naturelle du parasite et moyens de le détruire, par J. Danysz. Paris, 1893.

enhanced. In steam flour mills there is naturally a high temperature in certain parts, and throughout them a higher temperature is maintained than in ordinary mills, which is favourable to the development and rapid spread of the moth.

In 1889, there was a great scare concerning this insect in Canada. It was found to have infested a mill in one of the large Canadian milling centres to such an extent that the mill was closed, and orders were issued by the Government that before the work was continued every part of it and its machinery should be thoroughly disinfested. By this precaution, and the thorough execution of the orders given by the authorities, the mill was soon freed from the insect. But the millers paid little attention to this subject, and in 1890 it had become so common that it was necessary for the Provincial Board of Health of Toronto to send out a circular to apprise the millers that inspectors would be sent to examine their mills and condemn any infested produce therein. Many of these millers were ignorant of the presence of the moth, and of its nature and habits; and without doubt many millers and flour dealers in this country are equally unaware of this infestation. It is unfortunately prevalent in many mills and flour and corn stores, causing great loss and inconvenience.

History and Habits.

The moth *Ephestia Kühniella* belongs to the genus *Ephestia* of the family Phycidæ. It is about an inch across the wings and half an inch long (Fig. 2). It is shown at rest, with its wings folded, in Fig. 1. The upper wings are pale grey with dots or splashes of darker colour, and transverse markings, while the hind wings are glossy white with dark margins. The egg is oval, white, and just discernible without a glass. The female lays a large quantity of eggs. Professor Riley states that an anatomical examination showed the number of eggs in a single female to be 678. The eggs are laid upon sacks and bags containing flour or grain, upon the machinery, and in various parts of the mill or stores. In four or five days, the larvæ come from the eggs. At first, they can hardly be seen, but they grow very quickly, attaining a size generally rather over five-eighths of an inch (Fig. 5). In the early stages they are light red with brown heads of disproportionately large size. Afterwards, they become almost white. Upon the segments, near the head and tail, there are brown patches. They have six feet and ten sucker feet. There are a few bristles on every segment. The larvæ remain in this stage from three to four weeks and even longer in favourable circumstances, feeding upon the flour or upon the contents of biscuits or even upon the grain itself. They produce fine silken webs whose threads are sticky, and to which the flour, or grain or biscuit morsels adhere. After a time, a spongy mass is formed with numerous passages or galleries in which the larvæ live and

move. This mass often assumes large proportions in mills, impeding the work of the machinery and the action of the frames and dressing silks, and spoiling the flour and grain, for some distance round it. Before the larvæ change to pupæ they stray from these congeries and choose some quiet cranny or corner wherein to pupate. The chrysalis, as shown without the cocoon in Fig. 3, is brown, or reddish brown, and is enveloped in a cocoon of silk spun up with grain or flour or branny materials.

Preventive and Remedial Measures.

Cleanliness in mills and stores is essential as a means of preventing serious attacks of this insect. All corners, chinks, partitions, and machinery must be cleansed from time to time when opportunities occur. When infestation is noticed it is absolutely imperative to stop work and to thoroughly disinfest every part of the mills. In infested grain and flour stores, a clearance must be made as soon as possible and every part completely disinfested. Sacks and flour bags are fertile sources of infestation. The former, when emptied, should be subjected to heat in order to kill the larvæ. The latter, unless new or nearly new, may be either exposed to heat or burnt. There is no doubt that much infestation comes in these flour bags imported from many countries, and that the practice of importing flour, which has so enormously increased during the last few years, has tended in an eminent degree to the spread of the Flour Moth throughout the country. Foreign flour comes into grain stores in infested bags, from which the larvæ creep into stored corn or into corn in sacks, which is taken into mills for grinding. Bags and sacks must be regarded with great suspicion, especially those coming from Mediterranean ports.

When a mill is infested, it will be almost impossible to disinfest it without clearing all flour and grain out of the mill. Sulphur fumes will destroy the insects, but at the same time they injure the flour by the sulphurous acid gas acting upon the gluten of the flour and seriously affecting its baking qualities, as well as rendering it unwholesome. According to the Canadian receipt, 3 lbs. of sulphur with 3 ozs. of saltpetre are required for each 1,000 cubic feet of air space. This is put into metal dishes containing layers of burning cinders, and the fumes are retained within the mill by the tight closure of all doors, windows, and air-holes. In Canada it has been found necessary to repeat the sulphuring process in order to effectually clear out the pest.

In destroying the moth in steam flour mills, steam under pressure has been driven through all parts of the machinery, and in some cases over all parts of the building, with considerable advantage. In a report on the Flour Moth by Mr. James Fletcher, the Canadian Government entomologist,

published in the Annual Report of the Ontario Department of Agriculture for 1889, it is stated that, in consequence of an Order in Council, a steam stand-pipe with hose and other connexions was erected on each flat of an infested mill. By closing all doors and windows of each flat and turning on the steam simultaneously in each floor the whole building was filled with hot steam sufficient to kill anything.

Spraying the machinery, walls, partitions, floors, beams, and other parts with paraffin or carbolic acid solutions would no doubt remove these insects, but it would not be possible to use these extensively, as the flour would take up the smell and be spoiled.

It is important that the dressing machinery and the flour elevators should be of modern construction, so that the flour may not be retained in corners and ridges. M. Danysz, in his treatise, insists that round reels should always be used, and not those with six sides. He also points out the importance of fixing a brush on the straps on the elevators to which the cups are fastened, in order to keep the sides clear of flour that would harbour the larvæ.

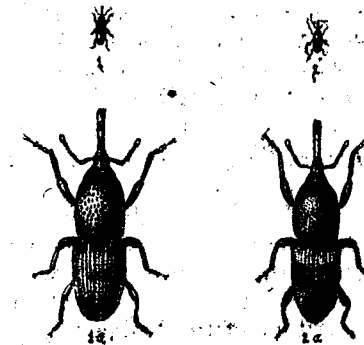
M. Danysz strongly recommends the use of pyrethrum powder, which is the base of several patent remedies used to destroy black beetles, fleas, and other insects. It seems, however, that the insect can only be reached by this powder in the moth stage. It could not affect the chrysalis or the larvæ. As there are constant generations of this insect, at all events in mills where the temperature is high, the process of dusting with pyrethrum must be frequently repeated, and great care must be taken that the powder does not get into the flour.

This flour moth is most difficult to deal with, for obvious reasons occurring to those who are acquainted with its life, history, and habits. Great precautions are required to prevent its entrance into mills and grain and flour storehouses, and when it has gained a lodgment, vigorous efforts must be used to dislodge it.

A miller in a large way of business, whose mills are fitted with machinery of the best and most modern construction, who has suffered much from this moth, believes that "cold air" is the best way of exterminating it. This would entail stopping work for a time and exposing all parts of the mill to the air in cold weather. Exposure for two or three days to frost in winter would effectually get rid of the insect.

There is a species of Ichneumon Fly according to Mr. Klein which destroys this moth, but, so far as can be ascertained, it has not yet been identified.

GRAIN WEEVILS.



The Wheat Weevil, *Sitophilus (Calandra) granaria*. 1. Natural size.
1a. Magnified.
The Rice Weevil, *Sitophilus (Calandra) oryzae*. 2. Natural size.
2a. Magnified.

There are several species of insects which cause serious injury to grain stored in granaries, and to grain during its transit in vessels from one country to another.

The most important of these insects are the two weevils figured above, *Sitophilus granaria* and *Sitophilus oryzae*. Though the latter is called the rice weevil it by no means confines its attacks to rice, and is most destructive to wheat in India and many other countries. It is supposed not to thrive in cold climates so well as its near relative the wheat weevil, *Sitophilus granaria*, but it is found now in most wheat-growing countries in which wheat is largely stored and shipped for export. The wheat weevil, *Sitophilus granaria*, is by no means confined to Europe, it is now found in North and South America and in other countries.

In Great Britain, quantities of both species of these weevils are found in the granaries and corn stores. In the early spring, when the weather is warm, they may be seen swarming on the heaps of wheat, and if the wheat is examined it will be seen that some of the grains have large holes in them in which are either the larvæ or pupæ of the weevil, or the perfect weevils. In some cases, a large number of the grains have been found to be punctured and their contents consumed by the larvæ and weevils.

The annual loss occasioned by *Sitophilus oryzae* in India was estimated in 1888 by Mr. Cotes, of the Indian Museum, in Calcutta, at 150,000*l*. It has been estimated by a correspondent of "Insect Life," published by the authority of the United States Secretary of Agriculture, that in the State of Texas alone there is an annual loss of 200,000*l*. from the same cause.

The world-wide prevalence of grain weevils was fully demonstrated at the World's Fair at Chicago in 1894, as they appeared in

the cereal exhibits of Guatemala, Costa Rica, Mexico, Trinidad, Curaçoa, British Guiana, Brazil, Paraguay, Uruguay, Ecuador, and the Argentine Republic, also in those of the Cape of Good Hope, Liberia, Orange Free State, Tunis, Siam, Ceylon, and Australia, as well as in the show cases of the exhibits of some of the American States. The grain exhibits were shown in cases covered with glass and were practically weevil-proof, but when the weevils, which had been brought in the grain in larval, or pupal, state, appeared in due course, some of the United States exhibitors suggested that they had got into the cases after their arrival at Chicago. On this point Professor Riley says:—"The fact that the exhibitors in charge of these exhibits protested that the weevil was unknown in their respective States counts for naught, since it is a well-established fact that this particular species—rice weevil—is of common occurrence in every state and territory of the Union."

Both of these species of *Sitophilus* are found in granaries and corn stores in Great Britain and are equally destructive. It is rather difficult to distinguish between the *Sitophilus granaria* and the *Sitophilus Oryzae* without a magnifying glass, but there is no doubt that they are both present in nearly equal proportions in this country, and that they do an amount of harm, that is in no degree realised, to grain stored for considerable periods. The weevils in suitable circumstances breed continuously, one generation succeeding another with remarkable rapidity, so that in a heap of grain stored for some time under conditions favourable to the propagation of these insects enormous loss of weight and quality may be sustained. This injury may often be unsuspected unless particular observation is directed to the grain when the heaps are moved and turned. The weevils attack all kinds of corn and malt, but wheat seems to be their favourite grain.

In the course of a recent examination of a sample of white wheat from Australia it was found that at least 35 per cent. of the grains were either actually infested or had holes in them from which the weevils had emerged, or which had been made by the weevils in quest of food. In this sample there was about an equal number of both species of *Sitophilus*.

Life History.

The *Sitophilus granaria* is rather more than the eighth of an inch long, varying in colour from dark red to black. It has a long snout, and its antennæ have elbows with a small oval club at each end. The six legs and antennæ are red. The thorax is somewhat long and has rows of dots upon it. A single egg of a dirty white hue is placed by the female weevil in a grain of wheat, or other grain, after a hole has been bored in it to receive the egg. After the egg is deposited, the female covers the hole with a sticky transparent substance, so that it is difficult to detect it without very careful inspection. A female will lay from 100 to 150 eggs, not all at once but during several weeks.

In about 10 days a white, curved and fleshy grub comes from the egg. This grub has no legs, its horny head is light brown, there are a few small bristles upon the segments near the head and tail. It is nearly the twelfth of an inch in length. It bites away and feeds upon the contents of the grains with its strong jaws until it assumes the pupal state, in which it continues from 8 to 10 days, and then the perfect weevil appears and eats its way out of the grain. The various stages of one generation are passed in from 35 to 45 days, depending upon the temperature. In a cold climate there are two, or at most three, generations; while in hot countries there are continuous successions of generations. Where stored grain is badly affected by weevils, the temperature of the heaps is considerably raised by the heating of the fine refuse resulting from the action of the larvæ upon the grain. In such circumstances, in all probability several generations are produced, even in cool climates. The weevils themselves do as much harm to the grain as the larvæ. They live upon it, and have been constantly seen boring into grains with their snouts. They hibernate during the winter, at least in cold climates, in cracks in the floors, beams, and walls of the granaries and corn stores, from which retreats they may be seen emerging in swarms in situations facing south on the first sunny spring day.

The *Sitophilus oryzae* is not quite so large as the *Sitophilus granaria*. It is rather darker in colour and has reddish-coloured patches upon the wing cases. It is furnished with wings, although it does not appear to make much use of them, at least in this country, whereas the *Sitophilus granaria* has only rudimentary wings. The larvæ and pupæ of each species are almost identical, and the history and habits of each are similar.

Preventive and Remedial Measures.

Wheat stored in very large heaps is not so liable to be attacked as that kept in small quantities, because in the larger heaps, air is excluded and some air is necessary to the weevils. Grain kept in bags or sacks is generally more injured than that in heaps. In India, the natives keep wheat in air-tight pits, and in these, weevils do little or no harm to the grain, although it sometimes remains stored in this way for years. But when the wheat is taken to the "godowns," or granaries, it soon becomes infested with weevils. Grain placed in large heaps must be examined closely from time to time when it is turned. Weevils will be found in the grains nearest the outsides of the heaps.

Small heaps of grain should be frequently turned and moved so that the weevils may be constantly disturbed.

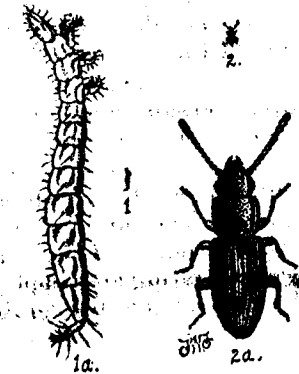
In these days, when imported wheat containing weevils is distributed throughout the United Kingdom, every granary and corn warehouse is liable to be infested by this insect. Grain should not be kept in sacks in establishments where weevils are known to be present.

All granaries and corn stores should be well ventilated and kept as airy and cool as possible. Floors and beams, wooden partitions, bins, and panellings, should be thoroughly scrubbed and washed with thick soft soap solutions. Walls and ceilings should be plastered so as to have smooth surfaces, which should be limewashed from time to time.

As the *Sitophilus oryzae* requires considerable heat, the frequent moving of stored grain, the aëration of granaries and stores and the admission of cold air will stay, or materially check, the actions and multiplication of this species. The same precautions will be to some extent effective against the *Sitophilus granaria*, but unless great care is taken there may be a large and rapid increase in the numbers of this species, and consequent important damage to grain. The fumes of bisulphide of carbon have been proved to be destructive to these weevils, but there is some difficulty in concentrating and applying them, and this could only be done by putting infested grain into receptacles made as air-tight as possible—large galvanized iron tanks, for instance—and placing an open vessel containing bisulphide of carbon on the top of the grain within the tank. As is well known, the fumes of bisulphide of carbon are heavier than air, and will, therefore, soon sink down into, and thoroughly permeate, the whole mass of grain within the receptacle, and destroy all insects therein. From 1½ to 2 lbs. of bisulphide will be required for each ton of grain according to the air-proof qualities of the tank. No harm is caused to the grain, but great care must be taken in handling and dealing with the bisulphide as it is most inflammable. Bisulphide of carbon can be used in bins and other receptacles that are not wholly air-tight, but in such circumstances much more of the substance would be required, and the results are necessarily less satisfactory.

On account of the almost certain introduction of weevils into all granaries and corn stores in imported wheat, it is essential that measures should be taken to prevent British grain from being infested by keeping foreign grain separate, if possible and by thoroughly cleansing and aërating places that are infested. Foreign grain is infested in the dirty granaries in which it is placed before being shipped. Some infestation occurs in the holds of the vessels. This has been somewhat diminished in recent years as the duration of the voyages has been so much lessened, and far greater attention is now paid to cleansing and purifying the holds after grain cargoes have been unloaded. It need hardly be said that it is most important that every effort should be made to keep ships' holds free from these and other pests of similar habits, in order that grain which is put on board clean and free from infestation may not run any chances of becoming infested and damaged during transit.

THE CORN BEETLE (*Lamophlaeus ferrugineus*, STEPH; *testaceus*, PAYK).



1. Larva natural size.
1a. Larva magnified.

2. Beetle natural size.
2a. Beetle magnified.

This beetle, described by Curtis under the name of the Corn Cucujus, *Cucujus testaceus*, does much harm to grain, particularly wheat. It is very often found, in company with *Sitophilus* (*Calandra*) *granaria* and *Sitophilus oryzae*, in wheat that has been for some time in store, as well as in wheat that has just arrived from foreign countries. Some wheat from Australia, recently examined, contained quantities of *Lamophlaeus ferrugineus* and its larvæ, together with a few pupa cases, and many specimens of both species of *Sitophilus*. The larvæ were in the grains of wheat, and at the bottom of the box in which they arrived, but no larvæ of *Sitophilus* were found in this wheat. In many cases the grains were completely cleared out, being mere shells. In this instance, as the wheat had only recently arrived, it must be concluded that the beetles were shipped with the wheat, or that they were in the vessel in which it was brought over.

Last year, foreign wheat which had been lying for some time in a London granary was examined, and found to be swarming with *Sitophilus* weevils and with beetles and larvæ of *Lamophlaeus ferrugineus*. The latter were more numerous and active than the *Sitophilus*, and appeared to be much less influenced by the cold. The *Lamophlaeus ferrugineus* is said to be cosmopolitan, but Professor Riley remarks that its naturalisation in the United States is doubtful. It was found in betel nuts from Johore exhibited at the "World's Columbian Exposition," as noticed in Professor Riley's report. A smaller species of *Lamophlaeus* designated *pumilus* was also discovered in corn and meal exhibited at the same Exposition. This species is seen frequently in this country, but it is much smaller than *L. ferrugineus*, and differs from it in several respects.

Life History.

The *Lamophlaeus* is of a red colour with yellowish shades on the thorax, and rather more than one twelfth of an inch long. In some specimens the colour is almost orange. Its head is dark, and the antennae are fulvous, with 11 joints, and small clubs. The legs are red and the wing cases cover the body entirely. It has jaws with formidable teeth. The wings are used very sparingly, and appear adapted only for short flights. This beetle moves rapidly, and, from observations made of specimens in confinement, it eats and lives upon the contents of the grains, and does quite as much harm as its larvæ.

The larva is about the tenth of an inch long with a narrow body composed of thirteen segments and furnished with three pairs of legs. The tail end is sharply curved upwards, having two sharp brown points at the extremity. It has a brown head with strong jaws. There are hairs scattered somewhat sparsely upon the body. In colour it is a very light brown; in some specimens, or it may be at some period of its life, there is a yellow tinge pervading the body, with brown flecks here and there. It is very active, moving very rapidly, and when it has cleared out the contents of one grain it visits another. It is clear, from prolonged observation of the habits of this insect, that the beetle places its eggs in grain in which holes have been pierced by other insects, and that the larva, when it has devoured the contents left by the first comer, moves on to other grains.

Remedies and Methods of Prevention.

Cleanliness is most important in granaries and warehouses infested with this beetle as well as with other insects injurious to grain, and all buildings of this kind should be frequently washed and cleansed. When a heap of grain is infested it should be frequently moved and got rid of as soon as possible. Many larvæ fall to the ground when the grain is moved, and when the infested heap has been cleared away, cracks and crannies in the floor and walls should be scrubbed well with a mixture of soft soap and water made very thick and strong. This will affect the larvæ as well as the beetles, as they creep into cracks and crevices and pupate there as well as in grain. Carbon bisulphide burnt upon infested grain in large bins made as airtight as possible would kill the larvæ and beetles, but great care must be taken in using this highly inflammable substance.

It would be well, if possible, to run infested grain through cleaning machines immediately upon its arrival from foreign countries, and to destroy the light pierced grains and all refuse from the sieves. Many of the *Lamophlaeus* beetles and larvæ might thus be destroyed.

THE TURNIP FLY AND MUSTARD.

The Board of Agriculture think it desirable to give publicity to the following communication received by them from Sir J. H. Heathcoat Amory, Bart., and to some comments thereon by the Technical Adviser to the Board.

SIR, Knightshayes Court, Tiverton.

HAVING read an article in your Journal some time since on the Turnip Fly, I write to inform your readers that if they they will sow a small quantity of mustard seed with the turnip seed they will never lose an acre of turnips from fly. It is best sown broadcast at the same time the turnip seed is drilled, as it then comes up more quickly than if drilled with the turnip seed. The fly will eat the mustard and leave the turnips, and the mustard may be hoed out the first time the turnips are hoed, as the turnips will then have their rough leaves and be safe from the fly. A very small quantity of mustard seed will be sufficient. I have tried this for more than 30 years and it has never failed.

I am, Sir,

Yours truly,

The Secretary, (Signed) J. H. HEATHCOAT AMORY.
Board of Agriculture,
London, S.W.

Comments by the Technical Adviser of the Board on the above letter.

In some seasons the sowing of mustard seed with turnip, swede, cabbages, cauliflowers, broccoli, and other such plants liable to the attacks of the "Turnip Fly," which is really a beetle, known as *Phyllotreta nemorum*, preserves these plants from serious injury. But in other seasons, when the attack has been very virulent and generations of beetles have succeeded each other quickly, it has been found to be of little value. In ordinary cases it would be decidedly useful to sow mustard with swedes and turnips, because it germinates and comes into leaf before these latter plants, and engages the attention of the beetles until the swedes and turnips get into the "rough leaf" stage, when they are not so attractive to the insects. The beetles do not take to the mustard in preference to the swedes and turnips, but rather that being ravenous they attack the mustard as it comes earlier.

THE PEA AND BEAN WEEVIL (*Sitona lineatus*).

The Pea and Bean Weevil. 1. Natural size. 2. Magnified.

The Board of Agriculture have received complaints of damage done to peas by a weevil, which feeds upon several leguminous plants. This insect is recognised as the Pea and Bean Weevil, to which attention was drawn by the Board in 1892.

Peas and beans are very subject to attacks by this insect, but the injury is frequently attributed to slugs, because the weevil is not by any means easily seen. It is of a dull colour, and falls to the ground on the least alarm. The weevil itself eats the leaves and young shoots of the pea and bean plants, and its larvæ devour their roots. It is often most troublesome in market gardens and allotment grounds, and in some years an extensive reduction in the crops of peas and beans has resulted from its attacks. It has been known also to attack sweet peas in its early stages, and its small white maggots, or larvæ, also spoil "second cuts" of clover by eating the roots of the plants and stopping their growth. Trifolium too, suffers considerably, particularly in its early stages, from the attacks of this weevil, although the injury to this crop is generally attributed to slugs and other insects.

Description and Life History.

The Pea and Bean Weevil is a quarter of an inch long. Its ground colour is dark, but the body is covered with greyish scales, which in some specimens are of a slightly greenish shade. There are three lines of this grey, or grey-green, hue on the thorax, and many lines on the wing cases. The antennæ are of a red colour, very slender, with club terminations. The legs are ferruginous. As Canon Fowler says, "The tibiae of the male are curved and armed with a small hook." It is not known where the eggs are placed. Egg-laying begins in the early spring. The larvæ, or maggots which are white, leg-less, nearly a quarter of an inch long, and somewhat curved, live in the roots of clover, peas, beans, and other leguminous plants, and there change to pupæ.

It is certain that some of the weevils pass the winter in weevil form. Probably, in other cases hibernation takes place in the pupal state, though this is not definitely known. Nördlinger observes that many weevils come from the pupæ at the end of August, and without doubt hibernate in weevil shape. From observation, it is plain that these insects hibernate in the perfect, as well as in the pupal state. Larvæ have also been found at all seasons of the year among the roots of clover. A favourite resort of the hibernating weevils is in the straws of stubble. They are also carried in quantities with peas and beans into ricks and barns. These weevils feed by night as well as by day.

Methods of Prevention and Remedies.

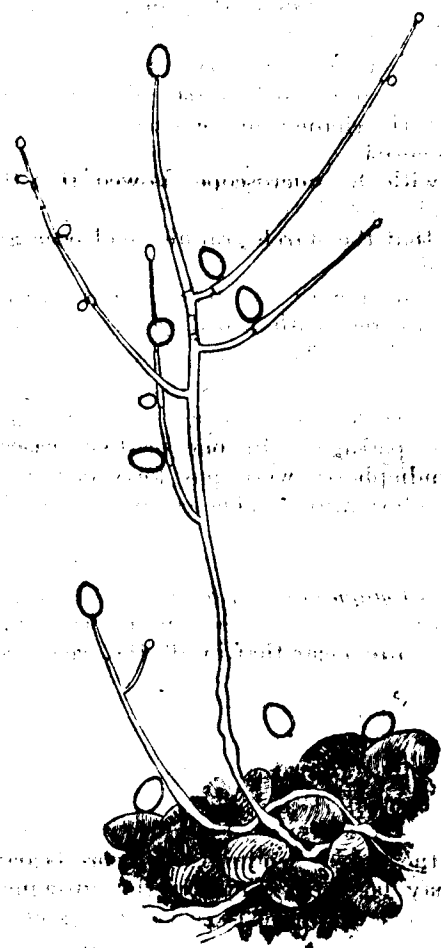
Lime, soot, and lime and soot mixed, may be advantageously distributed over infested plants while the dew is upon them, or after rain. Finely-powdered guano also may be used in this way.

Applications of weak solutions of paraffin, with a little soft soap, would make infested plants distasteful to these insects. These and other solutions can be put on with knapsack-machines. Fine powdery materials also can be easily applied and well distributed with knapsack-machines specially constructed.

When peas and beans are attacked it would be desirable to press the earth tightly and firmly close round the plants, in order to prevent the beetles from coming up from the earth. This might be done by men and boys walking with a foot on either side of each row of plants.

Summer-fallowing of land after an attack would be very desirable. Wheat after clover ley is often infested by swarms of weevils. In this case it would be dangerous to sow trifolium at all. If it is sown the land should be "broad-shared," or cultivated and ploughed. The stubble should be burnt. The burning of stubble, weeds, roots, and rubbish, is comparatively seldom adopted in these days. It is believed that the infrequency of this practice is one cause of the more frequent and more destructive visitations of insects injurious to crops.

Infested clover leys should be deeply ploughed, with a "skim" coulter on the plough, and thoroughly well pressed. Roots on the top should be removed and burnt, not carted to the outside and left in lumps.

POTATO DISEASE (*Phytophthora infestans*) IN THE TUBERS.

A section of infected tuber—x 150.

The dark spots show the starch granules and cell walls brown with disease. The plant, or mycelium, is shown running between the starch granules and the cell walls, and sending up branches bearing conidia or spores.

It has been thought by some observers that a new disease has been discovered in potato tubers, as many specimens examined in the early spring of the last two or three years on being cut through exhibited brown spots permeating them. In most cases these spots were small and distinct. Upon exposure to the air they became confluent after some time, and the whole of the cut pieces ultimately turned to a brown colour. The greater number of the tubers in which brown spots were found displayed no outwardly visible traces of disease, particularly in the early spring. In fact, it was necessary to cut many tubers open in order to obtain specimens. Later on in the season,

when the disease became more intensified, traces of decay were seen upon the outside of some infected tubers. And, generally, it was observed that directly the incipient shoots appeared in the "eyes" of the tubers the disease began to spread. Before this period it was more or less dormant. Even in mid-winter, a few spots, small and much scattered, were found, though there was but little change or progress in the disease until vegetation commenced.

Examination with the microscope showed that the tissues of the tuber in and around these infected spots were brown or sherry-coloured, that the starch granules had been absorbed and the cells broken down.

Thin slices of tuber with the disease spots upon them were placed on glass, covered with a bell glass, and kept at a temperature of 70 degrees. They were examined after an interval of about 60 hours, and, in a few instances, it was found that the fungus had developed mycelium which was burying itself among the intercellular passages. In one or two cases, branching filaments, or conidiophores, were put forth from the mycelium, as shown in the illustration.* The cultivation of the mycelium was, however, most difficult, but sufficient evidence was obtained to prove that the cause of the sherry-coloured spots in the tubers was the *Phytophthora infestans*. There may be other kinds of dark spots in potato tubers due to other fungi or other causes, but it is quite clear that in all the cases examined this season the disease was occasioned by the *Phytophthora*.

In these circumstances it is important, especially after a season when potato disease occasioned by this fungus was so widespread, to remind potato growers that, as pointed out by De Bary in 1863, the disease can be conveyed by these spotty, infected tubers, in two ways. First, by the mycelium of the fungus within the tuber sending out spore-bearing branches whose spores may be carried up by the growing plant, and communicated to plants near or conveyed by insects and animals. This, De Bary admits, may not be of frequent occurrence. But the second is the most important method of infection, viz.:—by the mycelium growing up in due time into the shoots from the tubers, and producing conidia, whose spores may infect many plants near and far by means of wind, insects, and other agencies. It does not always follow that an infected tuber communicates disease to the plant it produces or that it propagates disease in any way, though of course the risk is great when infected tubers are planted.

The disease, as is now well known, is also propagated by means of conidia evolved from "resting spores" which have hibernated in old rotten potato tubers, or haulm, or in other retreats, but it cannot be ascertained whether infection is more largely due to these or to tubers containing the germs of disease.

* Drawn by Mr. Worthington G. Smith.

Advice is freely given, that care must be taken to avoid planting tubers having disease germs within them. In theory, this is correct and valuable; in practice, it is most difficult to carry out. No external sign may be present of the existence of the disease. Large quantities of stored potatoes have been examined which outwardly were clean, sound, and bright. Upon cutting some of the tubers, the brown spots were seen, while other tubers in the clamps were quite free from spots. In various clamps the per-centage of spotty tubers ranged between 10 and 40 per cent.

The only possible mode of avoiding infection in such circumstances would be to reject all tubers too small to be cut for seed, and to cut all the larger tubers and put aside all that were found to be spotty. It should be stated, however, that even if this selection were made there would still be danger, as in some of the tubers that were examined only the slightest traces of disease could be discovered. In some cases, the discolouration was only discernible with the help of a strong glass, and it was noticed that as the shoots grew from the eyes, the disease spots grew larger and more numerous. It was also seen that, when tubers were cut in two, disease spots that were then almost imperceptible, and would probably have been unnoticed by the selectors of sound seed, increased in size remarkably after 36 hours' exposure to air and warmth. Although it has been shown by experiments extending over several years made by M. Girard in France, and by M. Caluwe in Belgium, as well as by experiments made by the Technical Education Committee of the Wilts County Council, and by the experiences of many practical potato growers, that whole potato seed of a medium size gives better results than cut seed, it will be desirable to make this comparatively slight sacrifice rather than to run the risk of having the crop damaged by disease.

Where this precaution of cutting the suspected seed is not adopted, and where the per-centage of spotty potatoes does not in the opinion of the growers necessitate such action, it is most important that preventive spraying with sulphate of copper solutions should be adopted directly the plants are high enough. This will arrest the progress of the disease in any plants that have become infected through the tubers, and save the healthy plants from the infection by arresting the development of conidia.

In view of the fact that planting medium-sized whole seed ensures the best crop, and that clean-looking, smooth, and apparently sound seed may nevertheless contain the disease germs, even though the greatest care is taken in selecting cut seed, it seems to be necessary, in order to avoid any risk of infection, to spray potato plants when they are 2 feet high, as a preventive measure. The results of the experiments in spraying with sulphate of copper, especially in the last season in this country, in Ireland and in foreign countries, prove that this treatment is most

effective, both as a preventive of the potato disease, and as a remedy against it when it has appeared. Many potato growers are so convinced of the value of this treatment that they intend to spray their potato plants systematically, as a part of ordinary cultivation, at certain stages of their growth, whether there is disease upon them or not.

There are horse-machines well adapted for distributing the sulphate of copper solution evenly and in a fine spray over and under the leaves of the plants, taking seven or eight rows at a time. From eight to 10 acres can be sprayed in a day by these machines, whose makers sell them and let them out on hire. Smaller horse-machines, which are suitable for small occupations, have been recently adapted to take three rows only.

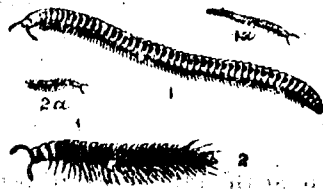
The formula for the preparation of sulphate of copper solutions, or, as it is termed, *bouillie bordelaise*, is 20 lbs. of sulphate of copper, 20 lbs. of lime, and 100 gallons of water. Some put only 10 lbs. of lime to 20 lbs. of sulphate of copper, but it has been shown by M. Girard and other experimenters that 20 lbs., or at least 15 lbs., of lime is preferable to the smaller quantity mentioned, because it is essential to neutralise completely the acid in the sulphate of copper, or the solution will burn the leaves of the plants. It is important also, for this reason, that the lime should be pure, and this applies equally to the sulphate of copper.

Some recommend that 20 lbs. of treacle or molasses should be mixed with 20 lbs. of sulphate of copper, 20 lbs. of lime, and 100 gallons of water, as they hold that the syrup causes the solution to adhere to the leaves. In several cases last year where this dressing was tried side by side with the ordinary sulphate of copper solutions no apparent difference was remarked. The cost of spraying varies according to circumstances, from 7s. 6d. to 10s. per acre for each application.

It will be interesting here to give some extracts from the Report on Experiments on Potatoes carried out by the Technical Education Committee of the Wilts County Council in 1894, to show the advantages of spraying for preventing disease. Twenty-four different varieties were grown, and sprayed twice, on June 25th and July 26th, with a solution of 20 lbs. of sulphate of copper and 10 lbs. of lime to 100 gallons of water. A few days previous to the second spraying, disease spots were noticed over an entire plot of Imperators, whilst all the central plots not sprayed were more or less affected. The weather was very suitable for the propagation of the disease and much damage had already been done to the crops generally in the district at the time of the second spraying. By August 13th, several of the unsprayed plots had entirely lost their haulm, and on September 1st, Schoolmaster, Supreme, and many second early varieties were still green on the unsprayed areas, whilst on September 13th the later varieties seemed hardly touched with the disease, although at this latter date the haulm on the central plots had disappeared. In the case

of every variety but two—Reading Giant and Windsor Castle—the crop of sound tubers was increased by the dressings, the gains varying from 10 cwt. to 5 tons 3 cwt. per acre, and averaging 2 tons 1 cwt. per acre on the 24 plots. The value of the increased crop due to this spraying, at the prices holding when the Report was made, is put at about 6*l.* per acre, and the cost of applying two dressings estimated at about 2*4s.* per acre, leaving the cultivator a difference in his total return of 4*l.* 16*s.* per acre.

"THOUSAND-LEGS." MILLEPEDES. (*Julus guttatus*, Fab.; *pulchellus*, Leach.; *Polydesmus complanatus*).



1a and 1. *Julus guttatus*: natural size and magnified.
2a and 2. *Polydesmus complanatus*: natural size and magnified.

These creatures, which are not, strictly speaking, insects, are doing much harm this year to all kinds of crops in fields and gardens. They have simply swarmed in some districts. Among the crops they have especially attacked are oats, barley, peas, and hops. A piece of oats was examined in which the plants looked sickly and were dying off fast, just as they do when attacked by wireworms. Upon examination, it was seen that there were many "thousand-legs" among the roots of the plants and in the decaying husks of the seeds, as well as in the bulbs and stems from the bulbs close to the ground, evidently feeding upon the plants. An occasional wireworm, it is true, was noticed also close to the bulbs of some plants, but as at least 40 per cent. of the plants were affected, this was not nearly sufficient to account for the serious harm caused to them. In the plants where wireworms were found the soft juicy stems from the bulb had evidently been bitten asunder. In other cases the plants appeared to be suffering from exhaustion of juices from the attacks of several "thousand-legs" collected round each plant. Barley plants were attacked in the same manner. In hop stocks showing manifest signs of weakness, which were putting out somewhat few and spindly bines, quantities of "thousand-legs" were found, as well as wireworms. It was clear that the former were in the sound and sappy parts of the stocks, as well as in decayed and decaying parts, and that they were injuring the plants by their action. It is supposed that they live upon vegetable substance in a decayed and decaying, as well as in a growing, state, but they were evidently feeding upon the sap of the hop stocks in the cases examined recently, and with regard to the corn and pea plants there was no decay except as to the husk of the germinated seed.

There were at least three species of "thousand legs" at work on various crops, but those chiefly in evidence are figured above, viz., *Julus guttatus* (Figs 1 and 1a), called by Curtis the "snake" millepede and the "beautiful snake" millepede; and *Polydesmus complanatus* (Figs. 2 and 2a), termed by Curtis the "flattened millepede." The former belongs to the genus *Julus* of the *Julidae*. It is of an ash grey colour, and has rows of crimson spots upon each side of its body. The latter, belonging to the genus *Polydesmus*, has a lilac hue which is somewhat lighter under the body. These creatures are propagated by eggs, and, according to Curtis, they do not become full grown until they are two years old.

"Thousand-legs" were also noticed in quantities at the roots of lettuces and peas which were plainly suffering from their attacks.

It has been found that a mixture of soot and lime, in the proportion of 1 bushel of soot to 3 bushels of lime, is useful in the case of oats, barley, peas, and other field and garden crops, and kainit of potash, at the rate of 4 cwt. per acre. In infested peas the dressing was sown broadcast and hoed in. Ground rape-cake, rape dust, was found useful in infested oats and barley.

Traps of pieces of mangel wurzel, or potato, or carrot, put close to the infested hop stocks were found of much value both for trapping "thousand-legs" as well as for wireworms. Both of these insects are attracted by the juiciness of the baits and collect upon them in quantities. The traps should be examined from time to time, and the "thousand-legs" brushed off and destroyed.

Carbon bisulphide would be equally efficacious against thousand-legs as against wireworms if it could be applied properly, by means of suitable injectors.

It is difficult to account for the great abundance of "thousand-legs," as well as of wireworms, this season, unless it be that the wet summer of 1894 favoured their development. It is clear that they can withstand the action of severe cold, after the Arctic weather of the last winter.

GENERAL AGRICULTURAL NOTES.

TIMBER TRADE OF VICTORIA.

The *Melbourne Weekly Times* states that the timber trade of Victoria has not hitherto had the attention it merits. Although parts of the country, and notably Gippsland, devote themselves to the trade, which is proving profitable, there has not, until lately, been any attempt made to export Victorian timbers. It is known that the Colony can produce, like the other provinces of Australia, wood which, when properly ripened and seasoned, is unequalled, save by rare and costly timbers. It seems that experts, who are thoroughly acquainted with Victorian timber, have declared that it is admirably adapted for innumerable purposes and would command large sales in England. An announcement has already been made that Australian timber has been found eminently suitable for paving purposes, and it is now further stated that the Victorian timber will suit very well for railway sleepers, and that the railway companies in the United Kingdom will be prepared to do business if the Victorians can meet them somewhat in prices. A proposal has lately been put forth that an application should be made to the authorities in New York, and other great American cities, for leave to put down in one of the principal streets, as a practical test, a pavement of timber grown in Australia.

DAIRYING AND BEEKEEPING IN SOUTH AUSTRALIA.

The Board of Agriculture have recently received a copy of the annual report on the work and proceedings of the Agricultural Bureau of South Australia for the year 1893-94.

As regards the dairy industry of the colony, it is stated that very satisfactory progress was made during the period covered by the report, particularly in the direction of the establishment of private and co-operative creameries. The Butter Bonus Act is said to have largely assisted in this progress, but the chief factor seems to have been the very low price of wheat, which compelled farmers to divert their energies to more profitable channels. About 300 tons of butter were exported, and it was anticipated that this quantity would be, in all probability, doubled during the next season. Attention is directed to the gratifying reception accorded to South Australian butter in foreign markets, and the opinion is expressed that it will be excelled by few, if any, competing butters when the industry becomes more extended and fully established in South Australia, the climate and natural pastures of which are reported to be most favourable to the healthy rearing and keeping of dairy stock.

In respect of bee-keeping, it is stated that the expectations, which had been entertained, that a market would soon be opened in England for the surplus honey products of the colony have not been fulfilled. It seems that many inquiries have been made by travellers for British provision merchants, but they cannot be referred to any firm in South Australia which will undertake to receive, grade, and consign honey and wax, and the output at present is not sufficiently large to tempt any English firm to establish a depôt for these products alone. The total yearly production of honey in South Australia is estimated at about 600 tons, and, at the date of the report, it was calculated that probably 200 tons were held in stock, which would be gladly sold at 2½d. to 2¾d. per pound free on board at Port Adelaide. It is believed that with caution in grading, and proper treatment in the markets, there would be an excellent outlet for South Australian honey in Great Britain.

CREAMERIES AND CHEESE FACTORIES IN NOVA SCOTIA.

The Secretary for Agriculture for Nova Scotia, in his report for the year 1894, calls the attention of the parties interested to the following extract from an Act passed on the 12th day of February 1894:—

"Any person, firm, or association establishing and maintaining a creamery and cheese factory in Nova Scotia shall be entitled to receive from the Provincial Treasury the following sums: two hundred dollars in the first year in which such creamery and cheese factory shall be in operation; one hundred dollars in the second year, and one hundred dollars in the third year. Provided, however, that these grants shall not be paid for more than three factories in any county. No grants shall be paid to any factory established after the first day of January 1899."

Regulations have been made for carrying out the provisions of the Act which provide that the minimum production of butter at one factory for which a grant shall be paid shall be not less than one-third of the product of two hundred cows, and that for the second and third years the creamery shall be operated for a period of not less than five months of each year.

During the first year of its operation the creamery may be limited to the making of butter alone, without disqualifying for the grant, but during the second and third years both cheese and butter are to be made at suitable seasons and in reasonable proportions.

The grant of two hundred dollars under the Act, for the first year in which a creamery shall be in operation, will be paid to the person, firm, or association in whose name the original application was made, after the creamery has been continuously in operation for a period of not less than one calendar month, to the satisfaction of the Secretary of Agriculture, or such person

as may be appointed by the Provincial Secretary to examine into its efficiency. The grants for the second and third years will be paid at the end of each of such years, and will be dependent upon the continued and efficient working of the creamery, as shown by a statement of the work actually done during the year, under a statutable declaration of the manufacturer, owner, or secretary before a justice of the peace.

An annual report of the operations of the year will be required from all creameries participating in the grant under this Act, such report to be transmitted before the 30th September of each year to the Secretary for Agriculture.

DAIRYING IN CANADA.

In his report for the year 1894, the Minister of Agriculture for the Dominion of Canada states that dairying yielded fair returns during the year. The price of cheese was slightly lower than in 1893. This is attributed mainly to the report that an unusually large quantity of cheese was made in Great Britain during the summer. The demand for Canadian cheese was steady; and its reputation as a wholesome pure food of fine flavour and rich quality is said to have gained ground. There is, it is maintained, much less difference between the qualities and values of the cheese from the different provinces and the different sections in each than used to prevail. The methods of manufacture are now nearly uniform throughout the whole Dominion, and while the districts which were formerly backward are now nearly abreast of the foremost in quality of product and in market price obtainable, the dairymen in the districts which were formerly far ahead have also been the gainers by the general improvement.

A moderate increase is reported in the manufacture of butter in co-operative creameries. It is pointed out that some better accommodation for the shipment of butter to Great Britain in summer will have to be provided, or cold storage must be more generally used for holding butter at a temperature about or under freezing point from the time when it is a few days old. It is regarded as important that Canadian butter should win and hold as good a name for excellence as has been gained by Canadian cheese.

Meetings of farmers, conventions of dairymen's associations, conferences, and similar gatherings for the discussion of agricultural and dairying topics were attended as usual in the different provinces by the Dairy Commissioner and his assistants.

As the climate of Canada imposes a period of at least six months during which cattle must be fed in stables, more attention is being given every year by dairymen to the growth of

Indian corn as fodder. Fed either as weather-dried stover or as ensilage, it is reported to be a juicy, wholesome, cheap feed for milking cows, and the possibility of growing heavy crops of it nearly everywhere in Canada, puts the farmers in the Dominion on an equal or better footing in regard to the cost of production than their competitors in other countries where cows can be fed on pastures for a longer part of the year. In some places, horse beans have been grown with satisfactory results as a fodder crop. On the Central Experimental Farm at Ottawa, as much as 12 tons per acre of green fodder of this valuable plant has been obtained.

The comparatively new departure in dairying, in the fitting-up of cheese factories for manufacturing butter from October until May, is reported to have made good progress. Two winter dairying stations were established in Ontario in 1891, under the charge of the Dairy Commissioner. During the winter of 1893-94, seven of these butter-making stations were conducted by the dairying service of the Department, and preparations have been made for conducting 10 during the winter of 1894-95, including the dairy schools at St. Hyacinthe, Quebec, and Kingston, Ontario. A large number of cheese factories were fitted up by the proprietors for the manufacture of butter during the winter. This new industry is now considered to be fairly well established in the province in Ontario, and well introduced into the other provinces. Attention is called to the fact that the direct revenue from the sales of butter is not the only advantage which results to the farming interests from an extension of winter dairying. By its means the number and quality of the cows which can be reared and kept upon farms are respectively increased and improved; and by the use of the skim milk and butter milk large numbers of swine can be reared and fattened.

DAIRYING IN FINLAND.

According to a statement published in the *Tidskrift for Landokonomi*, it appears there are 856 dairies in Finland, of which a large number are so small that they are chiefly worked by means of hand-separators, but, in addition to these, there are in many butter-exporting districts numerous peasants who keep cows, and who produce what is known as "peasants' butter." The exports of butter from Finland have grown from 1,984,400 lbs. in 1856-60 to an average annual export of 17,600,000 lbs. in 1891. Fifty years ago, the butter exported from Finland was exclusively peasants' butter, which was chiefly sent to Germany, and partly to Russia and Sweden. After 1860, dairies were introduced upon the Holstein principle, and better butter began to be exported to St. Petersburg. About 1885, a large number of dairy factories were established in West Finland,

with the object of producing butter for the English market which was shipped from Sweden, or directly to England, and later partly through Copenhagen. More than half the butter now exported is shipped to Copenhagen, while the remainder is chiefly consigned to St. Petersburg and Sweden. Some of the Finnish butter is said to be transhipped at Copenhagen for the English market, but the greater portion is consumed in Denmark as "household butter," thus setting free a corresponding quantity of Danish butter for export.

AGRICULTURAL EXPORTS FROM VICTORIA.

The Department of Agriculture of Victoria has recently published an interesting report on the prospects of trade with India, China, Japan, and other countries, in dairy products and other Victorian products and manufactures.

Two officials of the Department of Trade and Customs were directed by the Government to visit Colombo, Madras, Bombay, Calcutta, Rangoon, Penang, Singapore, Batavia, Sourabaya, Hong Kong, Shanghai, Nagasaki, Kobe, and Yokohama, for the purpose of securing, if possible, increased exports of the products of Victoria.

The Commissioners left Melbourne on the 13th January 1894, taking with them samples of preserved meat and rabbits, hams mincemeat, concentrated milk, butter, cheese, jams, marmalade, preserved fruits, tomato sauces, flour, compressed forages, and seeds.

In order to bring the products of Victoria prominently under notice, and to carry out the object of the mission the more effectually, public displays were held at Colombo, Madras, Bombay, Calcutta, Singapore, and Hong Kong. Advertisements were inserted in the newspapers, and special invitations to attend were issued to the Governors, the principal civil and military officers, merchants, traders, residents, and representatives of the press of the various countries visited. It was also found necessary to print catalogues and price-lists for the use and information of those who might desire to communicate with producers and vendors in Victoria.

In the report of the results of this mission, it is stated that the measure of success attained at the several places visited was, on the whole, very satisfactory, and an increase has already been noted in the exports of Victorian products to the Eastern countries visited.

The Commissioners state that no Victorian product attracted more attention than butter. They found that the principal classes of butter at present imported into Ceylon, India, the Straits Settlements, Java, and Hong Kong were of French, Danish, and Italian manufacture, while in Shanghai and Japan, American butter appeared to have the largest sale.

The best Victorian butters are, it is maintained, undoubtedly superior to those with which Eastern countries are at present supplied.

As regards cheese, the principal supplies for Ceylon and India are apparently obtained from the United Kingdom, while Burmah and the Straits Settlements import also from Holland, France, and Germany. In Shanghai and Japan, American and Canadian cheeses are said to be the most popular, while in Java, Dutch cheeses are preferred.

The samples of cheese which were taken from Victoria kept in excellent condition, and are reported to have been highly approved of by merchants. The samples were ten pound loaves, packed in husks in tins. The husks were removed in Colombo, and the cheeses were replaced in the tins without any packing, but in this state a tendency to sweat was observed, necessitating exposure to the air at intervals.

The samples of Victorian hams were also much appreciated, and should find, it is thought, a ready market in the various places visited, as they are said to compare favourably in quality and price with the hams imported.

It seems that there is a large demand in the East for hams and bacons of good quality and reasonable prices.

Detailed information is also given regarding various other articles of food in relation to the countries visited.

In concluding their report, the Commissioners remark, as regards the sale of Victorian products among the populations of the East, that vigorous and personal representation and extensive advertising, combined with careful and judicious management, are required to arouse interest. The establishment of depôts by a combination of producers and manufacturers would, it is imagined, result in their reaping the full benefit of the profit accruing from the sale of their produce.

It is suggested, as a necessary and important condition of success, that the goods should be equal in quality to the samples, and that attention should be paid to the packing and shipment, so that the articles may arrive in good condition. Sufficient attention, it is added, has not been given in the past in Australia to these matters of detail, and supplies from other countries have been obtained in preference to Australian, principally because every care has been paid to these points.

FLAX GROWING IN CANADA.

The Minister of Agriculture for Canada, in his report for the year 1894, calls attention to a branch of agriculture assuming proportions that bid fair to bring it prominently into notice, viz., the cultivation of flax, both for the value of the seed as well as of the fibre. Farmers in the Dominion are invited to consider the advisability of growing this crop for seed in Manitoba, and

both for seed and fibre in Ontario. The price realised by the flax-seed in 1894, the yield of which in Ontario is estimated at 10 bushels per acre, was from 4s. and upwards per bushel, the fibre being also valuable. In Manitoba, nearly double the amount of seed is raised, but the fibre in that province has no value. It seems that the Mennonite settlers in Manitoba grow flax in large quantities, the seed finding a ready market in Ontario. As an example of the demand for the seed, it is mentioned that the flax mills of Baden in Waterloo County paid out 30,000*l.* to the Pembina Mennonite settlers for this seed this year. These mills extract linseed oil from the seed, and the residue, known as linseed-cake, finds a ready market in Europe. The mills above-mentioned export 100 tons of this cake per week to the United Kingdom. Very little is, it appears, consumed in Canada, only an occasional car-load being sent to Quebec for feeding purposes, where it realises 5*l.* per ton.

The Mennonites sow flax as a catch crop after they can no longer sow wheat in the month of May, or on land newly broken by the process of simple harrowing. Not more than half a bushel of seed is used to the acre, experience having shown that by sowing it thinly, the plant bushes out so as to obtain the largest possible amount of seed. As the seed is very small in size, one half bushel to the acre is said to give to that area a larger number of grains to the acre than a bushel and a half or possibly two bushels of wheat. Where the object is to obtain fibre, it is recommended that the soil should not be too rich, and that the flax should never be grown on the application of fresh manure. It is asserted that the richness of the soil in Manitoba accounts for the fibre not possessing the strength of that grown in Ontario, and the same fact is reported in many of the Western United States, where hundreds of thousands of bushels of flax are grown for the seed alone, the fibre being found to be useless. The manager of the Baden mills expresses the opinion, based on long experience, that flax could not be considered an exhausting crop as respects the soil, but the land requires to be kept perfectly clean. Clean land is the test insisted on, rather than richness of the soil, the latter not being favourable to the growth of fibre, although conducive to large yields of seed. These are conditions which seem to make the crop particularly valuable on the rich prairies of Manitoba and the North-west for the seed product. Owing to the drought of last summer in Manitoba, flax sown in May by the Mennonites did not come up until June, but subsequently its growth was very rapid, and the seed ripened well. This rapidity of growth is considered to render the crop a valuable one for the short seasons of the Canadian North-west, and if the seed grown there possesses the properties of the Baltic seed, grown in similar conditions as respects land and climate, it may have a very considerable value for export to meet the growing demand for the products of this industry.

COMPOSITION OF GENUINE MILK.

The Twenty-third Annual Report of the Local Government Board contains a reference to the results of a systematic investigation, which was mentioned in a former Report, into the composition of genuine milk, made under the direction of Professor Bell, formerly Principal of the Laboratory of the Commissioners of Inland Revenue. The milk of 240 cows was examined, and it was found that the "total solids" in the milk of individual cows ranged from 10.3 to 17.2 per cent. Under Dr. Bell's superintendence another systematic investigation has since been made. In this later inquiry, the milk of 273 individual cows and the mixed milk of 55 dairies was examined. Dr. Bell states that, in each case, the cows were thoroughly milked in the presence of one of the assistant analysts of the Government Laboratory, and the genuineness of each sample can be substantiated. The samples, which embrace the milk of country farms as well as of town dairies, were collected over a wide area; and the breed of the cows, as well as the kind of food on which they were being fed, was duly noted.

The results showed that while there had been a sensible improvement in the quality of milk since the previous investigation 10 years ago, as regards the proportion of fat, the non-fatty solids were in substantial agreement with the results obtained from the samples previously analysed. It is pointed out that 17 per cent. of the samples from individual cows fell below 8.5 per cent. in non-fatty solids, though in very few cases did the per-centage fall much below this figure, and that the proportion under 8.8 per cent. amounted to over one-third of the total number, while in the case of the mixed milk of dairies more than one half of the samples fell below 9.0 per cent.

The average composition of the milk of the 273 cows was as follows:—Total solids, 12.90; solids not fat, 8.91; fat, 3.99. The average composition of the mixed dairy milk was:—Total solids, 12.96; solids not fat, 8.96; fat, 4.00. The total solids in the milk of individual cows was, however, found to range from 10.33 to 15.83 per cent., and it is observed, therefore, that if between these limits a high standard were fixed, the result would be to condemn much genuine milk, while, if a low standard were adopted, pure milk would be watered down to it.

Mr. Carter Bell, the public analyst for Cheshire, in referring to the undesirability of fixing a very low standard for milk, states that he has visited many farms in Cheshire and Lancashire, and has had hundreds of cows milked in his presence, and has rarely found an abnormal sample of milk. He is of the opinion that the farmers of Cheshire may feel perfectly safe that no prosecution could ever take place in the county for naturally poor milk, as it has been his custom for nearly 20 years to follow up poor cases of milk to their source, and only in one instance does he remember a case which did not come up to a very low standard. In this particular instance, the inspector

was asked to obtain a sample direct from the cows, which sample corresponded with that first analysed. Dr. Carter Bell then visited the farm himself, and found five half-starved cows, which were nothing more than animated bundles of bones. The cows were milked in his presence, and the analyses of the milk again corresponded with the former analysis. Dr. Carter Bell observes that it must be perfectly patent to all that the milk supply of the United Kingdom is not to be brought down to correspond with such samples as he has named. From the hundreds of samples he has himself seen taken from the cows, and subsequently analysed, he finds the average composition of the Cheshire milk to be:—Total solids, 13.32; solids not fat, 9.81; fat, 4.01.

It is interesting to compare this with a report made by a chemist to one of the large London dairies upon the milk supplied during the last 12 years, which represents the results of analyses of over 120,000 samples. The average composition of this large number of samples was as follows:—Total solids, 12.9; solids not fat, 8.8; fat, 4.1.

AGRICULTURAL HIRINGS.

The *Labour Gazette* of May contains some information relating to the agricultural hirings in Northumberland, Durham, and Scotland. At the Northumberland Hirings, the wages obtained are reported to have been generally similar to those of last year. Men who remained in their places were taken on at the old rates, and new comers who could provide women workers commanded the same sum, but single men had sometimes to take a slightly smaller rate at some markets. At the Darlington Hirings, men who received 17s. a week in 1894 received 16s. this year, but no reduction was made in the wages of those who received 16s. last year.

In Northumberland and Durham, the engagement is, it is stated, usually a yearly one in the case of men, and the employers are bound to pay them the agreed weekly wages in any circumstances, no matter how long the farm servant may be incapacitated by illness, unless it be of a permanent character. Women are also engaged by the year, and, although their employers are not bound to pay them for days on which they do not work, they are bound to pay them their agreed wages for any days on which they choose to offer themselves for work.

As regards the half-yearly hirings in Lanarkshire, Selkirk, and Stirlingshire, the rates of wages obtained were, it appears, generally similar to those obtained in the same period of 1894.

The rate of wages prevailing at the Northumberland yearly hirings is reported to have been from 15s. to 17s. At Hexham, 19s. to 21s. was paid, and 17s. to 20s. at Newcastle-on-Tyne. At the latter place the dominant rate of wage was stated to be 18s. 6d. In the Newcastle district, there are a number of dairy

farms, and it seems that the higher wages are chiefly paid to the men employed upon them, on account of their having to commence work earlier in the morning. In all cases in Northumberland, labourers are provided with a house and garden, and 1,000 to 1,200 yards of potatoes. Their coals are carted, and they sometimes receive manure for the garden or straw for pigs. At Alnwick, boys received from 10s. to 12s., and at Rothbury, up to 14s. per week. Women got from 1s. 6d. to 1s. 8d. a day in summer and 1s. 3d. to 1s. 4d. in winter, or 1s. 6d. all the year round, with 2s. 6d. or 3s. a day for 20 days during harvest. At Newcastle and Hexham, they got 1s. 3d. to 1s. 4d. per day, and 2s. 6d. per day during the harvest.

At the Durham Hiring at Darlington, hinds are reported to have obtained 16s. a week, with an additional 1s. a week in the case of those who could stack. Their perquisites consisted of a house and garden and 40 stones of potatoes, and the cartage of their coals. Women were usually hired at the rate of 1s. a day, and 2s. a day at harvest, with 3d. an hour overtime.

At the half-yearly hirings in Scotland, the wages paid include in each case board and lodging. The wages offered for best ploughmen at the Lanarkshire Hiring were from 14l. to 17l., and from 8l. to 12l. for second-class ploughmen. Lads got from 5l. to 7l. Best dairymaids received from 8l. 10s. to 10l. 10s., second-class from 7l. to 8l., whilst girls obtained from 3l. to 4l. At the Stirlingshire Hiring, the same rate of wages for best ploughmen prevailed, but second ploughmen got from 10l. to 13l. Boys from 1l. 10s. to 4l. The best dairymaids received from 9l. to 10l., and the second class from 7l. to 8l.; girls got from 1l. 10s. to 5l. At both these hirings, married ploughmen engaged by the year received from 18s. to 20s. a week, with house, garden, and coals carted. At the Selkirk Hiring, single ploughmen obtained from 9l. 10s. to 11l.; lads, 7l.; boys, from 3l. 10s. Women for outdoor work got from 9l. to 10l., and 8l. for indoor work.

AGRICULTURAL LABOUR IN APRIL.

The *Labour Gazette* for May contains the usual monthly report of the agricultural correspondent of the Labour Department of the Board of Trade on the condition of agricultural labour during April. It is stated, on the basis of information relating to 202 parishes in England and a report from an Agricultural Labourers' Union, that employment was, generally speaking, regular throughout England, farm work having been backward in a number of districts and the weather fine. Extra labour had been difficult to obtain in some localities, especially in potato growing districts, but reports of irregularity of employment were exceptional. A seasonal rise in wages was reported in April from certain districts in Cumberland, Lan-

cashire, Cheshire, Worcestershire, Warwickshire, Suffolk, Essex, Cambridgeshire, Norfolk, Lincolnshire, Bedfordshire, Hertfordshire, and Kent.

In some parts of Lancashire, wages of day labourers changed in March from 15s. to 18s. a week, and wages throughout the Fylde and Garstang Unions ranged from 16s. to 20s. Satisfactory reports as regards employment were furnished from Northumberland, Cumberland, Westmorland, Durham, Cheshire, and Derbyshire, and from certain districts in the unions of York, Malton, and Easingwold. The wages of day men in the Penrith district of Cumberland ranged in March from 12s. to 14s. with food, this being a rise of from 2s. to 3s. a week, while in the Nantwich and Tarvin Unions of Cheshire, they had risen from 14s. and 15s. to between 16s. and 18s.

Employment is reported to have been regular during the month of April in certain unions in Shropshire, Nottinghamshire, and Rutland. Equally satisfactory conditions appear to have prevailed in Northamptonshire and Worcestershire. In Warwickshire, work was regular in the Alcester Union during April, but some men are stated to have been in want of work at Stratford-on-Avon. Reports furnished from certain districts in Huntingdonshire indicated that employment was of a satisfactory nature. The information relating to wages in the midland counties showed that there had been a rise of one to two shillings a week in the wages of ordinary labourers.

As regards the eastern counties, it is stated that work was regular in all the unions of Lincolnshire and in most of those in Norfolk, to which the reports related. In Essex, satisfactory reports as regards regularity of employment were received from certain districts in the Tendring, Braintree, and Colchester Unions, but in a few parishes, some men were reported to be in want of work. In Suffolk, there seems to have been regular employment for able-bodied men. A few reports from several parishes mentioned some slight irregularity of employment. There was no want of employment in Cambridgeshire. In most districts in the eastern counties from which reports were received, there had been a rise in wages of 1s. to 2s., and in some parts of Lincolnshire of 1s. 6d. per week.

The information collected for the home counties showed that, on the whole, employment had been generally satisfactory, although, in a few districts, men were reported to be in irregular work. In some of the unions of Bedford and Hertfordshire there had been a rise in wages of 1s. a week. In two parishes in the Hollingbourne Union in Kent, a rise in wages is reported of 3s. to 4s. per week.

In two unions in Dorset, and three in Wilts, work was regular, and similar reports were received from districts in Gloucestershire, Somerset, and Cornwall, although at Camborne, in the Redruth Union of that county, some labourers are said to have been in irregular work in the month of April.

BEEF PRICES IN AMERICA.

In an article in *Bradstreet's* of April 20th, the recent recovery in prices of American beef is attributed to the scarcity of cattle and to the poor quality of the beasts brought to market. Attention is particularly directed to the significant decline in the numbers of live animals in the United States, and the following summary is presented of the numbers and values of farm animals in that country, according to the estimates of the Agricultural Department at Washington, on January 1st 1895 and 1894.

Number of Farm Animals in 1894 and 1895.

Live Stock.	1894.	1895.	Increase or Decrease.	Per-centage of Increase or Decrease.
Horses - - -	16,081,139	15,893,318	- 187,821	- 1.17
Mules - - -	2,352,231	2,333,108	- 19,123	- .81
Milch cows - -	16,487,400	16,504,629	+ 17,229	+ .10
Oxen and other cattle -	36,608,168	34,364,216	- 2,243,952	- 6.13
Sheep - - -	45,048,017	42,294,064	- 2,753,953	- 6.11
Swine - - -	45,206,498	44,165,716	- 1,040,782	- 2.30
Totals - - -	161,783,453	155,555,051	- 6,221,402	- 3.85

Aggregate Value of Farm Animals in 1894 and 1895.

Live Stock.	1894.	1895.	Increase or Decrease.	Per-centage of Increase or Decrease.
	£	£	£	
Horses - - -	153,844,960	115,346,116	- 38,498,844	- 25.0
Mules - - -	29,246,563	22,185,567	- 7,060,996	- 24.1
Milch cows - -	71,799,732	72,520,345	+ 720,613	+ 1.0
Oxen and other cattle -	107,357,949	96,599,826	- 10,758,123	- 10.0
Sheep - - -	17,837,222	13,337,153	- 4,500,069	- 25.2
Swine - - -	54,076,925	43,900,253	- 10,176,672	- 18.8
Totals - - -	434,163,351	363,889,260	- 70,274,091	- 16.2

It is shown that among the several decreases shown in the numbers compared with a year ago, the heaviest proportion of falling-off was in the class of "oxen and other cattle," from which the larger part of the beef supply of the country is obtained. The fall in the number of beef cattle is 6.13 per cent., while in sheep it is 6.11 per cent., and in hogs 2.30 per cent. As regards values, a small gain of 1 per cent. is observed in milch cows, but there was a decrease in beef cattle of 10 per cent., of 18 per cent. in hogs, and of 24 to 25 per cent. in horses,

mules, and sheep. The fall in value exceeded in all cases the decrease in the number, and while the aggregate decrease in numbers of all animals was less than 4 per cent., there was a fall in value of more than 16 per cent. A table is given showing the decline in value per head of different kinds of live stock in the twelve months, as follows:—

Live Stock	Average Value. 1894.	Average Value. 1895.	Increase or Decrease.
	£ s. d.	£ s. d.	£ s. d.
Horses - - -	9 19 3½	7 11 2½	- 2 8 1
Mules - - -	12 19 0½	9 18 1½	- 3 0 11
Milch cows - -	4 10 8½	4 11 6½	+ 0 0 10
Oxen and other cattle -	3 1 1	2 18 7	- 0 2 6
Sheep - - -	0 8 3	0 6 7	- 0 1 8
Swine - - -	1 1 11	1 0 8½	- 0 4 2½

It seems the number of beef cattle in the United States on January 1 of this year was smaller than at any similar period for seven years past, while their value was estimated to be the smallest for 13 years past. The number of sheep is stated to have been the smallest for 15 years, and their value the lowest on record. Hogs were fewer on January 1, 1895, than at any similar period since 1883, and, with the exception of 1891, their value was the lowest recorded for 10 years past. It is pointed out that the low prices had stimulated exports, the numbers of cattle exported from the States being 359,278 in the fiscal year ending 30th June 1894, against 287,094 in 1893; and those of sheep 132,370 against 37,260; while for the eight months ending February 1895, the exports of cattle were 242,847 against 187,837 in the eight months ending February 1894,—six times as many sheep being also exported in the later period. It is claimed, therefore, that such figures furnish the requisite basis for an advance in values such as has occurred, and it is contended that the circumstances generally do not favour the assumption that the late improvement in values is due to an artificial combination by a "beef trust" to push up prices.

EXTRACTS FROM DIPLOMATIC AND CONSULAR REPORTS.

AGRICULTURE IN EGYPT.

Lord Cromer's annual report on the progress made in the various administrative departments of the Egyptian Government during the year 1894 contains some details relating to the agriculture of Egypt.

It seems that although the out-turn of wheat was hardly up to the standard of previous years, the Egyptian agriculturist had little to complain of regarding the quantity and the quality of his produce in 1894. What did affect him seriously was the heavy fall in the price of agricultural products of all kinds. For each and every crop the price obtainable was the lowest ever before reached. As regards the wheat crop, the return realised is now so low as to make it scarcely worth cultivating it if any ordinary expenditure be thereby entailed. What has saved the cultivation of wheat in Upper Egypt up to the present is that it costs comparatively little; it is sown broadcast upon the slime, and left to itself until the time for reaping arrives. No ploughing or manuring of the fields is necessary. It is pointed out, however, that should prices fall much lower it is difficult to see how the lands under flood irrigation, and which produce one crop a year, can be profitably cultivated.

Egypt possesses a College of Agriculture which is now in its fifth year. Students who were first admitted completed their four years' course of study in June last, and were examined by external examiners appointed by the Ministry of Public Instruction. Ten out of a class of 22 succeeded in passing the final examination, and eight of these obtained situations connected with agriculture.

Samples of foreign barleys grown on the college experimental plots were sent to several English brewers, who are said to have valued two varieties of the same at not less than 30s. per quarter: a price greatly in excess of that obtained for native barleys. It appears that 20 acres of these two varieties have been sown, and arrangements made for the malting of the produce in England.

Analyses of the natural manures of the country, show that large clay deposits, long used as manure in Upper Egypt, contain nitrate of soda as the principal ingredient, an average of 5 per cent. being present in the 45 samples examined in the chemical laboratory. This would account for the value of the clay as a manure, although the nitrate of soda present is in too small a proportion to pay for its extraction and export.

The white scale-insect (*Icerya Egyptiaca*) is reported to have greatly increased in the gardens of Cairo in 1894, while those of Ghizeh have been kept comparatively free from the pest by the introduction of the New Zealand lady-bird (*Vedalia cardinalis*). Preparations are being made to supply colonies of these lady-birds to other gardens.

AGRICULTURAL DEPRESSION IN SWITZERLAND.

The Board of Agriculture have received some information through the Foreign Office from Her Majesty's Minister at Berne respecting the condition of agriculture in Switzerland.

Mr. F. R. St. John states that at a time of agricultural depression such as that which now obtains at home, where it has been occasionally attributed to the existence of large estates, and to the system of farming out the land, one may observe with profit how matters stand in Switzerland whose institutions are commonly held out as models for other nations to follow, and where, with very few exceptions, the soil is cultivated by proprietary peasantry. He directs attention, therefore, to a recent article in the *Neue-Züricher Zeitung*, from which it appears that fully one-half the aggregate net revenue from the arable land of German-speaking Switzerland is paid away in premiums on land mortgages. The unfortunate cultivating proprietor, who formerly was able to eke out, in spite of such hindrances, a scanty pittance by means of cottage industries, in which he was assisted by the whole of his family during the long winter months, is now deprived of these resources by the establishment everywhere of larger industries, with the result that falling prices of agricultural produce, render his position daily more desperate, and the necessity of discovering legislative means of arresting the evil even more imperative.

THE PEASANTRY AND PEASANT HOLDINGS OF POLAND.

Mr. Henry Grant, Her Majesty's Consul-General at Warsaw, has lately prepared for the Foreign Office a Report on the Peasantry and the Peasant Holdings of the Kingdom of Poland.

The first part of the Report consists of an historical account of the condition of the peasants before 1864. The second part consists of summaries of the three Ukases of 1864, which dealt

respectively with (1) the land occupied by the peasants, and their grazing and forest rights; (2) the compensation to the landlords; (3) the rural municipal institutions.

The results of these Ukases are dealt with at considerable length in the Report, which finally refers to the present condition of the peasants in Poland.

Mr. Grant states that during the 30 years that have elapsed since the peasants became freeholders, their condition has undoubtedly improved, and they are now a fairly prosperous class, but this is due more to the fact that their wants are small and easily satisfied from the land they have received and the forest and pasture rights bestowed upon them, than to any improvement in the system of agriculture or development of personal activity and industrious habits.

Apparently, the principal want of a Polish peasant is fuel. So long as he has enough wood to keep his stove going in winter he is satisfied. His holding, however small, provides food enough for his family and cattle, and a sheepskin fur in winter, with a cheap suit or two of "baika" (fustian) in summer, is all he requires in the shape of clothing. He is not, therefore, disposed to exert himself to make money by using his spare time in the service of others, and only high wages will occasionally tempt him out of his home; even then he has to be hard pressed by the females of the family. The only service which he appears to perform with a certain pleasure and at comparatively low wages is that of beater during the winter shootings, when he is satisfied with from 4d. to 7d. per day.

The average yield of a peasant's holding under corn is not much more than half of what it is on the farms of the landed proprietors, principally owing to the fact that while the latter manure one-sixth, the former cannot do more than one-tenth.

One of the reasons for this is that in the winter the peasants generally have more cattle than they have fodder for, and that most of the straw which should be used as litter has to be chopped up as food, to the detriment of the quantity of manure produced.

The average extent of the peasants' holdings appears to be about 20 acres, but in the Government of Suwalki there are peasants who have gradually accumulated as much as from 800 to 1,200 acres, without, however, ceasing to belong to the peasant class. As a rule, the peasants hide any money they may make, and it is only brought out when there is an opportunity of buying land.

Some of them are said to have enough money to complete a purchase, others raise it on mortgage generally from the Jews. But the Government, ever watchful of their interests, and desirous of seeing as much land as possible pass into their hand, provided the peasants, or at least tried to provide them,

six years ago with the means of easily buying land without having recourse either to their own pockets or to those of the Jews. This was done by the extension to the Kingdom of Poland, of the "Peasants' Land Bank" of Russia, with facilities infinitely greater than those given to the Russian peasants. This bank, however, has not yet had the desired result, but a reform of the statutes, with a view of removing the difficulties which prevent the institution from working properly in Poland, was announced by the official organ of the Government of Warsaw, the *Warschawski Dniownik* of the 22nd December 1893, and the deep interest taken by the Government in the question makes it probable that the reforms will before long be effected.

One of the great difficulties is that when an estate is sold, and subdivided in lots among the peasants, the statutes of the Bank require that the amount advanced should be mortgaged on the whole property, each holding thus becoming responsible for the others. This solidarity, which probably has its origin in the system existing in many parts of Russia, where the peasants hold property in common, is repugnant to the Polish peasant, who does not want to answer for anyone but himself.

[*Foreign Office Report, Miscellaneous Series, No. 355. Price 2½d.*]

AGRICULTURE IN FRANCE.

A Report on the Agriculture, Bounties, and General Trade of France, compiled by Sir J. A. Crowe, Her Majesty's Commercial Attaché at Paris, has been issued by the Foreign Office.

The Report states that the position of agriculture in France is, no doubt, better now than it was in 1893, but the progress which has been made is by no means satisfactory to persons connected with the management of land. Not that in France depression has been felt without energetic artificial means being applied to its cure, but that in spite of the energy and variety of the remedies applied, recovery is not anything like what sanguine people expected.

Notwithstanding all efforts, the general and universal complaint is that agricultural produce—viz., cereals, butter, cheese, wine, sugar, cattle, sheep—has fallen in price to such an extent that little or no margin of profit remains to the producer.

Reference is made in the Report to the discussion on agricultural depression in France during the debate, in February last, in the French Chamber of Deputies, on the Budget of the Agricultural Department. In this debate, the principal speakers pointed out that the continued depression of agriculture was proved by the absence of all trace of cultivation

on thousands of acres of land and the gradual migration of labourers into towns. Attention was drawn to the constant shrinking of French exports, and compensation was demanded of the State in the shape of measures for opening up completely the markets at home. Reforms in the system of agricultural credit and insurance were advocated, and a wish was expressed that an income-tax should be substituted for the land-tax; reductions, too, were asked for in the amount of excise charged on wine and cider.

Sir J. Crowe remarks that as regards the gradual migration of labourers into towns there is no doubt that Paris and other large cities attract the unemployed of the country districts. But facilities of locomotion are now so great that a regular ebb and flow of labour is established. When work is scant in Paris, country hands take their departure in large numbers and return to their villages, where they are better able to eke out a livelihood than elsewhere. But there are trades carried on in the capital which are subject to regular interruptions. Masons and carpenters, and men in auxiliary trades, return from cities to the country in the cold season, and the population of the country is thus almost as fluctuating as that of towns.

Apparently, no recent statistics exist to show that depreciation of property is progressing in France. No doubt farmers are still being evicted, as they refuse to renew leases on old terms, but farmers are not so numerous as they are in other countries. In 1882, the surface cultivated by owners was 47,869,000 acres, as against 24,700,000 acres cultivated by farmers under leases. Since 1882 the number of farms has probably diminished. Farmers in 1882 were under 200,000 in number, a very much smaller class than the tillers of their own soil. Evictions would only show that landlords are still desirous of getting rid of tenants from whom they can no longer expect to get sufficient rent. As to the price of land, Sir J. Crowe has been informed, on excellent authority, that the lowest ebb has been reached, a turn of the tide is noticeable, some tendency towards progress is apparent, and the country is gradually beginning to recover. For years, property has been losing the value which it had half a century ago. Incomes have been reduced in the same ratio as they had previously increased. It is now felt by economists that where money has become so cheap that gold investments yield only 2½ to 3 per cent. it would be vain to hope that land will not follow the same course. Gold has depreciated; land has done the same, and its produce has followed the fortunes of land and capital.

The number of small holdings paying from 23 s. to 50 fr. (2½d. to 2l.) a year to the State is 12,000,000, while 2,000,000 holdings pay over 50 fr. (2l.). The fact that there are but 14,000 owners of landed property in France taxed for their land at the rate of 1,000 fr. (40l.) and upwards appears to

dispose of the assertion that large domains are being re-constituted, and that minute divisions of small holdings are no longer taking place.

In 1882, there were about 2,151,000 holders of land in France tilling their own property, and 3,525,000 freeholders who not only cultivated their own ground, but hired small farms in addition, or acted as servants, *metayers*, or daily labourers. In 1862, tillers of their own soil numbered only 1,813,000. Sir J. Crowe states that there has been a further increase of independent land proprietors since 1882, and the tendency of small agricultural landlords has been to increase, with the result that sub-division has continued and not fallen off.

In summarising the state of agriculture in France in 1894, Sir J. Crowe says that the agricultural fortune of that country is concentrated on wine, spirits, corn, cattle, sugar, butter, cheese, market gardening, and silk, and it may be stated generally that there is little prosperity to be found in any of these branches of production.

Breeders of stock affirm that though value has increased since the disastrous drought of 1893, consumption has diminished, whilst prices have but imperceptibly risen, and imports have increased whilst exports fell.

Sheep breeders vainly tried to recoup themselves for losses in wool by increased attention to animals yielding abundant meat. Butchers note that meat fell in price 7 per cent. in 1892, 3 per cent. more in 1893, and that there is at present no symptom of revival. Similar depressing accounts are given of silk, butter, and cheese.

Sir J. Crowe concludes that agricultural depression exists in France, and that its results are seriously felt; but he states that it is not easy to give a trustworthy account as to the severity of the depression.

[*Foreign Office Report, Annual Series, No. 1498. Price 2d.*]

WHEAT GROWING IN FRANCE.

The following information on the cultivation of wheat in France is contained in Sir J. A. Crowe's recent report on the agriculture of that country, to which reference has already been made.

The area under wheat in France, which was 17,000,000 acres in 1862-71, and 17,290,000 acres in 1882-88, was, according to the latest statistics, 17,468,377 acres in 1893, and more rather than less in 1894.

The quantity of wheat produced in continental France during 10 years past has varied from 41,250,000 quarters in 1884, to 34,375,000 quarters in 1893, and 42,780,000 quarters, mostly

soft and of poor quality, in 1894. The average production has been 38,271,000 quarters, and the average import 5,271,000 quarters. France is dependent on supplies from abroad for an average quantity of 14 per cent. of her own production.

At the outset, protection was advocated by agriculturists as a boon, because, it was said, the consumer would not bear, or feel the incidence of the tariff, and customs duties would help to maintain prices at figures satisfactory to growers.

The progress of the import duties may be traced for thirty years past. In 1861 the sliding scale which had been enacted in 1853 having been abolished, a tariff duty of 1s. 0½d. per quarter of wheat was enacted. The country remained quiescent and satisfied with the result till 1881 when a new tariff was passed by Parliament introducing protective duties for French manufactures on a large scale. Agriculturists began to agitate for a share of protection for land produce; and, in 1885, the duty on wheat was raised to 5s. 2½d. per quarter. The arguments used to justify this change were that growers would be enabled to transform their plant, and improve their methods of cultivation, so as to prevent rapid fluctuations of price and, to meet the competition of cheap labour and abundant yields in the United States, India, Australia, and Russia.

Wheat in 1884 was quoted at 35s. 1d. to 37s. 11½d. per quarter. In 1885, under the influence of the new duty, prices rose to 37s. and 39s. 3½d. per quarter. But this was not considered satisfactory. Agriculturists asked for more protection, and got it. The duty on wheat was raised on March 30, 1887, to 8s. 8½d. per quarter. At first the effect was an advanced quotation of 43s. 7½d. per quarter, but this did not last. In 1889, 41s. 10½d. per quarter was quoted, in 1890, 41s. 6½d. per quarter, a temporary rise brought prices up to 48s. 10½d. per quarter, and then they fell suddenly to 34s. 10½d. per quarter. On February 27, 1894, the duty was further raised to 12s. 2½d. per quarter. But the market having been stocked in anticipation by an extraordinary import of 3,208,000 quarters of wheat during January and February, prices continued to fall; and when wheat was 30s. 6½d. per quarter in Paris, and 21s. 10½d. per quarter at Marseilles, agriculturists, taking no account of overstock, continued to demand a further increase of duty to 17s. 5½d. per quarter, or the re-establishment of the sliding scale. Yet, Sir J. Crowe points out, the figures of imports of wheat must have shown that France cannot supply herself; that in spite of the duty France, since 1885, has taken 2,750,000 quarters, 3,208,000 quarters, 3,687,000 quarters, 5,042,000 quarters, and in 1891-92 as much as 8,708,000 quarters and 8,250,000 quarters from abroad, and that if the import fell to 4,583,000 quarters in 1893, it rose again to 5,500,000 quarters in 1894. In 1880, when there was practically no duty, the import did not exceed 9,167,000 quarters.

It is regarded as a natural consequence of the protection enacted in favour of cereals that millers should ask for some compensating privileges. M. Cochery in his budget report for 1895, said "Millers always require, whatever the harvest may have been, an addition to the home supply. They grind a certain quantity of hard dry grain which is not to be found in France. This grain is mixed with native French wheat which millers consider to be too moist and too soft to produce bakeable flour."

For the mixtures which millers consider necessary to meet the deficiency in French crops, speculative importers hold large quantities of grain in bond, which is either entered for consumption direct or admitted free of duty under certain conditions. The quantity admitted free enjoys that privilege on condition that it shall be exported as flour. Corn growers complain that the flour exported is not the honest outcome of the milling. They also complain that bonding is unfavourable to them so far as it allows speculators to hoard wheat free of duty till the moment when it can be thrown on the market with advantage to speculators and detriment to the home grower.

Another grievance of French agriculturists is said to be that of railway rates which, it is alleged, favour import through-traffic, and impose differential burdens on home-grown corn. Steps have been taken by the Government to remedy some of these defects. Corn bonding will, it is stated, be limited to six or even two months. Private bonding will be reduced to a minimum. Millers will not be allowed to export flour that has not been certified as the produce of foreign grain; and all tariffs of penetration are, or will be, abolished. As regards the effects of these measures, Sir J. Crowe observes that it may be easily shown that if bonding is suppressed or curtailed, it will diminish the earnings of shipowners and railways, while milling, in which after all Frenchmen are largely employed, will lose some custom. If, again, the proposal should be adopted to re-establish the "surtaxe d'entrepôt" for cereals, ships will no longer be able to call at intermediate ports for orders, and a new barrier will be raised against persons engaged in navigation.

Whilst the cultivation of wheat and other cereals tends to increase rather than decrease throughout the whole of France, such is the decline in prices that growers are practically at their wits' end. As regards the great food product, wheat, depression and shrinking of price have been co-existent with an increase in the area of the sowing. No attempt has been made to meet the difficulties of the situation by changes in methods of growing. The Government have done their best to urge and to advocate measures tending to improve cultivation by providing the use of pure chemical manures, showing how prime cost may be reduced and yields be multiplied. Concurrently, the legislature has enacted a series of new duties for the purpose of protecting French producers from competitors abroad.

Yet it is stated on good authority, says Sir J. Crowe, that no mistake could be greater than to suppose that, because the sale of wheat is dull and languid and its price is low, the margin has been reached at which a profit cannot be realised. For it is maintained that wheat can be sold without loss, even at 3s. 11d. per bushel, if only a large yield per acre can be obtained.

It is for this reason that the efforts of the French Government are directed to an extension of the benefits of agricultural education.

[*Foreign Office Report, Annual Series, No. 1498. Price 2d.*]

AGRICULTURE IN ALGERIA.

A report has lately been published by the Foreign Office on the commerce of Algeria for the year 1893-94, prepared by Sir R. Lambert Playfair, Her Majesty's Consul General at Algiers.

Regarding the agriculture of Algeria, it is stated that the growth of cereals has always been the staple industry, but of late it has become unremunerative, and the returns, both from European and native culture, are very small.

The harvest of 1894 was fairly good, but the cultivators complain that they could not sell their produce at remunerative rates. The Vice-Consul at Philippeville reports that in his district wheat only fetched from 19s. 6d. to 19s. 9d. per quarter, barley 12s. 6d. to 14s. 5d. per quarter, and oats from 17s. 7d. to 19s. 9d. per quarter, prices utterly insufficient to repay the cost of culture.

The value of the crop in 1894, plentiful as it was, was barely sufficient to pay off the old debts, and left nothing for the farmers to live on.

It is observed that whatever can be done to increase agricultural returns must greatly add to the riches of Algeria, considering that 1 per cent. of the ordinary harvest represents a value of 72,000l.

It seems that agriculture is still in a very rudimentary condition, no manure is used, and, amongst Arabs especially, the rudest possible implements are in ordinary use. All that the Government can do is to supply seed corn of superior quality, and this it has done, giving it gratuitously both to European and native cultivators on condition that they sow it separately and preserve the result as seed for the following year. Soft wheat has been given to Europeans and hard wheat and barley to Arabs.

Extensive experiments are being continued, both in regard to cereals and to forage plants, but the Experimental Station, which it has been determined to organise, has not yet been created.

[*Foreign Office Report, Annual Series, No. 1507. Price 11d.*]

CULTIVATION OF ALFALFA HAY IN CHILE.

Mr. J. W. Warburton, Her Majesty's Consul-General at Valparaíso, in a recent report to the Foreign Office, states that among the most important of the agricultural products of Chile is "alfalfa" (*medicago sativa*), a species of lucern. In the districts where there is little rainfall it takes the place of grass in irrigated meadows. It is also dried like hay or clover and compressed for purposes of carriage, and forms the chief food of cattle and horses in the dry provinces. Alfalfa hay or "pasto" is said to be exceedingly nourishing, but perhaps more fattening than British hay, and therefore the latter would probably be more suitable for horses if it could be procured cheaply. But it is excellent food, and horses get little else except those of the richer classes. Chilian oats are stated not to be of good quality, and barley takes their place, but alfalfa hay is the chief food for stock.

Alfalfa, which in the drier districts is grown entirely by irrigation, is enormously productive, three and even four crops a year being taken. Mr. Warburton has been informed on excellent authority that such is the richness of the soil, that many of the alfalfa meadows have been worked for from 12 to 16 years without being tilled or the plants renewed; and without being manured.

A description is given in the report of a not unusually large alfalfa farm, the Pirque Estate, near Santiago.

On this farm there are nearly 6,000 acres laid down with lucern and the actual production is 1,500 bales a day. This, it is expected, will be augmented to 2,500. The plant consists of thirty-five champion mowers, twelve rakes, sixty carts, each with a carrying capacity of forty bales, six chaff cutters, three machines for cleaning and separating the hay into classes, two French horizontal pumps, three American vertical force pumps, four hydraulic presses, each with a pressure of sixty tons, and a 60 horse-power turbine.

The farm buildings consist of two sheds, each 65 by 22 yards, which contain the machinery and serve as stores for the pressed hay, and are lighted by electricity. There are, besides, carpenters' and blacksmiths' shops and storerooms.

The stock on the estate comprises 500 oxen for the carts, 220 horses for the mowers and rakes, and 200 for the use of the head waggons and overseers. There are, in all, including animals for breeding purposes, 2,500 horses and cattle, and 8,000 sheep.

[Foreign Office Report, Annual Series, No. 1516. Price 2½d.]

AGRICULTURE IN VENETIA.

Mr. Edward de Zuccato, Her Majesty's Vice-Consul at Venice, in his last annual report to the Foreign Office, states that the protective duties have, so far, not improved the general condition of agriculture in the Venetian provinces. The small farmers are reported to be oppressed with taxation which they are unable to meet, and the land is daily falling into the hands of rich capitalists to the detriment of the general welfare.

The condition of the peasants, more especially of the day labourers, continues, therefore, to be miserable in some of the Venetian provinces, and a not inconsiderable number of families with their young children are, it appears, yearly driven from home from lack of food, and emigrate to America.

A few rural banks, to lend money to villagers for agricultural purposes, were opened in Venetia in 1883 on the system successfully started in Germany, in 1849, by Herr Raiffeisen. These banks are becoming more and more popular, their chief advocates and supporters being the Venetian clergy.

[Foreign Office Report, Annual Series, No. 1496. Price 2d.]

FRENCH EXPORT OF EGGS AND POULTRY.

In his report to the Foreign Office, for the year 1894, Mr. Frank Lethbridge, Her Majesty's Vice-Consul at Caen, states that there was a decrease in the quantity of eggs shipped from his district to the United Kingdom in consequence of the English markets being so largely supplied by imports from Italy and many other parts of Europe. The prices in English markets were so low that shippers found a larger return from the Paris market, the French protective duties making importations of this article from other European countries unprofitable.

For the same reasons there is said to have been a decrease in the exportation of poultry. The high price of meat in France made the natives willing to pay higher prices than those obtainable in London, even for geese to which the French taste is not partial.

The continued increase in the price of meat, especially mutton, is, it appears, causing a great deal of complaint from people of small means.

[Foreign Office Report, Annual Series, No. 1506. Price 2½d.]

AGRICULTURE IN THE ARGENTINE REPUBLIC.

In a report, which has been recently published by the Foreign Office, on the condition of the Argentine Republic during the year 1894, Mr. William Gastrell, Her Majesty's Vice-Consul at Buenos Ayres, states that agriculture in the Argentine Republic is a subject which has only become interesting in recent years, during which it has increased so immensely as to now occupy a foremost place in the internal economy of this formerly essentially stock-raising country. The increase of area cultivated has been astonishing in the last few years. In 1869, cultivation only covered 180,000 acres; in 1891, the probable area was 7,500,000 acres; and in 1894, it was estimated to be double that amount, or 15,000,000 acres.

The area suitable to cereals has been calculated at 375,000 square miles, of which only 5 per cent. are now cultivated, so that there is practically unlimited room for extension in the future. Stock-raising now covers most of that area, and is not likely to be replaced by agriculture to any great extent except near railways and waterways, especially as the price of wheat in Europe has fallen so low as to leave but a small profit now to the wheat grower, notwithstanding the cheapness of land and labour. The Republic ranked, in 1893, as the third most important wheat-exporting country in the world, and, in Mr. Gastrell's opinion, it might well soon take a second place but for the over-production of wheat, which will, it is maintained, restrict the increase in Argentina as elsewhere in consequence of the very low price of wheat in Europe.

Maize was formerly the chief crop, but wheat is now estimated to form 50 per cent., if not more, of the total crops. Its development has been most remarkable, for, as late as 1880, 177,000 tons of wheat were imported into the Argentine Republic, whereas, in the year 1893, over 1,000,000 tons were actually exported, and in 1894, the export was expected to be at least 1,500,000 tons. This quantity would have been still larger but for the failure of the maize crop, in consequence of which much wheat was used in the country which would otherwise have been exported.

Seasons are variable in the Argentine Republic, and it is to be remembered that too much rain may easily spoil a crop by causing weeds and straw to be very luxuriant, whereas a cold, dry winter and spring makes the plant strong and thick on the ground. Drought is not so much to be feared, but hot winds in spring, or late frosts, and locusts early in the season, can cause much damage.

According to Mr. Gastrell, the crop of 1893 would have given more for export, but in January 1894 a large amount of stacked wheat was destroyed by rain owing to the wretched manner of stacking "header cut" wheat, and the absence of any sort of

thatching. The high price of maize caused wheat to be used much more largely for feeding purposes than usual.

Notwithstanding the low prices prevailing in the English markets in 1894, there was, it is said, a net profit to growers in the Argentine Republic varying, according to estimates, from 1s. to 8s. per quarter.

The cost of producing wheat in Argentina varies much and depends largely on whether the wheat grower employs his own family or hires labourers; also, on whether his land is near a railway and port of shipment. Mr. Gastrell holds the view that even if the profit should fall lower still, the colonists would go on wheat growing as it is the thing they now understand best, and by which they can, at any rate, live comfortably, though not making fortunes as formerly. At present prices wheat-growing pays the Argentine colonist well enough, and as it is the only business for which he is equipped it is certain that he will keep on at it for some years whatever the level of prices may be.

The quality of wheat in the last few years, owing to greater care in selection and shipping, is said to have much improved, and it is interesting to note that River Plate wheat was, during 1894, nearly equal in price to the United States red winter wheat, in spite of the damage done by rain to the crop.

[*Foreign Office Report, Annual Series, No. 1495. Price 9d.*]

THE AGRICULTURAL EXHIBITION AT MONTE VIDEO.

The Board of Agriculture have received information from the Foreign Office to the effect that the Agricultural Exhibition at Monte Video, to which the Board directed attention by notices issued through the press in October and November 1894, was formally inaugurated on the 12th of March last. In a memorandum on the subject, Mr. Alfred Grenfell, Her Majesty's Consul at Monte Video, states as follows:—

"The Exhibition in general is doubtless a very fair display of the productive resources and capabilities of Uruguay. The range of useful products is also as wide as could be shown, in all probability, by most countries under similar conditions of civilisation and practical experience in agriculture, and embraces products of both semi-tropical and temperate climates. But the industries for the conversion of these raw products to immediate use are still very immature.

"The pastoral industry, being by far the greatest in the Republic, naturally monopolises the largest share of the Exhibition. The show of live stock is below what might have been expected, and by far the finest animals exhibited are those that have been imported of late years for breeding pur-

poses, but the produce of these in no way do justice to their sires or dams. This may easily be accounted for, as experience and knowledge in fine stockbreeding are somewhat wanting in Uruguay.

"In the agricultural sections there are good qualities of cereals, especially wheat, maize, and barley.

"The most remarkable advance is clearly visible in the wine industry, and a fair show of good if not fine wines manufactured in the country forms a very interesting part of the exhibits.

"The machinery department, showing agricultural machinery and implements imported by various firms from manufacturers in Great Britain, the United States, France, and Germany, is on the whole good.

"The show of mules, the produce of imported Spanish asses, is worthy of note, showing the fine class of this useful animal procurable in Uruguay.

"In conclusion, I consider that the Exhibition has been a wise step towards encouraging the development of the natural resources of this nature-favoured country."

It may be mentioned that Uruguay is the smallest of the States of South America, covering only 72,000 square miles, and with a population of about 10 persons to the square mile. But it is estimated that there are in the country over 8,000,000 head of cattle (or as many as in Austria), and over 22,000,000 head of sheep (or more than in France), so that the pastoral industry may, if developed, become of importance.

AGRICULTURE IN RUSSIA.

A Report on the agricultural position of Russia by Mr. H. J. O'Beirne, Third Secretary to Her Majesty's Embassy at St. Petersburg, prepared at the instance of the Royal Commission on Agriculture, has recently been issued by the Foreign Office.

The report refers at the outset to the different systems of land tenure in different parts of Russia, and to the fluctuations in recent years in the market value of land in that country.

It is stated to be the opinion of the central authorities that severe depression exists only among the non-peasant proprietary classes; that the Russian peasant is now more abundantly supplied with his staple food than he has been in the past; and that the only serious danger of distress to him lies in his being forced to realise hurriedly a portion of his grain to meet demands for taxes—a difficulty which can be met by Government advances for short terms on his crop. After making all necessary allowances for official optimism, Mr. O'Beirne thinks that there is much to support this view of the position of the Russian peasantry.

The recent general fall in the price of grain in Russian markets is regarded as the chief cause of agricultural depression. Russia's average crop of rye, wheat, oats, and barley—her four more important grains—being largely in excess of her requirements for home consumption, a considerable portion of each year's harvest must find a purchaser abroad. The home prices of Russian grain, therefore, move in close connexion with those ruling in the international markets. In the case of wheat, as much as two thirds of the net yield of the harvest—after deduction of the seed for the following year—is usually sent abroad, so that the influence of the foreign market is more immediately and strongly felt; the export of rye represents only about one-twelfth of the net yield; that of oats one-seventh.

The unsatisfactory position of agriculture in a large part of Russia has made the loss of farming profits consequent upon lowered prices very severely felt. The farming methods practised in the Baltic Provinces are in general excellent, and in the western districts they are also comparatively up to date. But in the great fertile south-eastern section of European Russia, known as the Black Soil region, the southern portion of which grows the bulk of the wheat crop, agriculture is still of a somewhat rudimentary type. And it is maintained, therefore, that if the Black Soil crop reaches its actual dimensions on an ill-tilled, scarcely fertilised and thinly-sown soil, then it must be susceptible, under improved conditions, of a very considerable expansion. Moreover, the Southern Steppe region contains a large area of fertile soil which has yet to be brought under the plough.

The principal measures hitherto tried, and now under discussion, for the benefit of the agricultural interest, are reported to take one of two directions. Firstly, in order to assist the peasant to better systems of culture, the Zemstva, or provincial councils, receive State aid in land and money, towards founding agricultural schools, establishing model farms, making experiments in crops. They are also supplied gratis with the best seeds, improved implements, machines, &c., the use of which it is their business to teach and encourage among the peasantry. Secondly, loans for short terms are placed within easy reach of the peasants. It seems that experiments in peasants' banks have not been a conspicuous success in the past. The Government are now framing rules for the foundation of village banks, with funds drawn partly from the contributions of groups of communities, and partly from other private and public sources, under the superintendence of the Zemstva, which will aim at supplying the farmer with the small capital he needs on the most favourable terms. Advances are also made to peasants for short terms on the security of their grain, to obviate the necessity of hurriedly realising to meet demands for taxes; and of these

advances the peasants have largely availed themselves in the present year.

Whatever the severity of the agricultural depression, it has not manifested itself in any sensible decrease of the area in cultivation. During the past 12 years the total grain-growing area of the 50 governments of European Russia may be said to have remained, with a temporary diminution following the disastrous year 1891, at a standstill. It is now some 150,000,000 acres, being a slight increase on the area returned for the period 1883-87 (during which no new data respecting area were collected), and an insignificant decrease from the preceding year 1893. In the course of these 12 years some cereals have gained ground at the expense of others. The area under wheat shows a decided tendency to spread. In 1894, it was over 30,000,000 of acres, which represents a slight improvement on 1893, and the large increase of 3,800,000 acres on the period 1883-87. The area under rye which fell considerably after the disaster of 1891, has strongly rallied since then, and was in 1894 not far below that shown for 1883-87. That under oats, on the other hand, has somewhat largely fallen off.

Stated in round numbers, the yield of the three chief Russian cereals was in 1894: 48,000,000 quarters of wheat, 97,500,000 quarters of rye, and 80,769,000 quarters of oats. The production of wheat in the 12-year period under review has been regularly and decidedly on the increase; the mean annual yield for the period 1888-93 (omitting the famine year 1891) being considerably better than that of the previous 5-year period, 1883-87; and the 1894 crop better than either. The same may be said for the yield of oats. In the case of rye, there is no such marked improvement; the mean yield for the second 5-year period falls slightly below that for the first; but with the return of the area sown to its former proportions, the years 1893 and 1894 both yielded larger crops than any of the preceding 10 years.

Mr. O'Beirne estimates that 13,200,000 quarters of wheat and 5,400,000 quarters of rye were exported from Russia in 1894. The wheat export of 1894 was better, therefore, than in the years 1884-87, about equal to 1889, and decidedly less only than the quite exceptional year 1888. On the whole, the tendency is to increase; but the rate of increase is slow. The rye export, which represented about the mean of the years 1884-87, and much less than 1888 or 1889, certainly shows no signs of growth, and must be considered as at best stationary. The export of oats and barley both show a very large advance in the past few years.

For these three grains, wheat, oats, and barley, of which the export is on the increase, Great Britain is Russia's largest customer.

As regards the competition which is to be expected from Russian wheat, Mr. O'Beirne states that low prices notwith-

standing, Russia's wheat-growing area and wheat crop have during the past few years alike been on the increase; and her wheat export shows a tendency in the same direction. The inference is, that if prices fall no lower, the production and export will tend to increase further. There is abundant room for an increase of yield in two distinct directions; agricultural methods may be much improved; and fresh areas of fertile soil may be brought under the plough. But progress in either of these directions must necessarily be very gradual, and it may therefore be concluded that the growth of production and exports will be extremely slow.

The stock-raising and dairy-farming industries are said to have attained a considerable development in Finland, the Western and Baltic Provinces, generally in the neighbourhood of large towns, and in certain districts of Tver, Vologda, and Yaroslavl. In the Little Russian districts, cattle are, in general, raised only with a view to their employment in agricultural labour, and for the sake of the manure they supply. Throughout the greater part of the Central Russian agricultural region, where cattle are not employed as beasts of labour, stock raising is much neglected, there is a strong tendency to break up pasture lands in order to obtain the largest possible grain-growing area, and the number of horned cattle has of late years greatly diminished. In the South-eastern Steppe regions, large herds are still tended by nomadic and semi-nomadic tribes.

The export of live stock from European Russia, exclusive of Finland, is not very considerable. In 1893, it reached some 12,000 head, of which only 3,400 were sent to England; and with the number of cattle diminishing over a large part of Russia, the prospect of its attaining any serious importance is remote. The weight of fresh meat exported is small, and it is consigned principally to Germany.

The export of eggs is more formidable, and has been growing during the past few years. In 1893 European Russia exported 785,000,000 of eggs, of which Great Britain bought nearly 200,000,000. Finland's export is relatively small, some 300,000 in 1892.

The export of butter from Russia has been diminishing in recent years.

[Foreign Office Report, No. 356, Miscellaneous Series. Price 1d.]

78 PARLIAMENTARY PUBLICATIONS. [June 1893]

PARLIAMENTARY PUBLICATIONS.
Report on the Agricultural Experiment Stations and Agricultural Colleges of the United States of America.
 [C-7699.] Price 4d.

In view of the interest attaching to the formation and development of stations for the conduct of agricultural experiments, whether by way of illustration of results already known to scientific observers or by way of direct and original research, it has been thought expedient to issue as a Parliamentary paper, under the above title, a report by Major Craigie to the President of the Board of Agriculture, in which a variety of notes made during a visit to some of the experimental stations and agricultural colleges in the United States of America are presented in such a form as to give a general view of the educational and experimental work now being undertaken in that country for the benefit of agriculture.

The Report itself is followed by a series of Appendices in which are embodied, for reference, the complete text of three Acts of the Federal Legislature indicating the attitude of the American Congress to technical, including agricultural education, and the several steps taken to develop the collegiate instruction and experimental work. The earliest Act quoted is that known as the Morrill Act of 1862, whereby a large area of public lands was assigned to the several states and territories of the Union for the purpose of providing colleges "for the benefit of agriculture and the mechanic arts." The Morrill Act was followed by the Hatch Act of 1887, which established, in connection with these colleges, the agricultural experimental stations to which attention is mainly directed in this volume. These stations were by the last quoted Act endowed out of the Federal Treasury with a special and direct annual appropriation to each State of \$15,000 (about 3,000*l.*). Still more recently the agricultural colleges received further endowments by a later Supplementary Act passed in 1890.

It would appear from this Report that at the time of Major Craigie's visit upwards of three score Collegiate Institutions were engaged wholly or partly in agricultural teaching, while 54 district Experiment Stations were accounted for, of which 48 were qualified to receive the Federal Grant for maintenance, a few others relying on State as distinct from Federal funds for their support.

Detailed accounts are given of the educational arrangements at the University of Cornell, in the State of New York, and of those at the State University of Wisconsin at Madison, and descriptions supplied of the work and equipment of the typical

experiment stations to be found at these two centres, as well as of the experimental stations at Newhaven in Connecticut, and at Geneva in New York State where special characteristics are notable.

Attention is drawn to the great variety of topics handled at the institutions named, and in the second appendix there is further exhibited in a condensed form a complete list, extracted from the official publication of the Central Experiment Station Office at Washington, of the subjects dealt with, according to the titles of all the bulletins, by the local experiment stations throughout the Union during 1892 and 1893, thus enabling a general idea to be obtained of the very wide scope of the inquiries on which the scientific staff of more than half a hundred stations have embarked.

The "lines of work" thus indicated include many matters which would probably not be within the scope of similar institutions in older countries, but selecting only the first of the two years quoted, it is not without interest to observe that the largest number of inquiries in any single group of subjects related to horticulture or fruit and vegetable growing. These numbered 183 in that year. Inquiries into the varieties, and manuring, of the larger farm crops took the second place, reaching 146 in the season. Experiments on the feeding of animals for milk, for beef, for mutton, and for pork, separately made up a total of 81 independent inquiries. Chemical investigations, fertilisers and field experiments, and special inquiries relating to forms of dairy produce ranked next in order, and were followed by a very long and miscellaneous series.

Statistics are added from the official records of the year 1892, which give details of the staff, the number of students, and the number of past graduates of the American agricultural colleges, with the length of the several courses of study prescribed. Similarly, official accounts are included of the revenue from various sources of each of the teaching institutions, and of the Experimental Stations.

Agricultural Returns for Great Britain, 1894, showing the Acreage and Produce of Crops, Prices of Corn, and Number of Live Stock, together with Summary of Agricultural Statistics for the United Kingdom, British Possessions, and Foreign Countries. [C-7698.] Price 1s. 4d.

This annual publication of the Board of Agriculture has on the present occasion been enlarged so as to comprise in a single volume the final and complete tables supplying not only the customary details respecting the crop areas and live stock on the farms of Great Britain, together with various incidental and

foreign data hitherto published under the title of "Agricultural Returns," but also the "Produce Statistics" of the past year, showing the yield of the several grain crops, roots, and hay in the country as a whole, and in the divisions and counties of Great Britain. The separate series of tables published in recent years under the title of "Corn Prices," is now also embodied in the pages of the present issue which is intended to form a complete compendium of agricultural statistics.

All the more prominent features of the Agricultural Returns of the year 1894 have been made known to the public at the earliest possible moment by means of advance tables appearing at various dates from August 1894 to March 1895. The present volume supplies, however, various supplementary and comparative tables, and combines the whole for future permanent and convenient reference.

Independently of an exhaustive tabular index arranged alphabetically, and in addition to the statistical summaries appearing in the report, the volume now presented to Parliament includes 109 separate tables, extending to 237 pages, embracing not only the necessary statistics on the points above quoted, but extending also to other matters of interest, such as the total surface area of the country, the approximate extent of rough grazings and of woodlands, the details of the minor crops in the counties of Great Britain, the area under Small Fruit, Hops and Orchards and Market Gardens, and the land shown to be farmed by its owners on the 4th of June 1894.

A further new departure may be noted in this volume, whereby, by the assistance of the Ordnance Survey Department, there has been secured, as a frontispiece, a new coloured map of Great Britain, showing the grouping of the counties into several more or less distinctive Agricultural Divisions and Sub-Divisions, which may be found useful by students of the returns, as furnishing in a graphic form an approximate indication of the prevailing agricultural types of particular sections of the country, the more distinctively arable districts in the east of England and of Scotland respectively being coloured from yellow to brown.

In a general report to the President, prefacing the tabular matter, Major Craigie reviews some of the features presented by the Returns, commenting on the proportions of arable and pasture land at different dates during the past quarter of a century, and the distribution of the land under various crops in 1894, with comparisons with the immediately preceding and with earlier years. The details as to increases or decreases in the stock of horses, cattle, sheep, and swine in Great Britain at various dates are also commented upon, and, including the returns received from Ireland and the Isle of Man and the Channel Islands, the acreage under the leading groups of crops is shown for the United Kingdom as a whole for the last three years.

In the same report the aggregate produce and yield per acre of the grain, root and hay crops of the United Kingdom are dealt with, and an analysis given of the variations shown in the produce of certain of the crops in different districts of Great Britain, with comparisons based on a new average calculated for the 10 years for which official estimates of production are now available. The relative character of each of the harvests of wheat, barley, oats, potatoes, and hay since 1884, as indicated in this part of the report, is shown by means of the following table, wherein "100" represents the average yield per acre of the whole period under review:—

Year.	Wheat. Average 1884-94. Bushels per Acre.	Barley. Average 1884-94. Bushels per Acre.	Oats. Average 1884-94. Bushels per Acre.	Potatoes. Average 1884-94. Tons per Acre.	Hay (Clover &c.). Average 1884-94. Owts. per Acre.	Hay (Permanent Grass). Average 1884-94. Owts. per Acre.
1885	107	106	96	100	—	—
1886	92	97	99	98	104	109
1887	109	93	91	109	97	87
1888	96	99	97	99	99	118
1889	102	96	103	106	119	122
1890	108	106	106	91	106	114
1891	107	106	101	98	101	96
1892	90	105	102	99	90	86
1893	80	93	93	113	66	63
1894	103	104	100	95	115	120

In the case of wheat the increase in bulk in 1894 over 1893—although subject to much discount on the score of quality—was, it appears, very marked in the South-East and East of England. The total produce of this cereal for Great Britain would appear to have been greater by 20 per cent., but a gain of as much as 37 and 52 per cent. was reported in the districts where the prolonged and excessive drought of 1893 had been most felt.

The great addition to the area mown for hay forms naturally a subject of special comment, and in view of the entirely exceptionally scanty character of the 1893 crop, the estimated outturns of the three crops of 1892-3-4 are shown side by side for the several divisions and sub-divisions of England, as well as for England, Wales, and Scotland separately.

In the section of the report dealing with prices of agricultural produce, the serious drop in corn prices in 1894 is necessarily referred to, and means of ready comparison with earlier records provided, while, in default of officially ascertained average prices of like character in the case of meat, the apparent conclusions to be drawn from the rough market quotations available are

utilised so far as practicable—the values of various imported commodities, as well as those of imported grain and meat, are also supplied in numerous cases from the data returned by the Customs. The growth of agricultural imports from abroad is also dealt with, and notices are finally given of foreign and colonial agricultural data—special attention being drawn to the relative extent and to the recent increase or decrease of wheat areas, and to the growth or diminution in numbers of cattle, sheep, and swine in those countries or colonies from which recent statistics could be procured.

Board of Agriculture. Annual Report of Proceedings under the Tithe Acts, the Copyhold Acts, the Inclosure Acts, the Metropolitan Commons Act, the Drainage and Improvement of Land Acts, the Universities and College Estates Acts, the Glebe Lands Act, 1888, &c., &c., for the Year 1894. [C.—7660.] Price 2d.

Under the Tithe Acts, the Board received in 1894 a total of 487 applications for redemption, besides 193 applications for altered apportionments of rentcharge. 103 applications relating to other branches of tithe business were also received.

Under the Copyhold Acts, 308 enfranchisements were completed by the Board in 1894, and proceedings in 222 other cases had been commenced. Orders of exchange of lands were confirmed in 38 cases in the year.

Special attention is drawn to the business of the Board relating to the enclosure and regulation of commons and to the extent to which these questions are affected by recent legislation. Some falling-off is reported in the applications for land improvement and in the number of transactions involving outlay for new works under the Drainage and Improvement Acts, but the actual expenditure for which charges on estates had been created was 150,949*l.* as compared with 116,816*l.* in 1893.

Education Department, 1895. Code of Regulations for Day Schools, with Schedules and Appendices, by the Right Honourable the Lords of the Committee of the Privy Council on Education. [C.—7652.] Price 5d.

In the section of the Code which relates to Grants, provision has been again made for the practical teaching of dairy work to girls by a teacher holding a certificate recognised by the Department.

On similar lines a grant is now also obtainable on account of any boy who, while receiving instruction in the elementary

subjects in Standard IV. or any higher standard, has attended not less than twenty hours at a gardening class of not more than fourteen scholars.

Grants are also made, as regards practical instruction, in cookery, and laundry work.

Special provision is made for cases where the school year is less than twelve months, and it is shown to the satisfaction of the Department that the completion of the course of instruction in cookery, laundry work, dairy work, or cottage gardening has been thereby prevented.

Appended to the Regulations are schedules relating to various educational subjects referred to in the Code, and which include, in addition to those already mentioned, the principles of agriculture, horticulture, domestic economy, as well as several scientific subjects.

Scotch Education Department, 1895. Code of Regulations for Day Schools, with Appendices by the Lords of the Committee of the Privy Council on Education in Scotland. [C.—7662.] Price 4½d.

Scotch Code of Regulations for Evening Continuation Schools, with Schedules and Appendices. [C.—7664.] Price 1½d.

These Regulations also give information similar in character to that contained in the English Code regarding the teaching of, and Grants for, various subjects directly and indirectly connected with agriculture.

Rateable Value of Lands, &c., 1869-70, and Gross Estimated Rental and Rateable Value of Lands, &c., 1894. [H.C.—204.] Price 8½d.

This publication is a Return published by the Local Government Board showing:—

- (1.) The Rateable Value of Lands, Buildings, Railways, and all other kinds of Property, according to the Valuation List or other record of Assessment which was last in force before Lady Day 1870; in each Parish and Union of England and Wales.
- (2.) The Gross Estimated Rental and Rateable Value of Lands, Buildings, Railways, and all other kinds of Rateable Property, in each Union in England and Wales, according to the Valuation Lists in force in the Metropolis on the 6th day of April 1894, and in the rest of England and Wales at Lady Day 1894, and where there were no such Lists in force, according to

the last Poor Rate made before such dates respectively.

- (3.) Also showing for each Union the Population according to the Census of 1871 and 1891, the Amount per Head calculated on such Populations of the Rateable Value in 1870 and 1894, and the Area in Acres (excluding Water), according to the Census of 1891.

In a detailed memorandum prefixed to the Return, Mr. Shaw-Lefevre points out that the information now collected follows the lines of that supplied in a Return laid before Parliament in 1871, which showed for each Poor Law Union in England and Wales, the Rateable Value, at Lady Day 1870, of property assessed for Local Taxation, distinguishing Land, Buildings, Railways, and other properties.

The present Return is one of a similar character for the year 1894, brought into comparison for each Union with that of 1870, showing the changes which have taken place in the intervening 24 years in the value of these different kinds of property.

For the whole of England and Wales it appears that the rateable value of property assessed in 1870 was 104,870,000*l.*, while that of 1894 was 161,081,000*l.*, an increase of 56,211,000*l.*, or 53·6 per cent.

The rateable value of land, however, owing to the agricultural depression of the last few years, has been considerably reduced in the interval, and the proportion of it to the value of other property has been greatly diminished.

In the 24 years which have elapsed since 1870, the rateable value of land has been reduced by 6,180,000*l.*, or 15·5 per cent., and the total rateable value of land is now only 33,654,000*l.*, or 20·9 per cent., a little more than one-fifth of the whole. The assessments of buildings have increased by 47,504,000*l.*, or 86 per cent., and they are now 63·7 per cent. of the whole. Railways have increased by 9,000,000*l.*, or 184·8 per cent., and their rateable value now stands at 8·6 per cent., or about one twelfth of the whole; and other property, including mines, waterworks, canals, &c., has increased by 5,887,000*l.*, or 117·6 per cent., and now stands at 6·8 per cent. of the whole, or about one fifteenth.

The reduction in the assessments of land since 1870 does not represent the whole of the fall in the value of land which has taken place of late years. The value of land rose considerably during the first decade after 1870, and it is only in the last 14 years that the fall has taken place. A table is given to show the gross annual value of lands, including tithes in each geographical county of England and Wales, according to the income-tax valuations for the years 1870-71, 1879-80, 1893-94. It appears from this table that in the income-tax assessments of land under Schedule A., which have always been considerably higher than the gross assessments for local rates, there was a rise in the value, between 1870 and 1879, of about 3,000,000*l.*,

or 5·8 per cent. of the assessments for the former of these years, and that there was a fall from 1879 to 1894 of 11,736,000*l.*, or 22·7 per cent. It is suggested that there was a similar rise in the assessment of land for local rates between 1870 and 1879. If so, the reduction of assessments from 1879 to 1894 has been for the whole of England and Wales 22·7 per cent. The reduction has varied very much in different parts of the country, and instances are given showing the per-centage of reductions in various counties.

It is pointed out that these per-centage reductions do not show the full reduction in value of purely agricultural land in rural districts, a large extent of land in agricultural counties near towns not having lost its value to the same extent as other land. There is also much pasture land of the best quality which has either maintained its value or lost but little.

In some Unions where the population has largely increased, the fall in the assessment of land appears to be due to some extent to the withdrawal of land from agricultural purposes.

Even in individual Unions it is probable that the average reduction of assessment of land does not represent the fall in the value of purely agricultural land of the worst quality. There is much land which has maintained its value for exceptional reasons when other land in the neighbourhood has fallen greatly in value.

The return brings to light the growth in value of property other than land, especially of railways, and the higher assessments of railways have in a very large number of Unions made up for the reduction in the value of land.

Another point brought out clearly by the return is that, in spite of the fall in the value of land and the great increase of population, there has been a general increase in the proportion of rateable value of property to the population. There are only seven counties where there has been a slight reduction of rateable value in proportion to population, viz., Essex, Lincoln, Norfolk, Northampton, Suffolk, Wilts, and York (East Riding). The average rateable value per head of population in these counties was, in 1870, 5*l.* 8·9*s.*, and in 1894 it was 5*l.* 2·9*s.*

In the vast majority of Unions there has been an increase of rateable value in proportion to population. For the whole country the rateable value per head of population in 1870 was 4*l.* 12*s.*, and in 1894 it was 5*l.* 11*s.* per head.

Welsh Land Commission. Minutes of Evidence taken before the Royal Commission on Land in Wales and Monmouthshire. (Forty-sixth to Sixty-third Days.) Volume III. [C.—7661.] Price 8s. 5d.

This volume contains a list of witnesses examined, and the minutes of evidence taken, from the 16th of April to the 12th of May 1894. An appendix of documents on various subjects is also attached to this publication.

Light Railways. Copy of Report, with Appendices, of a Committee, presented to the Right Honourable James Bryce, M.P., Chairman of a Conference on Light Railways. [H.C.—49.] Price 1½d.

This publication is the Report of a Committee appointed to consider:—

1. How far the usual requirements of the Board of Trade as to constructing and working new railways may fairly be relaxed, especially in the case of lines built through sparsely populated and agricultural districts?
2. Whether additional legal facilities for obtaining powers to construct tramroads and light railways are necessary or desirable?

The Committee state that they have given special attention to the case of light railways in agricultural districts, and that they have also considered tramways and tramroads, as well in rural districts as in urban districts not of the first magnitude, but under this head they have not considered the circumstances of main lines of railway or tramway, on which the traffic may be expected to be of great volume.

Information on the subject in question was obtained and considered by the Committee who submitted the following report:—

They find that the existing law in Great Britain specially affecting the construction and working of light railways, is mainly contained in the Acts of 1864 and 1868, and the law specially affecting tramways in the Act of 1870.

In the case of tramways the law necessitates a confirming Act, even where no compulsory powers of taking land are demanded.

Tramroads, as distinguished from tramways, are only dealt with in a Standing Order of the Houses of Parliament.

Practically no light railways have been constructed under the general Acts of 1864 and 1868, owing, in part, it is alleged, to the consent of all landowners and other parties beneficially interested, and the absence of opposition from any railway or canal company, being necessary before the Act can be made use of.

The mileage of such lines constructed under special Acts has also been inconsiderable.

This lack of progress in rural districts has also been in great measure due to the want of latitude left to the Board of Trade by law, and in other cases by the conditions which the Board considered it their duty to impose for the public safety.

It has also been stated that obstacles have arisen in the case of tramways and tramroads in consequence of the local authorities requiring conditions which were considered too onerous by the promoters of new schemes.

The Committee believe that the impediments to construction may be greatly diminished, and that on a large proportion of such lines as are contemplated by their inquiry, the regulations which have been enforced with a view to public safety may be considerably relaxed.

In the case of lines of small traffic, having few trains in the day and working at a moderate speed, there is little risk compared with that occurring on great trunk lines having numerous sidings and branches, and carrying at high and varying speeds, a complicated traffic of passengers, merchandise, minerals, and cattle, at all hours of the day and night.

It seems reasonable that details as to route, width of gauge, fencing, level crossings, bridges, gates, the use of public roads, stations and station requirements, signals, continuous brakes, and many similar matters—unnecessary expenditure on which taken together adds greatly to the cost—should differ in different parts of the country, depending in each case upon the nature of the country and the traffic to be conveyed.

The same remarks apply to limitation of speed and regulations for ensuring reasonable safety in working.

There are several other items involving expenditure, such as the provision for deposit of security, the lodging of plans, advertisements, &c., in which there is room for considerable economy.

The Committee think that it is not reasonable that undertakings of limited scope, when they are approved of by the locality they are intended to serve, should be forced, as they are now, to have recourse to the expensive tribunal of a parliamentary inquiry.

The Committee are of opinion that the recent creation of popular local authorities of various degrees throughout Great Britain opens the door to an escape from the great cost attending applications to Parliament, by enabling powers and responsibilities with reference to the authorisation and control of light lines to be conferred on those bodies, and that the time has arrived for Parliament to consider whether this should not be done, an ultimate appellate jurisdiction being reserved to the Government.

Department charged with the inspection of railways, which, it may be assumed, would be exercised with due regard to the existence of such local control and responsibility.

If this were done the initial cost of construction, and the expenses of working, could be so greatly reduced that many light railways and tramways, promoted either by independent companies, or by the existing lines of railway and tramway, could be undertaken to the great advantage of districts, and especially agricultural districts, at present without satisfactory means of transport.

The Committee suggest that proposals for the construction and working of such lines should be submitted in the first instance to the County Council (with exceptional provisions as to large municipalities), subject to precautions ensuring that the interests of those directly affected are duly safeguarded. In all cases a majority of assents in number and value of owners and frontagers should be required, and in cases of compulsory acquisition of land there should be a power of appeal to the Board of Trade.

If any doubt should arise as to whether a proposed line is a light railway, to be dealt with locally, or is a scheme which, on account of its magnitude or otherwise, should properly be dealt with by Parliament, the Committee think that the Board of Trade should determine the question.

The Committee are doubtful whether it would be within the terms of the reference to them, and they refrain from giving an opinion, as to whether, and if so, on what conditions, it is desirable that local authorities should be empowered to contribute funds towards, or otherwise take part in, undertakings of this character.

The Report is signed by all members of the Committee (except Sir Courtenay Boyle and Mr. Hopwood, the officers of the Department concerned), subject to memoranda by individual members which are appended to the Report.

Report of the Royal Commission appointed to inquire into the effect of Food derived from Tuberculous Animals on Human Health. Part I. [C.—7703.] Price 2½d.

The Commission was appointed to inquire and report what is the effect, if any, of food derived from tuberculous animals on human health; and, if prejudicial, what are the circumstances and conditions with regard to the tuberculosis in the animal which produce that effect upon man.

The Commissioners recapitulate the information they have obtained from the witnesses who favoured them with their experience, and from the results of three experimental inquiries

conducted on behalf of the Commission, together with their own conclusions, as follows:—

“We have obtained ample evidence that food derived from tuberculous animals can produce tuberculosis in healthy animals. The proportion of animals contracting tuberculosis after experimental use of such food is different in one and another class of animals; both carnivora and herbivora are susceptible, and the proportion is high in pigs. In the absence of direct experiments on human subjects, we infer that man also can acquire tuberculosis by feeding upon materials derived from tuberculous food-animals.”

“The actual amount of tuberculous disease among certain classes of food-animals is so large as to afford to man frequent occasions for contracting tuberculous disease through his food. As to the proportion of tuberculosis acquired by man through his food or through other means, we can form no definite opinion, but we think it probable that an appreciable part of the tuberculosis that affects man is obtained through his food.”

“The circumstances and conditions with regard to the tuberculosis in the food-animal which lead to the production of tuberculosis in man are, ultimately, the presence of active tuberculous matter in the food taken from the animal and consumed by the man in a raw or insufficiently cooked state.”

“Tuberculous disease is observed most frequently in cattle and in swine. It is found far more frequently in cattle (full grown) than in calves, and with much greater frequency in cows kept in town cow-houses than in cattle bred for the express purpose of slaughter. Tuberculous matter is but seldom found in the meat substance of the carcass, it is principally found in the organs, membranes, and glands. There is reason to believe that tuberculous matter, when present in meat sold to the public, is more commonly due to the contamination of the surface of the meat with material derived from other diseased parts than to disease of the meat itself. The same matter is found in the milk of cows when the udder has become invaded by tuberculous disease, and seldom or never when the udder is not diseased. Tuberculous matter in milk is exceptionally active in its operation, upon animals fed either with the milk or with dairy produce derived from it. No doubt the largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter.”

“The recognition of tuberculous disease during the life of an animal is not wholly unattended with difficulty. Happily, however, it can, in most cases, be detected with certainty in the udders of milch cows.”

"Provided every part that is the seat of tuberculous matter be avoided and destroyed, and provided care be taken to save from contamination by such matter the actual meat substance of a tuberculous animal, a great deal of meat from animals affected by tuberculosis may be eaten without risk to the consumer."

"Ordinary processes of cooking applied to meat which has got contaminated on its surface are probably sufficient to destroy the harmful quality. They would not avail to render wholesome any piece of meat that contained tuberculous matter in its deeper parts. In regard to milk we are aware of the preference by English people for drinking cows' milk raw, a practice attended by danger, on account of possible contamination by pathogenic organisms. The boiling of milk, even for a moment, would probably be sufficient to remove the very dangerous quality of tuberculous milk."

A supplementary Report by Professor Brown, C.B., contains some observations on the alleged grievances of farmers and others concerned in the meat trade in respect of losses incurred by the seizure and confiscation of carcasses of animals found to be more or less affected with tubercle on post-mortem examination.

Railway and Canal Traffic Acts, 1873 and 1888. Sixth Annual Report of the Railway and Canal Commission with Appendix (1894). [C.—7721.] Price 2d.

In submitting the Report of their proceedings during the past year, the Commissioners explain the jurisdiction which was conferred on them by the Railway and Canal Traffic Act of last session—viz., to hear and determine any complaint with respect to the unreasonableness of any rate or charge which from and after 1892 has been or shall at any time be increased. The Act gives them also jurisdiction, whenever merchandise is received or delivered by a railway company at any siding or branch railway not belonging to the company, and a dispute arises between the railway company and the consignor or consignee of such merchandise as to any allowance or rebate to be made from the rates in force, in respect that the railway company does not provide station accommodation or perform terminal services, to determine what would in such case be a reasonable and just allowance.

Another subject with which this Act deals, is that of costs, and it is provided that in proceedings before them, other than disputes between two or more companies, the Commissioners shall not have power to award costs on either side, unless they are of opinion that either the claim or the defence has been frivolous and vexatious.

Lists of the applications made to the Court, and of the cases heard, and of the working agreements submitted to the commissioners for approval, are given in an Appendix to the report.

Report on Local Taxation in Scotland. [C.—7575.] Price 1s. 9d.

This publication, by John Skelton, Esq., C.B., LL.D., formerly chairman of the Board of Supervision, and now Vice-President of the Local Government Board (Scotland), is a report on local taxation in Scotland, with especial reference to the proportion of local burdens borne by urban and rural ratepayers, and by different classes of real property.

In an introduction to the report, Dr. Skelton states that in an inquiry into the progressive increase of local taxation in Scotland, he has followed as far as possible the main lines of inquiry, historical and geographical, on which the interesting and instructive reports by Mr. Goschen and Mr. Fowler as to the increase and incidence of local taxation in England proceeded.

Dr. Skelton's inquiry is, however, limited to a comparatively recent period, because reliable statistics are not available for Scotland for the earlier years of the century. The year 1848, when the Poor Law Act may be said to have come fully into operation, is taken as a convenient starting point, and a comparison is made of the amount of local taxation levied in 1848 with the amounts levied in three representative later years—viz., 1881 and 1893.

The report is divided into various sections showing the present position of local taxation in Scotland, with a retrospective survey of the various amounts, and rate per £, of local taxes levied at various periods.

The amount of indirect taxation for local purposes during the same period is given, as well as the increase in the local expenditure and in the local debt.

The growth of taxation is traced as regards poor rates, education rates, church and burial ground rates, road rates, police or constabulary rates, and sanitary rates.

In the section relating to the increase of valuation of real property it is shown that the growth in the valuation of Scotland during the present century has been very great. The real value at different dates is given as follows: in 1815, 6,652,000£; in 1841, 9,306,000£; in 1848, 10,236,000£; in 1856, 11,745,000£; in 1867, 16,260,000£; in 1874, 18,921,000£; in 1881, 22,276,000£; in 1892, 23,980,000£; and 24,180,000£ in 1893.

Assuming that the old valued rent was a fair value at the time, and that the then value of the £ Scots was 1s. 8d. sterling, the report states that the value of real property has in

216 years increased from 300,000*l.* to 24,180,000*l.*; or, if the comparison be confined to the available figures of the present century, the annual value of real property has risen since 1815 from (in round numbers) 6½ millions pounds sterling to 24 millions pounds sterling, being about 260 per cent. of increase.

An increase of 53 per cent. occurred between 1815 and 1848; of 58 per cent. between 1848 and 1867; of 37 per cent. between 1867 and 1881; and of 8 per cent. between 1881 and 1893.

The valuation of lands, buildings, and other property in Scotland in certain years from 1814-15 onwards is given showing that the rental of land, which in 1814-15 was 5,080,000*l.*, increased annually till 1879-80. It then reached a maximum of 7,769,000*l.*, when the increase was arrested and a diminution set in; the fall in agricultural rent during the thirteen years ending May 1893, being no less than 1,478,000*l.* Since 1814-15 the rental of buildings has risen from 1,369,000*l.* to 13,643,000*l.*; and the rental of other property from 203,000*l.* to 4,247,000*l.*

The following table shows the per-centage borne by each class to the total valuation during the same period:—

Year.	Lands.	Buildings.	Other Property.
1814-15	76.4	20.6	3.0
1848-49	54.1	33.5	12.4
1867-68	42.9	39.0	18.1
1881-82	38.7	52.9	13.4
1892-93	26.0	56.4	17.6

Another section of the report relates to the geographical distribution of local rates, and a careful analysis is made with a view to arrive at certain general conclusions explaining why the burden of local rates is not uniform.

The amount of direct local taxation borne by lands, houses, and other property respectively in 1848 and 1893 is also referred to in a separate section, and, in conclusion, Dr. Skelton gives a general summary of the results of his inquiry.

This report, Dr. Skelton adds, may be regarded as little more than a rapid survey or review of the figures contained in certain statistical tables which are printed as appendices to the volume.

Report on the County of Lincolnshire, by Mr. Wilson Fox, Assistant Commissioner to the Royal Commission on Agriculture. [C.—7671.] Price 1s. 6d.

After reviewing the system of farming, the condition of buildings, rent and tenure, in Lincolnshire, Mr. Wilson Fox says, in respect of the present position of agriculture in that county,

that owing, in the first instance, to bad seasons, commencing in 1874, and then to the rapid and continuous fall in all prices commencing in 1882 and 1883, which came at a time when there had been great losses, through decreased yields and sheep rot, and also when the land was much deteriorated, the farming industry has suffered blow after blow until the present time, when the situation is extremely critical, and the future outlook of the gloomiest character.

The depression is almost universally attributed by the farmers to foreign competition, though many regard the present system of currency as a factor of more or less importance. As regards the effect of the depression on the land, it seems that good land in the county has not gone back much in condition, if at all, from want of farming, but the heavy land has gone back considerably. Some of the latter has been laid down to grass, but much of it is reported to be worth little or nothing at the present time; none of the land has, however, been actually abandoned. It is satisfactory to find that neither the breeds of cattle nor sheep have deteriorated since the depression.

Mr. Wilson Fox remarks that the position of landlords since the depression set in must not only be judged by the reductions they have given in rent, for a reduction of 40 or 50 per cent. in their gross rental often means an alarming encroachment on their private income when all outgoings and also fixed charges and interest on mortgages have been paid. The fall in rents since 1882 is reported to have been extensive and general throughout the county, and there is apparently very little grumbling about rent with the Lincolnshire farmers, though it is very generally stated that reductions were not made soon enough, and that during the disastrous period between 1879 and 1882 the majority of landowners did not make adequate reductions.

At the time of Mr. Fox's visit in April and May of last year, there was, it seems, not much difficulty in letting farms of a moderate size at present rents where the land was not heavy, nor was there a great number of farms on owners' hands, though tenants were not easily found for the larger farms.

In speaking of the effects of the depression on the farmers, Mr. Fox observes that the yeoman farmer, who in the good times bought a farm at double its present value, is usually in a worse plight than a tenant, because a large proportion of the purchase money was frequently left on mortgage, and the rate of interest paid now represents a considerably larger sum than the land would be worth to rent. Many such men are said to have already sunk, overwhelmed by the burden of interest they had to pay, and their position is, it is pointed out, not only worse than tenants, because they are paying a higher rent in the shape of interest, but because they are irrevocably bound to the land they have bought, for they cannot sell it without going out as ruined men, and they cannot let it for a sufficient rent to pay the interest on their mortgages. Generally speaking, the effect

of the depression on all farmers has been to seriously cripple their resources.

With reference to the assertion that farmers live too well and above the style which it is wise to adopt, Mr. Fox states that he does not believe this to be the case at the present day.

The position of the small holder—that is, men making a living entirely by farming—appears to be in the great majority of cases very unsatisfactory and sometimes deplorable. Small occupiers on the other hand would appear to be generally better situated than the small holders. But Mr. Fox thinks it very doubtful whether at present prices foremen or labourers, from whose ranks these classes are generally drawn, improve their pecuniary position by taking up the responsibilities of a farm. Instances of small holders prospering in the county are rare, for they are so greatly handicapped in every operation by want of capital, and few can be found who possess the necessary requisites for success, which Mr. Fox enumerates as follows:—first-rate land, sufficient capital, a moderate rent (or interest), a hardworking wife, brains, health, and a cheap method of marketing produce.

In reply to the objection that small tenants employ fewer labourers per acre than large farmers and give them less regular employment, it is maintained that an increase in the number of such tenancies would create a larger resident population of a hardworking and thrifty character, with a stake and an interest in the parish and the county, and less likely to migrate if they could obtain a fair margin of profit.

While admitting that labourers who remain on the soil and are in regular work have undoubtedly benefited by the low prices, Mr. Fox remarks that the effect of the depression up to the present time upon the whole body of wage-earning classes may be measured by anyone who will drive through Lincolnshire, Norfolk, Suffolk, and Cambridgeshire, leaving Essex out of the question, and see miles of tenantless farms, acres of worthless grass and weeds, and scores of deserted cottages. It seems to be the general opinion in Lincolnshire that the labourers do less work than formerly, though it was admitted that the quality of the labour compared most favourably with that of other counties.

The report contains some notes on dairying and other allied industries in the county. A butter factory has been working for two and a half years at Sutton-on-Sea and has been successful. It has also had a stimulating effect in making other people produce better butter. It was considered by some witnesses that poultry rearing was a useful adjunct to the ordinary farming operations, but that a better means of marketing should be devised to enable farmers to reap the benefit of the high winter and spring prices. In south and east Lincolnshire, a good deal of the land is suitable for market gardening, which is carried on to a considerable extent near Boston and Spalding. At the latter place, a great variety of vegetables, fruit, and flowers are grown for northern and London markets.

With respect to remedies and suggestions to meet the present state of affairs, Mr. Fox remarks that, as a rule, witnesses in Lincolnshire did not suggest many remedies for agricultural depression. It was asserted over and over again that the tap root of all the farmers' troubles and grievances was low prices. There was a consensus of opinion that the landed interest bears an undue proportion of rates and taxes, and that there should be a readjustment to make personal property bear a larger share than at present. It was further suggested that the land tax should be abolished, and also that the maintenance of the poor, the expenses of the highways, sanitary matters, police, and education, should be defrayed out of the Imperial Exchequer. Reference was also made to the incidence of the income tax and the death duties. Resolutions in favour of lowered railway rates for agricultural produce, especially for small consignments, and the abolition of preference rates to foreigners over English lines, were usually passed at the meetings. Landowners all consider that it would be a great benefit if money could be borrowed at a cheaper rate than can now be obtained, for the purpose of improving properties. A number of small freeholders, occupying and farming their own land, stated that the greatest good the Government could do them would be to advance money at a cheap rate of interest to pay off their mortgages.

Several witnesses suggested that co-operation by farmers both in the production and sale of certain produce would be beneficial.

Other remedies suggested were the marking of foreign meat; the prevention of adulteration of butter and all agricultural produce; the exclusion of all live foreign cattle; cheapening the transfer of land; selling of cattle by live weight; old age pensions; technical education; Lord Winchelsea's scheme for uniting in one organisation landowners, farmers, and labourers with the object of remedying agricultural grievances; and light railways.

IMPORTS OF AGRICULTURAL PRODUCE.

I.—STATEMENT showing the NUMBER of ANIMALS imported into GREAT BRITAIN from IRELAND during the month ended 30th April 1895, and during the first four months of the year 1895, compared with the corresponding periods of 1894 and 1893.

Animals.	Four Months ended 30th April 1895.	Four Months ended 30th April 1894.	Four Months ended 30th April 1893.
Cattle - - - - -	170,054	193,230	176,350
Sheep - - - - -	34,946	81,563	118,046
Swine - - - - -	254,977	221,611	184,605
Goats - - - - -	901	2,200	1,810
Horses - - - - -	6,841	9,233	9,401

II.—STATEMENT showing the QUANTITY of HAY imported into the UNITED KINGDOM from the under-mentioned Countries in Four Months ending 30th April 1895, and in the corresponding periods in 1894 and 1893.

(Furnished by the Board of Customs.)

Countries whence Exported.	Four Months ending 30th April 1895.	Four Months ending 30th April 1894.	Four Months ending 30th April 1893.
	Tons.	Tons.	Tons.
Algeria - - - - -	3,576	190	730
Canada - - - - -	1,784	5,958	2,109
France - - - - -	3,446	1,758	517
Holland - - - - -	1,711	6,762	6,163
United States - - - - -	15,341	84,093	28,096
Other Countries - - - - -	1,342	36,328	5,869
Total - - - - -	27,200	135,289	43,494

III.—STATEMENT showing the QUANTITIES of CERTAIN ARTICLES of AGRICULTURAL PRODUCE IMPORTED into the UNITED KINGDOM in the Four Months ending 30th April 1895, and in the corresponding periods in 1894 and 1893.

(Compiled from the Trade and Navigation Returns.)

Articles.	Four Months ending 30th April 1895.	Four Months ending 30th April 1894.	Four Months ending 30th April 1893.
Horses - - - - - No.	7,309	5,448	4,105
Cattle - - - - - "	96,100	123,485	81,958
Sheep - - - - - "	283,344	67,160	5,167
Bacon - - - - - cwts.	1,422,381	1,258,415	971,072
Beef:			
Salted - - - - - "	75,819	73,985	63,154
Fresh - - - - - "	644,229	661,118	633,160
Hams - - - - - "	376,862	350,336	237,220
Meat unenumerated:			
Salted or fresh - - - - - "	98,577	70,921	70,455
Preserved, otherwise than by salt- ing - - - - - "	229,377	162,901	176,575
Mutton, fresh - - - - - "	798,016	603,647	591,285
Pork:			
Salted (not Hams) - - - - - "	75,696	76,586	50,160
Fresh - - - - - "	100,845	73,212	79,233
Rabbits - - - - - "	39,103	37,228	32,178
Butter - - - - - "	1,036,367	898,603	822,165
Margarine - - - - - "	326,328	433,975	448,061
Cheese - - - - - "	440,685	353,704	344,227
Milk, condensed or preserved - - - - - "	175,659	185,110	138,380
" and cream, fresh - - - - - gallons	113,688	67,869	—
Eggs - - - - - gt. hundreds	3,189,133	3,768,491	2,704,145
Corn:			
Wheat - - - - - cwts.	23,311,575	17,178,872	15,968,025
Wheat Meal and flour - - - - - "	5,824,500	5,597,382	6,452,121
Barley - - - - - "	6,240,467	9,696,082	4,185,332
Oats - - - - - "	3,769,150	3,783,172	2,709,584
Malt - - - - - "	9,664,280	11,779,138	8,756,369
Fruit:			
Apples - - - - - bushels	1,239,003	751,678	987,085
Pears - - - - - "	14,088	13,451	6,257
Hops - - - - - cwts.	92,584	52,085	55,456
Onions - - - - - bushels	1,751,961	1,570,368	1,118,963
Potatoes - - - - - cwts.	1,270,091	104,944	760,070
Poultry and game - - - - - value £	251,407	169,095	196,448
Vegetables (unenumerated) - - - - - "	266,005	208,657	259,936

PRICES OF LIVE STOCK AS RETURNED UNDER THE
MARKETS AND FAIRS (WEIGHING OF CATTLE)
ACT, 1891.

Statements have appeared in each of the previous numbers of the Journal of the Board of Agriculture showing the extent to which, in 1893 and 1894, the employment of the weighbridge was resorted to in the sale of live stock, and furnishing illustrations of the prices recorded under the Markets and Fairs (Weighing of Cattle) Act, 1891, from the nineteen scheduled places in Great Britain.

The following summaries based on the Returns received by the Board continue the information thus afforded, and show that the number of animals entering the public markets or auction marts, the number whereof the live-weight was ascertained, and the cases where the current prices were ascertained by the market authorities and auctioneers, were as follows in the first three months of 1895 and of 1894 respectively :—

Animals.	1895.	1894.
CATTLE :	No.	No.
Entering markets - - -	271,648	282,562
Weighed - - - - -	24,771	22,587
Prices returned - - -	22,211	20,353
Prices returned with breed and quality distinguished.	16,818	13,978
SHEEP :		
Entering markets - - -	710,865	895,871
Weighed - - - - -	7,703	8,193
Prices returned with breed and quality distinguished.	5,279	5,197
SWINE :		
Entering markets - - -	57,508	41,429
Weighed - - - - -	845	555
Prices returned - - -	232	86
Prices returned with breed and quality distinguished.	4	11

The actual numbers of cattle weighed and priced were greater in the present year than in 1894, thus indicating a continued if not very rapid advance in the practice of weighing. Despite a decline of nearly 4 per cent. in the numbers of cattle shown in the scheduled markets, the numbers weighed were nearly 10 per cent. greater, and the records of price more numerous by 9 per cent. than in the same months of 1894, while the quotations furnished in complete form showed more than twice this rate of improvement.

Very different returns continue, however, to be received from England and Scotland. It is desirable, therefore, to regard these separately, when the comparison stands as under :—

Cattle at Scheduled Places.	England.		Scotland.	
	1st Quarter, 1895.	1st Quarter, 1894.	1st Quarter, 1895.	1st Quarter, 1894.
No. entering markets - -	210,777	221,839	60,871	60,723
No. weighed - - - - -	6,237	5,509	18,534	17,078
Prices returned - - - -	3,709	3,288	18,502	17,065
Prices returned with breed and quality distinguished.	3,709	3,288	13,109	10,690

It will be observed that, so far as cattle were concerned, while less than 3 animals out of every 100 shown in the 14 English markets were weighed, about 30 out of every 100 shown in the 5 Scotch markets were passed over the weighbridge; and if the market of Glasgow, from which the returns received continue very defective, were left out of account, the per-centage of recorded weighings in the rest of Scotland would seem now to reach nearly 40 per cent. of the whole transactions.

Outside of London it would indeed appear, from the returns rendered, that the English sellers of live stock are even further behind those of Scotland than the above per-percentages indicate in making use of the facilities, secured by the action of the Legislature in 1887 and 1891, for the employment of live-weight in their transactions in cattle. In the Metropolitan Market, out of 25,000 stock shown in the past quarter, 3,557 were weighed, or about 14 per cent., while prices were quoted in 1,554 cases. But elsewhere in England, out of 157,000 cattle, or more than six times as many animals, shown in 10 markets, only 2,680 seem to have been weighed at all—or fewer than in the single market of Dundee in Scotland, where 4,259 cattle were shown, and 2,727 weighed in the quarter. In a further group of English markets—Bristol, Lincoln, and York, where in all 28,605 cattle seem to have been exhibited—no single instance of the employment of the weighbridge was reported during the three months ending 31st March last.

As regards sheep, of which a considerably smaller number were shown, weighing is reported in four of the fourteen English markets, but only 2,887 cases are recorded and only 463 quotations of prices supplied. Returns from Aberdeen, Perth, and Dundee in Scotland show that sheep were weighed in 4,816 cases, and prices are quoted for all of these. Of swine the numbers weighed remain quite insignificant.

The quotations of price supplied for the several grades of cattle, cover, as on former occasions, a very wide range, indicating some lack of local uniformity in the classification of the transactions and the determination of the several qualities.

The London prices range from 29s. 4d. to 30s. per live cwt. for interior animals in the first three months of this year, as against 28s. 4d. to 33s. 2d. per cwt. in the same months of 1894. The second quality of stock is quoted as from 31s. 2d. to 37s. 4d., against 32s. to 37s. in 1894, while the quotations of prime cattle seem lower than last year, or from 35s. 10d. to 39s. 4d. per live cwt. against 37s. 6d. to 40s. 8d. in 1894.

The Scotch prices of such stock as are there graded in the lowest class run from 24s. 4d. to 27s. 8d. per live cwt. at Aberdeen, from 23s. 6d. to 29s. 4d. at Dundee, and apparently from 27s. 4d. to 30s. 10d. at Perth.

In the medium or second quality stock, the prices seem to have ranged lower during the first three months of 1895 at Edinburgh and Perth,—27s. 6d. to 33s. 8d.,—than in Aberdeen and Dundee where the range was from 31s. 2d. to 35s. In the same period of 1894, at all four of these markets, the quotations in this grade were closer, ranging from 31s. to 34s. 6d.

In cattle classed as prime the Scotch quotations for the quarters now contrasted were as under, per live cwt. :—

	1895.	1894.
Aberdeen - - -	35s. 4d. to 37s.	35s. 4d. to 38s.
Dundee - - -	33s. 4d. to 35s. 10d.	34s. 2d. to 35s. 2d.
Edinburgh - - -	33s. 2d. to 39s. 10d.	33s. 6d. to 44s. 8d.
Perth - - -	33s. to 38s. 8d.	33s. 6d. to 34s. 6d.

These prices relate to cattle not distinguished as stores, there being 90 cases in these four markets where transactions in store cattle with the aid of the weighbridge are reported.

As on former occasions, it may be useful to obtain an actual average of the transactions in cattle recorded at the following places in the several grades shown. This is to be got by dividing the total price by the total live weight of the animals in each class, when the comparison for the first quarter of 1895 with that of 1894 stands as follows :—

Places.	Inferior or Third Quality.		Good or Second Quality.		Prime or First Quality.	
	1895.	1894.	1895.	1894.	1895.	1894.
ENGLAND:	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.
Leicester	30 2	31 0	33 2	—	—	—
Liverpool	—	—	27 8	28 0	33 10	33 4
London	29 4	29 10	34 0	35 2	37 6	39 2
Newcastle-on-Tyne.	—	—	32 8	32 6	34 2	35 2
SCOTLAND:						
Aberdeen	24 8	24 8	31 6	31 11	35 8	36 4
Dundee	26 2	25 11	31 8	31 11	33 8	34 3
Edinburgh	—	24 11	33 6	33 6	34 0	34 8
Perth	29 8	29 11	32 0	32 1	34 10	35 8

TOTAL NUMBER of Cattle, Sheep, and Swine, entering the MARKETS and MARTS of the under-mentioned Places in ENGLAND and SCOTLAND, with the Number WEIGHED, as received from the Market Authorities in the First Quarter 1895, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
ENGLAND.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Ashford	2,374	37	37	12,305	—	—	5,340	—	—
Birmingham	7,317	19	19	11,444	—	—	—	—	—
Bristol	12,163	—	—	17,445	—	—	81	—	—
Leicester	11,831	310	270	8,101	6	6	1,742	2	2
Leeds	9,128	346	—	23,100	229	—	2,980	113	—
Lincoln	2,302	—	—	11,603	—	—	3,950	—	—
Liverpool	18,063	969	969	55,838	69	69	—	—	—
London	25,020	3,557	1,554	151,900	2,583	388	500	—	—
Newcastle-upon-Tyne	23,095	535	535	61,167	—	—	13,666	98	198
Norwich	19,053	147	147	35,088	—	—	—	—	—
Salford	39,242	153	153	109,479	—	—	930	—	—
Shrewsbury	6,817	84	25	3,435	—	—	4,633	—	—
Wakefield	20,232	80	—	40,981	—	—	4,765	—	—
York	14,140	—	—	13,556	—	—	2,223	—	—
SCOTLAND.									
Aberdeen	17,376	6,075	6,075	7,046	2,362	2,352	4,483	—	—
Dundee	4,259	2,727	2,721	5,333	—	582	806	—	2
Edinburgh	14,813	6,295	*3,514	46,721	—	—	1,757	—	—
Glasgow	13,765	75	75	66,658	—	—	—	—	—
Perth	10,033	3,362	*724	20,005	1,882	1,862	1,907	130	1130
TOTAL for ENGLAND	210,777	9,237	3,709	555,482	2,887	463	47,633	213	100
TOTAL for SCOTLAND	60,871	18,534	*13,109	155,383	4,816	4,816	9,875	132	132
Total	271,648	24,771	*16,818	710,865	7,703	5,279	57,508	345	1232

* Prices for 2,755 cattle in addition to the above were quoted from Edinburgh, and for 2,633 cattle from Perth but without distinguishing breed or quality.

† Prices given but details insufficiently furnished.

‡ The details for 4 swine only were furnished in the form prescribed.

NUMBER and PRICES of Cattle WEIGHED in the under-mentioned Places in
First Quarter of 1895, under the Markets and Fairs

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			Good. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.	
			Per Stone.	Per Cwt.		Per Stone.	Per Cwt.		Per Stone.	Per Cwt.
ENGLAND:		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
Leicester	Herefords	—	—	—	6	4 4½	35 2	—	—	—
	Shorthorns	70	3 9½	30 2	98	4 1½	33 2	—	—	—
	Welsh	3	3 10½	31 0	—	—	—	—	—	—
	Herefords (Stores)	—	—	—	20	4 1½	32 10	—	—	—
	Welsh (Stores)	—	—	—	25	4 5½	35 6	—	—	—
Liverpool	Irish Cross Bred	—	—	—	253	3 5½	27 8	716	4 2½	33 10
London	Devons	—	—	—	4	3 10½	31 2	47	4 7	36 8
	Devons*	—	—	—	—	—	—	20	4 7	36 8
	Herefords	—	—	—	—	—	—	30	4 6	36 0
	Herefords*	—	—	—	—	—	—	5	4 6	36 0
	Highland Scots	4	3 9	30 0	6	4 2½	33 10	—	—	—
	Highland Scots*	—	—	—	2	4 3	34 0	—	—	—
	Lincoln Shorthorns	—	—	—	—	—	—	5	4 5½	35 10
	Norfolks	—	—	—	224	4 3½	34 2	313	4 7½	36 10
	Norfolk*	—	—	—	52	4 3	34 0	26	4 6½	36 2
	Polled Scots	—	—	—	93	4 5½	35 6	278	4 10½	39 0
	Polled Scots*	—	—	—	8	4 8	37 4	16	4 11	39 4
	Runts	—	—	—	26	4 2½	33 8	4	4 6½	36 4
	Scotch Shorthorns	—	—	—	4	4 7½	36 10	13	4 0½	38 6
	Shorthorns	41	3 8	29 4	272	4 2	33 4	20	4 5½	35 10
	Shorthorns*	—	—	—	32	4 1½	33 2	—	—	—
Newcastle-upon-Tyne.	Cross Bred	—	—	—	11	3 10½	31 0	18	4 8½	34 4
	Irish	—	—	—	10	4 3	34 0	24	4 3	34 0
	Polled Angus	—	—	—	—	—	—	1	3 9	30 0
	Polled Irish	—	—	—	—	—	—	8	4 0½	36 6
	Shorthorns	—	—	—	95	4 1	32 8	360	4 3½	4 2
	Shorthorns*	—	—	—	—	—	—	8	3 11½	31 6

* Sold by Live Weight.

ENGLAND and SCOTLAND, as received from the Market Authorities in the
(Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			Good. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.	
			Per Stone.	Per Cwt.		Per Stone.	Per Cwt.		Per Stone.	Per Cwt.
SCOTLAND:		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
Aberdeen	Cross Bred	959	3 0½	24 4	2,837	3 11	31 4	1,645	4 5	35 4
	Polled	83	3 1	24 8	106	4 0	32 0	159	4 6½	36 2
	Polled Angus	72	3 5½	27 8	152	4 4½	34 10	19	4 7½	37 0
	Polled (Stores)	—	—	—	—	—	—	43	4 8½	37 6
Dundee	Cross Bred Polled	14	3 4½	27 0	193	3 11½	31 8	186	4 2½	33 10
	Cross Bred Polled*	—	—	—	6	4 1	32 8	30	4 3	34 0
	Cross Bred Short-horns.	84	3 3½	26 2	227	3 11½	31 6	195	4 2½	33 8
	Cross Bred Short-horns.*	1	3 6	28 0	9	4 1½	32 10	19	4 2	33 4
	Irish Cross Bred	25	3 0½	24 6	709	3 11½	31 8	728	4 2½	33 6
	Irish Cross Bred*	1	2 11½	23 6	16	4 0½	32 4	125	4 2½	33 6
	Polled Angus	11	3 8	29 4	—	—	—	—	—	—
	Polled Angus*	1	3 6	28 0	8	4 4½	35 0	19	4 5½	35 10
	West Highland	—	—	—	2	3 10½	31 2	—	—	—
	Irish (Stores)	—	—	—	—	—	—	22	3 8½	29 10
Edinburgh	Cross Bred	—	—	—	3,100	4 2½	33 8	—	—	—
	Polled*	—	—	—	—	—	—	4	4 6½	36 6
	Polled Angus	—	—	—	3	3 5½	27 6	11	4 4½	34 10
	Polled Angus*	—	—	—	—	—	—	23	4 11½	39 10
	Polled Galloways	—	—	—	—	—	—	2	4 4½	35 2
	Shorthorns	—	—	—	62	3 9½	30 2	265	4 1½	33 2
	West Highland	—	—	—	—	—	—	4	4 2½	33 8
	Irish Shorthorns (Stores).	—	—	—	10	3 6½	28 6	—	—	—
	Shorthorns (Stores)	—	—	—	10	4 2½	33 6	—	—	—
Perth	Cross Bred	8	3 10½	30 10	98	3 11½	31 10	59	4 3½	34 2
	Cross Bred Polled	42	3 9½	30 4	220	4 0½	32 2	74	4 2½	33 8
	Cross Bred Short-horns.	18	3 5	27 4	48	4 0	32 0	42	4 10	38 8
	Polled Angus	—	—	—	6	3 11½	31 8	76	4 4½	34 10
	Shorthorns	2	3 9½	30 2	13	4 0½	32 6	16	4 1½	33 0
	Cross Bred (Stores)	—	—	—	5	3 5½	27 8	—	—	—

* Sold by Live Weight.

The number and prices of Sheep reported as weighed under the Markets and Fairs (Weighing of Cattle) Act, 1891, in the under-mentioned places in the First Quarter of 1895 are shown in the following table:—

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals		Average Price.	Animals		Average Price.	Animals		Average Price.
		Weighed.	Per Stone.		Weighed.	Per Stone.		Weighed.	Per Stone.	
		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
ENGLAND:										
Liverpool	Irish Cross Bred	—	—	—	69	5 6½	44 4	—	—	—
London	Downs	—	—	—	5	5 10½	47 0	35	6 1½	49 0
	Downs*	—	—	—	15	5 9	46 0	36	5 11½	47 8
	Half-Bred	—	—	—	175	5 7½	45 2	—	—	—
	Half-Bred*	—	—	—	71	5 9½	46 4	51	5 10	46 8
SCOTLAND:										
Aberdeen	Black Face Wethers	—	—	—	—	—	—	132	4 10½	38 10
	Cheviot Wethers	—	—	—	—	—	—	36	5 3	42 0
	Cross Bred	—	—	—	780	4 0½	32 4	951	4 11½	39 6
	Cross Bred Hoggets	—	—	—	—	—	—	120	4 10½	39 0
	Half-Bred Hoggets	—	—	—	—	—	—	397	4 11½	39 8
	Shropshire Cross Bred Hoggets.	—	—	—	20	4 5½	35 8	—	—	—
Dundee	Cross Bred Hogs	—	—	—	—	—	—	101	5 2½	41 10
	Cross Bred Hogs*	—	—	—	—	—	—	393	5 1	40 8
	Cross Bred Hoggets	—	—	—	—	—	—	6	5 5	43 4
	Shropshire Hogs	—	—	—	—	—	—	12	5 2	41 4
	Shropshire Hogs*	—	—	—	—	—	—	70	5 1½	40 10
Perth	Black Face Ewes	62	3 5	27 4	40	3 9½	30 6	—	—	—
	Black Face Wethers	—	—	—	52	4 3½	34 4	364	4 11½	39 6
	Cross Bred	—	—	—	74	4 11	39 4	150	4 11½	39 10
	Cross Bred Hogs	—	—	—	33	4 4	34 8	337	5 1	40 8
	Cross Bred Hoggets	—	—	—	35	4 6½	30 2	210	4 11½	39 10
	Cheviot Hogs	—	—	—	—	—	—	30	5 1½	41 2
	Half Bred Hogs	—	—	—	—	—	—	114	4 11½	39 8
	Half Bred Hoggets	—	—	—	—	—	—	105	4 11½	39 10
	Shropshire Cross Bred Hogs.	—	—	—	20	4 8½	37 6	—	—	—
	Shropshire Cross Bred Hoggets.	—	—	—	—	—	—	145	5 0	40 0
	Cross Bred (Stores)	—	—	—	82	5 3	42 0	—	—	—

* Sold by Live Weight.

PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

I.—PRICES OF MEAT.

AVERAGE PRICES OF DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the Third and Fourth Quarters of 1894, and the First Quarter of 1895.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	3RD QUARTER, 1894.		4TH QUARTER, 1894.		1ST QUARTER, 1895.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
BEEF:—						
Scotch, short sides	4 4 to 4 7		4 2 to 4 6		4 0 to 4 3	
„ long sides	3 10 „ 4 1		3 9 „ 4 0		3 9 „ 3 11	
English, Prime	3 10 „ 4 1		3 6 „ 3 10		3 9 „ 3 11	
Cows and Bulls	2 4 „ 2 10		1 11 „ 2 5		2 7 „ 3 1	
American, Birkenhead killed	3 0 „ 3 4		2 11 „ 3 5		3 6 „ 3 8	
„ Deptford killed	3 1 „ 3 6		2 10 „ 3 6		3 6 „ 3 8	
„ Refrig. hind-qrs.	3 2 „ 3 10		2 10 „ 3 11		3 6 „ 3 10	
„ „ fore-qrs.	1 9 „ 2 2		1 9 „ 2 2		2 8 „ 2 11	
MUTTON:—						
Scotch, Prime	4 8 „ 5 1		4 8 „ 5 0		4 10 „ 5 1	
English, Prime	4 6 „ 4 11		4 4 „ 4 8		4 8 „ 5 0	
Ewes	3 7 „ 4 0		3 2 „ 3 7		3 9 „ 4 1	
Dutch	4 1 „ 4 5		3 5 „ 4 0		4 1 „ 4 5	
German	—		—		—	
New Zealand	2 3 „ 2 7		2 1 „ 2 6		2 1 „ 2 7	
Australian	1 11 „ 2 2		1 9 „ 2 0		1 10 „ 2 0	
River Plate, Frozen	1 9 „ 2 0		1 8 „ 1 10		1 10 „ 2 0	
„ „ Town killed	3 8 „ 3 11		2 1 „ 2 8		3 8 „ 4 0	
LAMB:—						
English	4 10 „ 5 6		4 6 „ 5 1		6 1 „ 7 3	
New Zealand	3 2 „ 3 6		3 4 „ 3 8		2 11 „ 3 9	
VEAL:—						
English	3 11 „ 4 9		4 2 „ 4 10		4 3 „ 4 9	
Foreign	3 9 „ 4 7		4 1 „ 4 9		4 0 „ 4 7	
PORK:—						
English, small	4 1 „ 4 6		4 0 „ 4 4		3 6 „ 3 10	
„ medium and large	3 4 „ 3 11		3 0 „ 3 10		2 11 „ 3 6	
Foreign	—		—		—	

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE AND SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during the under-mentioned Quarters of 1894 and 1895.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
1st Quarter 1894	s. d. 2 4	s. d. 3 11	s. d. 4 6	s. d. 3 6	s. d. 4 10	s. d. 5 7
2nd Quarter „	2 5	3 11	4 6	3 6	4 11	5 8
3rd Quarter „	2 5	4 0	4 7	3 9	5 3	5 11
4th Quarter „	2 6	3 10	4 5	3 8	5 6	6 1
1st Quarter 1895	2 8	3 11	4 5	4 4	5 9	6 4

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during the under-mentioned Quarters of 1894 and 1895.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
1st Quarter 1894	s. d. 2 0	s. d. to 3 6	s. d. 3 4	s. d. to 4 10	s. d. 2 6	s. d. to 3 10	s. d. 3 8	s. d. to 4 8
2nd Quarter „	1 10	„ 3 4	3 4	„ 5 0	2 6	„ 4 0	4 0	„ 5 2
3rd Quarter „	2 0	„ 3 6	2 8	„ 4 8	2 4	„ 3 8	3 0	„ 4 8
4th Quarter „	1 10	„ 3 4	2 8	„ 4 8	2 0	„ 3 6	3 4	„ 4 10
1st Quarter 1895	2 10	„ 3 8	3 4	„ 5 0	2 8	„ 4 2	4 0	„ 5 4

* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the Liverpool Abattoir, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.

I.—PRICES OF MEAT—*continued.*

BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) in the BERLIN CATTLE MARKET in the first four months of 1895.

MONTHS.	CATTLE.		SHEEP.	
	Per cwt.		Per cwt.	
1895.	s. d.	s. d.	s. d.	s. d.
January	61 5½	to 64 11½	50 3½	to 53 1
February	59 6¾	„ 63 4¼	46 11½	„ 50 3¾
March	60 1¾	„ 62 6¼	45 10½	„ 49 4¾
April	57 8¼	„ 60 4¾	44 1¼	„ 48 2¼

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirtschaftliche Presse*.

PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium Quality) in the PARIS CATTLE MARKET in the first four months of 1895.

MONTHS.	OXEN.	CALVES.	SHEEP.	PIGS.
	Per cwt.	Per cwt.	Per cwt.	Per cwt.
LIVE WEIGHT.				
1895.	s. d.	s. d.	s. d.	s. d.
January	39 1½	42 0	41 6¼	43 7¼
February	38 7½	41 1½	42 0	45 5
March	36 1	38 4½	41 7½	43 7¼
April	35 0	38 9½	41 5½	42 1¾
DEAD WEIGHT.				
1895.	s. d.	s. d.	s. d.	s. d.
January	63 1½	82 7½	74 8	61 7
February	62 0½	83 4	75 7½	61 0½
March	60 1	76 9½	75 7½	57 9
April	58 5½	78 1	75 4½	56 10½

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.

I.—PRICES OF MEAT—continued.

CHICAGO.

AVERAGE PRICES of CATTLE at CHICAGO per Cwt. (Live Weight)
in the first four months of 1895.

Months.	Good Dressed Beef and Shipping Steers.		Export Cattle.		Extra Prime Cattle.	
1895.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
January -	18 5 $\frac{1}{4}$	to 22 10 $\frac{1}{4}$	22 10 $\frac{1}{4}$	to 25 1	25 3 $\frac{1}{4}$	to 27 6 $\frac{1}{4}$
February -	19 5 $\frac{3}{4}$	„ 23 11	23 8	„ 24 11 $\frac{1}{4}$	25 5 $\frac{1}{4}$	„ 27 0 $\frac{3}{4}$
March -	22 0 $\frac{3}{4}$	„ 26 9 $\frac{1}{4}$	25 10 $\frac{1}{4}$	„ 27 1 $\frac{3}{4}$	28 1 $\frac{1}{4}$	„ 29 2
April -	22 2	„ 26 7 $\frac{3}{4}$	26 2 $\frac{1}{4}$	„ 27 1 $\frac{1}{2}$	27 9 $\frac{1}{4}$	„ 28 9 $\frac{1}{4}$

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson, & Co.,
of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per Cwt., of various Kinds of DEAD MEAT
Imported into the United Kingdom from FOREIGN COUNTRIES
and BRITISH POSSESSIONS in the under-mentioned Quarters
of 1894 and 1895.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.	PORK.		BACON.	HAMS.
	Fresh.	Salted.	Fresh.	Fresh.	Salted.		
1st Quarter 1894 -	s. d. 42 5	s. d. 31 4	s. d. 39 11	s. d. 49 1	s. d. 35 3	s. d. 45 4	s. d. 47 4
2nd Quarter „ -	40 9	29 4	40 1	47 6	30 6	42 9	47 9
3rd Quarter „ -	39 1	26 5	36 9	47 11	26 6	44 8	52 11
4th Quarter „ -	38 1	26 0	35 5	48 1	27 4	40 10	47 3
1st Quarter 1895 -	40 6	26 7	35 4	43 5	29 0	37 2	43 0

II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial
bushels,* computed from the Weekly Averages of Corn
Returns from the 196 Returning Markets of ENGLAND AND
WALES, pursuant to the Corn Returns Act, 1882, together
with the QUANTITIES returned as sold at such Markets, in
the under-noted periods of the Years 1895, 1894, and 1893.

QUARTER ENDED.	PRICES.			QUANTITIES.		
	1895.	1894.	1893.	1895.	1894.	1893.
Wheat.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day -	20 1	25 1	25 7	652,874	613,313	708,986
Midsummer -	—	24 4	26 2	—	429,460	674,704
Michaelmas -	—	22 11	26 4	—	313,288	577,112
Christmas -	—	19 2	27 2	—	300,773	639,268
Barley.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day -	21 6	28 1	25 2	1,835,588	671,620	1,092,467
Midsummer -	—	25 2	24 0	—	40,863	104,155
Michaelmas -	—	22 1	24 1	—	95,121	248,829
Christmas -	—	22 7	29 1	—	1,921,744	1,920,615
Oats.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day -	13 9	18 1	17 7	250,838	193,922	201,578
Midsummer -	—	18 7	19 5	—	61,862	75,457
Michaelmas -	—	17 11	19 9	—	70,824	99,899
Christmas -	—	13 10	18 1	—	239,139	198,594

* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from each of the under-mentioned Foreign Countries and British Possessions in the Year 1894, and in the First Quarter of 1895.

COUNTRIES from which Exported.	Average Value per Imperial Quarter.	
	Year, 1894.	First Quarter, 1895.
	s. d.	s. d.
ARGENTINE REPUBLIC - -	22 0	22 4
CHILE - - - -	23 6	23 3
ROUMANIA - - - -	22 9	23 11
RUSSIA - - - -	21 11	21 3
TURKEY - - - -	21 8	21 0
UNITED STATES { Atlantic	23 8	23 1
OF AMERICA { Pacific	24 1	24 1
AUSTRALASIA - - - -	24 3	24 4
INDIA, BRITISH - - - -	22 11	21 5
NORTH AMERICA, BRITISH -	23 5	24 4

II.—CORN PRICES:—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1895, and in the Corresponding Weeks in 1894 and 1893.

Weeks ended (in 1895)	Wheat.			Barley.			Oats.		
	1895.	1894.	1893.	1895.	1894.	1893.	1895.	1894.	1893.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Jan. 5 -	20 4	26 4	25 10	21 5	28 10	24 9	14 2	17 8	16 8
" 12 -	20 8	26 4	26 4	21 3	28 10	25 6	13 9	18 0	16 11
" 19 -	20 8	26 3	26 6	21 8	29 2	25 7	14 9	18 0	17 0
" 26 -	20 9	26 1	26 4	21 11	29 1	25 6	13 10	18 0	17 3
Feb. 2 -	20 6	25 7	26 3	21 5	28 11	25 4	13 10	18 1	17 5
" 9 -	19 11	25 3	25 11	21 8	28 8	25 0	13 6	17 10	17 11
" 16 -	19 10	24 10	25 7	21 10	28 3	24 11	13 8	18 0	17 10
" 23 -	19 10	24 5	25 5	22 2	28 0	25 1	13 9	18 4	18 0
Mar. 2 -	19 10	24 3	25 1	21 9	27 5	25 2	14 0	18 5	17 11
" 9 -	19 9	24 3	25 0	21 6	27 0	25 2	13 9	18 4	18 1
" 16 -	19 0	24 3	24 9	21 7	27 5	25 0	13 8	18 4	18 7
" 23 -	20 0	24 4	24 8	20 10	26 11	25 5	13 10	18 1	18 3
" 30 -	20 3	24 6	24 9	20 10	27 1	25 11	14 0	18 0	18 4
Apr. 6 -	20 4	24 6	24 9	20 11	26 7	25 6	14 5	18 3	17 11
" 13 -	20 4	24 7	24 10	21 3	27 10	24 8	13 11	18 2	18 7
" 20 -	20 6	24 8	25 5	21 2	28 6	24 5	14 5	18 4	18 8
" 27 -	20 9	24 10	25 10	20 8	26 3	24 0	14 2	18 3	19 3
May 4 -	21 4	24 10	25 10	20 5	26 1	23 11	14 8	18 7	19 5
" 11 -	22 4	24 9	26 4	20 8	24 11	22 7	15 3	18 9	19 4
" 18 -	22 10	24 5	27 0	20 6	25 0	23 2	15 3	18 9	19 8
" 25 -	23 5	24 4	27 6	20 1	24 0	25 0	15 9	18 10	19 6

II.—CORN PRICES:—BELGIUM, FRANCE, ENGLAND AND WALES.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND AND WALES in the first four months of 1895.

Month.	Belgium.	France.	England and Wales.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - - -	22 3	30 5	20 7
February - - - -	21 11	30 7	20 0
March - - - -	22 3	30 11	19 11
April - - - -	—	30 7	20 5
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - - -	21 1	19 8	21 6
February - - - -	20 2	19 8	21 9
March - - - -	20 0	19 6	21 3
April - - - -	—	19 4	21 0
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - - -	13 4	18 5	13 11
February - - - -	13 7	18 5	13 8
March - - - -	13 7	18 6	13 10
April - - - -	—	18 4	14 2

Note.—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished under the Corn Returns Act, 1882.

II.—CORN PRICES :—LONDON, PARIS, BERLIN.

AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER at the under-mentioned Markets in the first four months of 1895.

Month.	London.	Paris.	Berlin.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - -	21 10	29 0	29 8
February - - -	21 1	29 0	29 3
March - - -	20 5	30 3	30 2
April - - -	21 3	30 7	31 1
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - -	25 11	18 10	16 8 to 31 2
February - - -	24 2	18 9	16 8 „ 30 10
March - - -	24 1	18 6	16 11 „ 30 2
April - - -	No sales.	18 3	18 4 „ 30 0
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - -	15 3	17 0	16 3
February - - -	14 11	17 0	16 2
March - - -	15 7	17 0	16 2
April - - -	14 10	17 6	16 9

Note.—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.

III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE, in the months of March and April 1895, and in the First Quarter of 1895.

(Compiled from the *Grocer*.)

DESCRIPTION.	Month of March 1895.	Month of April 1895.	1st Quarter of 1895.
	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.
BUTTER :			
Clonmel - - -	- - -	- - -	- - -
Cork, 1sts - - -	92 0 to -	81 0 to -	98 0 to -
„ 2nds - - -	85 0 „ -	66 0 „ -	95 0 „ -
„ 3rds - - -	61 2 „ -	50 0 „ -	73 9½ „ -
„ 4ths - - -	46 0 „ -	44 3 „ -	51 3 „ -
Friesland - - -	72 9½ „ 76 9½	67 0 „ 73 0	90 3 „ 94 7
Dutch Factories - -	75 7 „ 80 0	74 0 „ 79 0	93 0 „ 98 2
French Baskets - -	95 7 „ 110 0	90 0 „ 106 0	103 10 „ 115 10
„ Crocks and Firkins. - - -	81 2 „ 91 2	76 0 „ 86 0	89 2¼ „ 99 0¾
„ 2nds and 3rds - -	71 2 „ 76 9½	70 0 „ 74 0	79 4½ „ 84 11
Danish and Swedish	94 4½ „ 99 7	90 0 „ 96 0	100 11½ „ 106 8
Finnish - - -	77 7 „ 90 0	76 0 „ 85 6	80 6 „ 96 0
Russian - - -	65 2 „ 78 9½	65 0 „ 83 0	69 0¾ „ 83 5
Australian - - -	42 0 „ 88 4¼	36 6 „ 80 6	47 10 „ 96 9½
New Zealand - - -	42 0 „ 88 4¼	36 6 „ 80 6	47 10 „ 96 9½
MARGARINE :			
Margarine - - -	32 0 „ 50 0	30 6 „ 53 0	31 2 „ 53 2
Mixtures - - -	54 0 „ 76 0	55 6 „ 77 6	56 4 „ 77 6
CHEESE :			
Cheddar - - -	48 7 „ 71 7	44 0 „ 71 0	44 7 „ 71 10
Somerset - - -	46 0 „ 62 9½	46 0 „ 62 0	48 4 „ 64 11
Cheshire - - -	33 2 „ 80 9½	30 0 „ 84 0	34 6¾ „ 79 3
Wiltshire - - -	35 2 „ 60 9½	36 0 „ 60 0	33 1½ „ 60 7
Double Gloucester -	36 0 „ 60 0	36 0 „ 59 6	36 0 „ 60 0
Derby - - -	32 0 „ 50 9½	40 6 „ 51 3	32 0 „ 51 5

PRICES OF VEGETABLES AND FRUIT.

I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	MARCH.				APRIL.			
	COVENT GARDEN.		FARRINGDON.		COVENT GARDEN.		FARRINGDON.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Artichokes, per ton	—	—	—	—	—	—	—	—
Asparagus, per 100 heads	6 9	to 8 6	—	—	5 0	to 6 7½	—	—
Beans, per lb.	1 5½	„ 1 10½	—	—	1 0	„ 1 5	—	—
Beetroot, per bushel	—	—	3 0	to 3 6	—	—	—	—
„ per cwt.	—	—	—	—	—	—	2 9	to 4 0
Broccoli, per bushel	—	—	—	—	—	—	1 9	„ 2 3
„ per sieve	—	—	—	—	—	—	—	—
Carrots, per cwt.	—	—	2 0	„ 2 6	—	—	—	—
Cauliflowers, per dozen	—	—	1 6	„ 1 9	—	—	1 6	„ —
Cucumbers, per dozen	2 0	„ 5 0	5 0	„ —	1 9	„ 3 0	2 6	„ 3 1½
Curly Kale, per bushel	3 0	„ 4 6	4 0	„ 6 0	3 0	„ 4 0	3 4½	„ 4 9
Greens, per bushel	—	—	4 0	„ —	—	—	2 6	„ 3 0
Horseradish, per bundle	—	—	3 0	„ 4 6	—	—	1 10	„ 2 6
Leeks, per dozen bunches	—	—	1 0	„ 1 1	—	—	1 0	„ 1 3
Mint, per dozen bunches	—	—	1 6	„ 3 0	—	—	1 0	„ 2 0
Mushrooms, per lb.	6 0	„ 9 0	—	—	6 0	„ 9 0	11 0	„ 15 0
Onions, per bushel	0 10½	„ 1 0½	—	—	0 7½	„ 0 9½	—	—
„ English, per ton	2 0	„ 2 6	—	—	2 0	„ 2 6	—	—
Parsley, per bushel	—	—	120 0	„ —	—	—	110 0	„ —
„ per dozen bunches	—	—	5 0	„ —	—	—	6 0	„ 8 0
Parsnips, per cwt.	—	—	—	—	—	—	3 0	„ 4 0
Potatoes:	—	—	—	—	—	—	—	—
Bruces, per ton	—	—	85 0	„ 100 0	—	—	90 0	„ 101 8
Cambridgeshire Magnums, per ton	—	—	90 0	„ —	—	—	80 0	„ 90 0
Canary Islands, per cwt.	—	—	18 0	„ —	15 0	„ 18 0	—	—
Channel Islands, per lb.	0 5	„ 0 7	—	—	0 6	„ 0 7	—	—
Dunbars, per ton	—	—	120 0	„ 135 0	—	—	120 8	„ 136 8
Hebrons „ „	—	—	105 0	„ 130 0	—	—	—	—
Imperators, per ton	—	—	—	—	—	—	95 0	„ 103 0
Magnums „ „	—	—	100 9	„ 120 0	—	—	90 0	„ 100 0
Main Crop „ „	—	—	100 0	„ 125 0	—	—	100 0	„ 110 0
Rending Giants, per ton	—	—	100 0	„ 110 0	—	—	—	—
Scotch Bruces „ „	—	—	100 0	„ 110 0	—	—	90 0	„ 110 0
„ Magnums „ „	—	—	110 0	„ 140 0	—	—	80 0	„ 90 0
„ Main Crop, per ton	—	—	107 8	„ 115 0	—	—	100 0	„ 115 0
Snowdrops, per ton	—	—	100 0	„ 125 0	—	—	—	—
Rhubarb, per dozen bundles	1 3	„ 1 6½	1 3	„ 1 9	1 3	„ 1 9	1 11	„ 2 6
Savoy, per sieve	—	—	3 0	„ —	—	—	—	—
„ per tally	—	—	6 6	„ 7 6	—	—	—	—
Seakale, per punnet	—	—	—	—	—	—	—	—
Spinach, per bushel	1 7½	„ 1 11½	1 9	„ —	1 2½	„ 1 8	—	—
Sprouts, per bushel	—	—	4 0	„ —	—	—	3 0	„ 6 0
„ per half sieve	—	—	—	—	—	—	2 0	„ 2 6
Swedes, per bag	—	—	1 8	„ 1 6	—	—	2 6	„ 3 0
Turnips, per bag	—	—	2 2	„ 2 9	—	—	2 6	„ 3 0
„ per cwt.	—	—	—	—	—	—	2 6	„ 3 2
Turnip-tops, per bag	—	—	5 0	„ 6 0	—	—	1 9	„ 2 0
„ per bushel	—	—	—	—	—	—	—	—

PRICES OF VEGETABLES AND FRUIT—continued.

—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—continued.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	MARCH.				APRIL.			
	BOROUGH.		STRATFORD.		BOROUGH.		STRATFORD.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Broccoli, per bag	—	—	4 6	to 6 0	2 0	to 2 9	—	—
per sieve	—	—	3 6	„ 4 6	—	—	2 6	to 3 0
Cabbages, per bag	—	—	3 0	„ 7 0	—	—	—	—
per tally	1 9	to 2 0	—	—	1 9	„ 2 0	—	—
Carrots, per bag	—	—	21 10½	„ 30 0	—	—	22 8	„ 27 4
household, per ton	—	—	15 0	„ 22 3	—	—	14 0	„ 22 0
cattle feeding, per ton	—	—	2 11	„ 4 4	1 3	„ 2 0	1 8	„ 2 2
Cauliflowers, per dozen	—	—	10 0	„ 20 0	—	—	8 4	„ 10 0
per tally	7 6	„ 12 3	—	—	—	—	1 6	„ 3 0
Celery, per dozen bundles	—	—	—	—	—	—	—	—
Cucumbers, per dozen	—	—	3 9	„ 5 0	—	—	—	—
Greens, per bag	—	—	5 0	„ 7 0	—	—	—	—
per tally	1 0	„ 1 2½	1 0	„ 1 2	1 0	„ 1 3	—	—
Horseradish, per bundle	—	—	12 3	„ 13 3	—	—	12 0	„ 17 0
Mangolds, per ton	—	—	4 7½	„ 5 0	4 4½	„ 5 6	3 3	„ 4 6
Onions, English, per cwt.	4 9	„ 6 9	4 0	„ 4 9	—	—	3 0	„ 3 6
„ Bordeaux, per case	—	—	3 1	„ 3 7	—	—	2 0	„ 2 9
„ Dutch, per bag	—	—	—	—	—	—	4 6	„ 5 0
„ Egyptian, per bag	—	—	—	—	3 0	„ 5 0	—	—
„ foreign, per bag	2 10½	„ 4 10½	8 0	„ 9 0	—	—	—	—
„ Valencia, per case	—	—	—	—	2 7½	„ 3 1½	—	—
Parsnips, per bag	—	—	4 6	„ 5 0	—	—	3 6	„ 4 3
per cwt.	—	—	0 11	„ 1 3	—	—	0 4	„ 0 6
per score	—	—	—	—	—	—	—	—
Potatoes, per ton	57 6	„ 130 0	—	—	58 4	„ 130 0	—	—
Tenerife, per cwt.	—	—	95 0	„ 108 9	—	—	95 0	„ 110 0
Bruces, per ton	—	—	—	—	—	—	65 0	„ 75 0
French Chascons, per ton	—	—	5 0	„ 5 6	—	—	4 0	„ 5 0
German, Bruces, per bag	—	—	5 0	„ 5 6	—	—	—	—
„ Imperators, per bag	—	—	—	—	—	—	4 0	„ 5 0
„ Magnums „ „	—	—	80 0	„ 107 6	—	—	90 0	„ 105 0
Imperators, per ton	—	—	87 6	„ 93 9	—	—	85 0	„ 92 6
Magnums, dark-soil, per ton	—	—	92 6	„ 105 0	—	—	92 6	„ 105 0
„ uplands „ „	—	—	102 6	„ 115 0	—	—	95 0	„ 110 0
Main Crop Kidneys „ „	—	—	95 0	„ 106 3	—	—	95 0	„ 110 0
Scotch, Bruces „ „	—	—	92 6	„ 107 6	—	—	110 0	„ 120 0
„ Magnums „ „	—	—	101 8	„ 111 8	—	—	—	—
„ Main Crop „ „	—	—	100 0	„ 120 0	—	—	—	—
Sutton's Abundance „ „	1 6	„ 2 4	—	—	1 6	„ 1 9	2 0	„ 2 9
Rhubarb, per dozen bundles	—	—	—	—	—	—	1 6	„ —
Salad, per dozen	4 0	„ 7 9	2 9	„ 8 6	5 0	„ 10 0	8 0	„ 10 0
Savoy, per tally	1 6	„ 2 2	2 0	„ 2 4½	1 6	„ 2 6	—	—
Sprouts, per half sieve	—	—	12 3	„ 13 9	—	—	12 0	„ 20 0
Swedes, per ton	—	—	—	—	—	—	2 6	„ 3 6
Swede-tops, per bag	—	—	—	—	2 1½	„ 3 0	—	—
Turnips, per bag	2 10½	„ 3 4	—	—	—	—	1 6	„ 2 0
per dozen bunches	—	—	25 0	„ 46 3	—	—	20 0	„ 30 0
per ton	—	—	4 0	„ 5 0	1 4½	„ 2 3	2 1½	„ 3 0
Turnip-tops, per bag	—	—	0 7	„ 0 8	—	—	0 6	„ —
Watercress, per dozen	—	—	—	—	—	—	—	—

PRICES OF VEGETABLES AND FRUIT—continued.

II.—MONTHLY MEAN PRICES (WHOLESALE) OF FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	MARCH.		APRIL.	
	s. d.	s. d.	s. d.	s. d.
COVENT GARDEN :				
Cobs, per 100 lbs.	21 3	to 25 7½	19 0	to 22 6
Figs, per dozen	—	—	6 0	„ 8 0
Grapes, 1st quality, Black English, per lb.	2 9	„ 3 4½	3 6	„ 4 7½
Melons, each	—	—	3 0	„ 4 0
Peaches, per dozen	—	—	12 0	„ 24 0
Pine-apples, St. Michael, each	2 0	„ 6 0	2 0	„ 6 0
Strawberries, morning gathered, per lb.	—	—	4 0	„ 5 0
„ „ „ 2nds, per lb.	—	—	1 9	„ 2 6
Tomatos, Canary Islands, per lb.	0 3	„ 0 6	0 3	„ 0 6
„ English, per lb.	1 6	„ 1 9	1 4½	„ 1 7½
FARRINGTON :				
Apples, Canadian, per barrel	12 0	„ 15 0	15 6	„ 20 0
„ Baldwins, per barrel	14 0	„ 13 6	—	—
„ Golden Russets, per barrel	18 0	„ 21 0	—	—
„ Greenings, per barrel	15 0	„ 18 0	—	—
Grapes, black, per lb.	3 0	—	—	—
Pears, Californian, per case	—	—	6 0	„ 12 0
BOROUGH :				
Apples, English, per bushel	3 0	„ 9 0	3 8	„ 8 8
„ Canadian, per barrel	12 8	„ 18 0	12 0	„ 18 6
„ other sorts, per barrel	8 0	„ 10 0	—	—
STRATFORD :				
Apples, English, per bushel	6 9	„ 7 8	3 2	„ 5 2
„ American, per barrel	15 0	„ 18 0	12 0	„ 18 0

PRICES OF WOOL.

III.—AVERAGE PRICES OF ENGLISH WOOL, per Pack of 240 lbs., in the months of March and April 1895.

(Compiled from the *Economist*.)

DESCRIPTION.	MARCH.		APRIL.	
	£ s.	£ s.	£ s.	£ s.
Fleeces, South Down hoggs -	9 10	to 10 10	9 10	to 10 10
Half-bred hoggs -	9 10	„ 10 5	9 10	„ 10 5
Half-bred wethers -	9 0	„ 9 15	9 0	„ 9 15
Kent fleeces -	9 10	„ 10 0	9 10	„ 10 0
South Down ewes and wethers -	9 10	„ 10 0	9 10	„ 10 0
Leicester „ „ -	9 0	„ 9 10	9 0	„ 9 10

CONTAGIOUS DISEASES OF ANIMALS.

I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER OF CATTLE returned as SLAUGHTERED, by order of the Board of Agriculture, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having DIED from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro-Pneumonia.	SWINE that Died of Swine-Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine-Fever.
March 1894 -	No.	No.	No.	No.	No.	No.
June 1894 -	8	303	16	1,862	14,057	221
September 1894 -	7	88	7	2,186	22,306	374
December 1894 -	—	—	5	1,971	12,311	435
March 1895 -	—	43	2	1,212	7,622	290
				1,914	9,584	190

NUMBER of PLACES upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies. DISEASED ANIMALS KILLED OR DIED.
	OUT- BREAKS.	ANIMALS ATTACKED.	OUT- BREAKS.	ANIMALS ATTACKED.	
March 1894 -	No. 184	No. 364	No. 293	No. 382	No. 38
June 1894 -	113	251	230	351	60
September 1894	91	220	230	372	49
December 1894	106	162	212	332	111
March 1895 -	123	283	243	428	207

II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of CATTLE returned as SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having DIED from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro- Pneumonia.	SWINE that Died of Swine- Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine- Fever.
March 1894 -	No. —	No. —	No. 22	No. 540	No. 7,743	No. 139
June 1894 -	—	—	5	932	12,060	71
September 1894	—	—	1	902	2,446	651
December 1894	—	—	—	562	6,146	947
March 1895 -	—	—	—	504	3,402	675

NUMBER of PLACES in Ireland upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies. DISEASED ANIMALS KILLED OR DIED.
	OUTBREAKS.	ANIMALS ATTACKED.	OUTBREAKS.	ANIMALS ATTACKED.	
March 1894 -	No. 3	No. 3	No. 1	No. 1	No. 89
June 1894 -	—	—	4	9	213
September 1894	1	1	6	19	242
December 1894	1	2	2	3	244
March 1895 -	1	1	5	5	171

POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

ADVANTAGES OFFERED FOR OLD AGE PENSIONS.

Provision for old age can be made by buying Savings Bank Deferred Annuities from 1*l.* to 100*l.* to begin at any age selected.

RETURN OF PURCHASE MONEY. The Premiums for Deferred Annuities can be returned on application, or on Death before the Annuity begins, if the Contract is taken out on these conditions.

IMMEDIATE PENSIONS. Annuities to begin at once, of any amount from 1*l.* to 100*l.* a year, can be bought through the Post Office Savings Bank. The Purchase Money is payable in a lump sum which is not returnable, and the Pensions are payable half-yearly.

Savings Banks Annuities are payable by half-yearly instalments on the 5th January and the 5th July, or the 5th April and 10th October, according to the date of purchase.

PROCEDURE. A simple form of Proposal, and a form for statement of age, can be obtained at any Post Office Savings Bank. When filled up the forms will be forwarded by the local Postmaster to the Chief Office, London, and a Contract will be issued when the first premium has been paid. Annuity Premiums are payable in the same way as Insurance Premiums, namely, by transfers from Savings Bank accounts.

The following Table shows the cost of an Immediate Life Annuity of £1, and the annual or single premium for which a Deferred Life Annuity of £1 will be granted.

POST OFFICE SAVINGS BANKS.

OLD AGE PENSIONS.—IMMEDIATE LIFE ANNUITIES.

This Table shows the cost of an Immediate Life Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below.

AGE at time of Purchase.	Males. Cost of an Immediate Annuity of £1.	Females. Cost of an Immediate Annuity of £1.	AGE at time of Purchase.	Males. Cost of an Immediate Annuity of £1.	Females. Cost of an Immediate Annuity of £1.
5 and under 6	£ s. d. 25 19 0	£ s. d. 27 12 6	44 and under 45	£ s. d. 16 15 8	£ s. d. 18 13 3
6 " 7	25 15 1	27 9 1	45 " 46	16 9 11	18 6 9
7 " 8	25 11 1	27 5 8	46 " 47	16 4 2	18 0 0
8 " 9	25 7 0	27 2 2	47 " 48	15 18 3	17 13 2
9 " 10	25 2 11	26 18 8	48 " 49	15 12 3	17 6 1
10 " 11	24 18 10	26 15 1	49 " 50	15 6 1	16 18 11
11 " 12	24 14 9	26 11 6	50 " 51	14 19 11	16 11 9
12 " 13	24 10 6	26 7 10	51 " 52	14 13 6	16 4 7
13 " 14	24 6 4	26 4 1	52 " 53	14 7 1	15 17 4
14 " 15	24 2 1	26 0 4	53 " 54	14 0 5	15 9 11
15 " 16	23 17 10	25 16 6	54 " 55	13 13 8	15 2 4
16 " 17	23 13 6	25 12 7	55 " 56	13 6 9	14 14 9
17 " 18	23 9 1	25 8 8	56 " 57	12 19 8	14 6 11
18 " 19	23 4 9	25 4 8	57 " 58	12 12 5	13 19 0
19 " 20	23 0 4	25 0 8	58 " 59	12 1 11	13 11 1
20 " 21	22 15 10	24 16 6	59 " 60	11 17 4	13 3 1
21 " 22	22 11 4	24 12 4	60 " 61	11 9 8	12 15 1
22 " 23	22 6 9	24 8 1	61 " 62	11 2 2	12 7 0
23 " 24	22 2 3	24 3 10	62 " 63	10 14 11	11 19 0
24 " 25	21 17 7	23 19 5	63 " 64	10 7 8	11 11 0
25 " 26	21 12 11	23 15 0	64 " 65	10 0 6	11 2 11
26 " 27	21 8 3	23 10 6	65 " 66	9 13 4	10 14 7
27 " 28	21 3 6	23 5 11	66 " 67	9 6 4	10 6 4
28 " 29	20 18 9	23 1 3	67 " 68	8 19 7	9 18 1
29 " 30	20 13 11	22 16 6	68 " 69	8 12 10	9 9 10
30 " 31	20 9 1	22 11 8	69 " 70	8 6 2	9 1 10
31 " 32	20 4 2	22 6 9	70 " 71	7 19 5	8 14 2
32 " 33	19 19 2	22 1 9	71 " 72	7 12 10	8 6 10
33 " 34	19 14 2	21 16 7	72 " 73	7 6 4	7 19 10
34 " 35	19 9 2	21 11 5	73 " 74	7 0 1	7 13 0
35 " 36	19 4 1	21 6 2	74 " 75	6 14 1	7 6 4
36 " 37	18 18 11	21 0 9	75 " 76	6 8 4	6 19 10
37 " 38	18 13 9	20 15 3	76 " 77	6 2 8	6 13 7
38 " 39	18 8 6	20 9 7	77 " 78	5 17 4	6 7 5
39 " 40	18 3 2	20 3 11	78 " 79	5 12 3	6 1 6
40 " 41	17 17 10	19 18 0	79 " 80	5 7 2	5 15 9
41 " 42	17 12 4	19 12 1	80 or any greater age.	5 2 4	5 10 3
42 " 43	17 6 10	19 5 11			
43 " 44	17 1 4	18 19 8			

POST OFFICE SAVINGS BANKS.

OLD AGE PENSIONS.—DEFERRED LIFE ANNUITIES.

The Annuity Tables below give the cost of an Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below. In this class of Annuities the Purchase Money will be returned on application, or on the Death of the Nominee, if an instalment of the Annuity shall not have become due. These Pensions can be Deferred any number of years from 10 to 50, and any cost not given below will be furnished on application to the Controller, Post Office Savings Bank, London.

Purchase Money Returnable Scale.

Age at time of Purchase.	Cost of an Annuity of £1 payable after the expiration of 10 YEARS.				Cost of an Annuity of £1 payable after the expiration of 20 YEARS.			
	Males.		Females.		Males.		Females.	
	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.
21 and under 22	£ s. d. 1 12 5	£ s. d. 15 15 9	£ s. d. 1 15 10	£ s. d. 17 9 0	£ s. d. 0 13 0	£ s. d. 10 15 1	£ s. d. 0 14 6	£ s. d. 11 19 3
22 " 23	1 12 0	15 11 10	1 15 5	17 5 1	0 12 10	10 11 8	0 14 3	11 15 6
23 " 24	1 11 7	15 7 11	1 15 0	17 1 1	0 12 7	10 8 4	0 14 0	11 11 9
24 " 25	1 11 3	15 4 0	1 14 7	16 17 0	0 12 5	10 4 10	0 13 9	11 7 10
25 " 26	1 10 10	15 0 0	1 14 2	16 12 11	0 12 2	10 1 4	0 13 6	11 3 10
26 " 27	1 10 5	14 16 0	1 13 9	16 8 8	0 12 0	9 17 10	0 13 3	10 19 9
27 " 28	1 10 0	14 11 11	1 13 4	16 4 4	0 11 9	9 14 3	0 13 0	10 15 6
28 " 29	1 9 7	14 7 10	1 12 10	16 0 0	0 11 6	9 10 7	0 12 9	10 11 3
29 " 30	1 9 2	14 3 9	1 12 5	15 15 6	0 11 4	9 6 10	0 12 6	10 6 10
30 " 31	1 8 8	13 19 6	1 11 11	15 10 11	0 11 1	9 3 1	0 12 3	10 2 6
31 " 32	1 8 3	13 15 3	1 11 5	15 6 3	0 10 10	8 19 2	0 12 0	9 18 1
32 " 33	1 7 10	13 11 0	1 10 11	15 1 6	0 10 7	8 15 2	0 11 9	9 13 8
33 " 34	1 7 5	13 6 8	1 10 5	14 16 7	0 10 4	8 11 2	0 11 5	9 9 2
34 " 35	1 6 11	13 2 3	1 9 11	14 11 7	0 10 1	8 7 6	0 11 2	9 4 6
35 " 36	1 6 6	12 17 9	1 9 5	14 6 6	0 9 10	8 2 10	0 10 11	8 19 11
36 " 37	1 6 0	12 13 8	1 8 11	14 1 3	0 9 7	7 18 6	0 10 7	8 15 2
37 " 38	1 5 6	12 8 7	1 8 4	13 15 10	0 9 4	7 14 1	0 10 4	8 10 4
38 " 39	1 5 1	12 3 11	1 7 9	13 10 4	0 9 1	7 9 6	0 10 0	8 5 5
39 " 40	1 4 7	11 19 2	1 7 2	13 4 10	0 8 9	7 4 10	0 9 9	8 0 7
40 " 41	1 4 1	11 14 4	1 6 7	12 19 2	0 8 6	7 0 2	0 9 5	7 15 8
41 " 42	1 3 7	11 9 4	1 6 0	12 13 7	0 8 3	6 15 7	0 9 2	7 10 9
42 " 43	1 3 0	11 4 3	1 5 6	12 7 11	0 7 11	6 11 2	0 8 10	7 5 10
43 " 44	1 2 6	10 19 1	1 4 10	12 2 1	0 7 8	6 6 9	0 8 6	7 1 0
44 " 45	1 2 0	10 13 9	1 4 3	11 16 3	0 7 5	6 2 4	0 8 3	6 16 0
45 " 46	1 1 5	10 8 4	1 3 8	11 10 3	0 7 2	5 18 0	0 7 11	6 11 0

Purchase Money Not Returnable Scale.

21 and under 22	1 10 3	14 2 4	1 14 0	16 1 5	0 11 0	8 5 11	0 12 11	9 19 2
22 " 23	1 9 10	13 18 1	1 13 7	15 17 3	0 10 10	8 2 2	0 12 8	9 15 4
23 " 24	1 9 5	13 13 8	1 13 2	15 13 1	0 10 7	7 18 5	0 12 5	9 11 5
24 " 25	1 8 11	13 9 4	1 12 9	15 8 10	0 10 4	7 14 7	0 12 2	9 7 6
25 " 26	1 8 6	13 4 10	1 12 4	15 4 6	0 10 2	7 10 9	0 11 11	9 3 6
26 " 27	1 8 1	13 0 5	1 11 10	15 0 1	0 9 11	7 6 11	0 11 8	8 19 5
27 " 28	1 7 8	12 15 11	1 11 5	14 15 7	0 9 8	7 3 1	0 11 5	8 15 3
28 " 29	1 7 2	12 11 5	1 10 11	14 11 1	0 9 5	6 19 2	0 11 2	8 11 0
29 " 30	1 6 9	12 6 10	1 10 6	14 6 5	0 9 3	6 15 4	0 10 11	8 6 9
30 " 31	1 6 3	12 2 3	1 10 0	14 1 9	0 9 0	6 11 4	0 10 8	8 2 5
31 " 32	1 5 10	11 17 8	1 9 6	13 16 11	0 8 9	6 7 5	0 10 5	7 17 11
32 " 33	1 5 4	11 13 0	1 9 0	13 12 1	0 8 6	6 3 0	0 10 1	7 13 5
33 " 34	1 4 11	11 8 3	1 8 6	13 7 2	0 8 3	5 19 0	0 9 10	7 8 10
34 " 35	1 4 5	11 3 6	1 8 0	13 2 1	0 8 0	5 15 5	0 9 6	7 4 2
35 " 36	1 3 11	10 18 9	1 7 6	12 16 11	0 7 9	5 11 5	0 9 3	6 19 5
36 " 37	1 3 5	10 13 11	1 6 11	12 11 8	0 7 6	5 7 5	0 8 11	6 14 8
37 " 38	1 3 0	10 9 1	1 6 5	12 6 4	0 7 3	5 3 4	0 8 8	6 9 10
38 " 39	1 2 6	10 4 2	1 5 10	12 0 10	0 7 0	4 19 2	0 8 4	6 4 11
39 " 40	1 2 0	9 19 2	1 5 3	11 15 3	0 6 9	4 15 1	0 8 0	6 0 0
40 " 41	1 1 6	9 14 2	1 4 8	11 9 7	0 6 6	4 10 10	0 7 9	5 14 11
41 " 42	1 0 11	9 9 1	1 4 1	11 3 9	0 6 2	4 6 8	0 7 5	5 9 10
42 " 43	1 0 5	9 4 0	1 3 5	10 17 9	0 5 11	4 2 5	0 7 1	5 4 9
43 " 44	0 19 11	8 18 10	1 2 10	10 11 9	0 5 8	3 18 1	0 6 9	4 19 7
44 " 45	0 19 4	8 13 7	1 2 2	10 5 6	0 5 4	3 13 9	0 6 5	4 14 4
45 " 46	0 18 10	8 8 3	1 1 6	9 19 3	0 5 1	3 9 5	0 6 1	4 9 1

LIST OF LEAFLETS ISSUED BY THE BOARD OF AGRICULTURE.

Number.	Title.
A 3.—1893 I.	Cultivation of Osiers.
A 4.— „ I.	Insects on Fruit Trees.
A 5.— „ I.	The Mangel Wurzel Fly.
A 6.— „ I.	The Field Vole.
A 7.— „ I.	Autumn Catch Crops and Fodder Supply.
A 8.— „ I.	Farmers and Assessments to Local Rates.
A 9.— „ I.	Ensilage.
A 10.— „ I.	The Ribbon Footed Corn-Fly.
A 12.— „ I.	The Gooseberry Saw-Fly.
A 13.— „ I.	Acorn Poisoning.
A 14.— „ I.	The Raspberry Moth.
A 15.— „ I.	The Apple Blossom Weevil.
A 16.— „ I.	The Apple Sucker.
A 17.— „ I.	Preservation of Commons.
A 18.— „ I.	Fertilisers and Feeding Stuffs Act, 1893.
A 1.—1894 I.	Mites on Currant and Nut Trees.
A 2.— „ I.	Vine and Raspberry Weevils.
A 3.— „ I.	The Diamond Back Moth.
A 4.— „ I.	The Daddy Longlegs.
A 5.— „ I.	Potato Disease.
A 6.— „ I.	The Warble Fly.
A 7.— „ I.	Farmers and the Income Tax.
A 8.— „ I.	Moths on Fruit Trees.
A 9.— „ I.	Remission of Tithe Rentcharge.
A 10.— „ I.	Wireworms.
A 1.—1895 I.	Anthrax.
A 2.— „ I.	Pea and Bean Weevil.

Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.

The Journal

OF THE

Board of Agriculture.

Vol. II.]

September 1895.

[No. 2.]

CO-OPERATION IN THE IRISH EGG TRADE.

In a short account of the progress of co-operation amongst Irish farmers, published in an earlier number of this Journal,* some details were furnished of the success which had attended the efforts of the co-operative dairy societies in the south of Ireland to effect an improvement in the distribution and marketing of dairy products by means of a federation for the joint sale of their produce, under the name of the Irish Co-operative Agency Society.

Hitherto, the trading operations of this Agency have been confined for the most part to the sale of butter, but a new and important branch of business has recently been inaugurated by the completion of arrangements for the sale of eggs on behalf of various local societies. It is hoped that the successful extension of co-operation to the egg and poultry industries will effectually dispose of the argument that the co-operative movement has deprived farmers' wives and daughters of occupation, owing to the home dairies having been superseded by butter factories and creameries.

The Agency is prepared to sell all the eggs that may be consigned to it, on condition that they are fresh, of good quality, and properly packed. It is proposed that centres for the collection of the eggs shall be formed by local societies constituted on the lines of a scheme drawn up by the Irish Agricultural Organisation Society, which was explained in a recent number of the *Irish Homestead*, the official organ of that body. The local societies will be managed by a committee elected by the members from amongst themselves. It is estimated that each society will require a working capital of about 300*l.* in order to be in a position to pay cash for the eggs supplied. In cases where this amount is not forthcoming from the subscriptions for the shares, the remainder will be borrowed on the security of

* *The Journal of the Board of Agriculture*, Vol. II., No. 1.

the members of the society. Accommodation will be provided at each centre for storing straw and packing eggs, and one or more horses or ponies with spring carts will be employed for the service of collection. The working staff of a centre will include an expert egg-packer and sorter, with one or more assistants, who could learn their business from him; one or two local "egg-lers" (*i.e.*, persons accustomed to drive egg carts and collect eggs); and unskilled labourers to be employed in making packing cases.

The price paid to suppliers of eggs will be slightly in excess of the local buyers' prices in order to secure sufficient trade. This extra price will, it is said, be realised, first, through the eggs being sold fresh instead of stale, and, secondly, by the increased price obtained for the eggs through their being sorted and sold of uniform size, as uniformity is of paramount importance. The practice of holding up eggs for a rise in the market will be discountenanced.

In order to obviate the difficulty usually experienced in securing an adequate supply of eggs during the winter, members of the societies will be encouraged to produce greater quantities of eggs at this season of the year. This, it appears, can be done by better feeding and early hatching. The eggs will be consigned daily to the Co-operative Agency Society, and that body will undertake to market them at a commission of about 3 per cent. The profits of the local societies will be divided among the members supplying the eggs in proportion to the amount of trade done by each with the society.

It will be seen that the foregoing scheme is intended for new societies, whose special function will be to collect, sort, and pack the eggs of the district in which they work. It is proposed, however, that the creameries and agricultural societies shall immediately take up this industry. To the former it will prove a boon in the winter, as it will enable them to find profitable employment for their hands at that season, while it will provide the labourers with a new source from which to augment their scanty incomes.

It is maintained that as soon as the eggs exported through the Agency become known and appreciated on the English markets, they will fetch a greatly enhanced price, but it is recognised that this can only be accomplished by the co-operation of the egg producer.

AGRICULTURAL BANKS IN BAVARIA.

The first successful attempt to establish an agricultural credit bank on what is known as the Raiffeisen system in Bavaria was made in 1867 with the opening of a bank at Theilheim near Würzburg. The success which attended this venture encouraged its promoters to carry on a propaganda in favour of the formation of similar institutions in other rural districts, and in the course of the next four years 37 credit associations came into operation in the province of Lower Bavaria, while others were opened in different parts of the kingdom. A report of the German Co-operative Union gives the number of land-banks in Bavaria in 1888 as 274, while according to a statement* by Mr. Vansittart, Second Secretary to Her Majesty's Legation at Munich, the number of agricultural credit associations, omitting a few small societies, in Bavaria at the present time is 605. But both these estimates include co-operative credit banks of all kinds.

The principle upon which the Raiffeisen credit associations are based is that of unlimited liability. Raiffeisen, their founder, had in view the needs of a class essentially lacking in credit, and his system was framed entirely to meet the needy circumstances of the peasant farmer and the village tradesman. As Raiffeisen saw the matter, what was required was an association which should borrow money chiefly from persons outside of its membership and lend it to its members at a somewhat advanced rate of interest. Such an institution could obviously only be successful if it were in a position to borrow on more advantageous terms than private individuals, and the principle chiefly relied upon to secure this result is unlimited liability. Mr. Vansittart says, "The strength of the Raiffeisen associations consists in unlimited liability. Their safety is so trusted that bankers have declared themselves ready to grant the associations credit, merely on the ground of their unlimited responsibility, and without asking for any other guarantee."

With the principle of solidarity or unlimited liability a share capital was not deemed necessary, and, at first, the associations were organised without a share capital, all the profits of their business in excess of the working expenses being devoted to the creation of a reserve fund. One of Raiffeisen's objections to a share capital was, that, besides repelling those who would feel themselves unable to make monthly payments, it would introduce the practice of declaring dividends and thus foster a spirit of speculation antagonistic to the primary purpose he had in view. The reserve fund was to be the back-bone of the

* *Foreign Office Report, Miscellaneous Series, No. 365.* Price 1d.

system, for, as this increased, the credit of the associations was strengthened, and the risk to which unlimited liability exposed the richer members was diminished.

The absence of shares was a feature of the Bavarian Raiffeisen banks until 1873, when share capital was made obligatory by law in all credit associations in the kingdom. The Raiffeisen associations, however, met this difficulty by making their shares as low as possible, in most cases 10s. payable in monthly instalments of about 3d., no member being able to acquire more than one share.

The operations of the credit associations are usually limited to districts with a population not exceeding 2,000. This limitation is considered essential so that the circumstances and character of the members may be easily known.

The object is not to secure a large roll of members, but rigidly to exclude everyone who is not really eligible. That done, the association is organised on entirely democratic lines. No difference of any sort is recognised between poor and rich, except that the rich, bearing the brunt of the liability, are, by general agreement, allowed to take the leading part in the administration.

It would appear that little difficulty is experienced in forming a Raiffeisen association in Bavaria. In a district where there are but three honest, competent, and willing men—the one to act as accountant, the second as president, and the third as chairman of the supervising council—a society can be formed. Five persons are chosen for the directorate, and nine are selected to act on the council of supervision. Afterwards, a general meeting is held at which the articles of association are discussed and settled, and the formation of the society is subsequently announced to the provincial Court of Justice. The association is then in working order.

The accounts have to be gone through four times a year, but they present no particular difficulties, and either a clergyman or schoolmaster is well qualified for the work. It is calculated in the smaller associations that the accountant can dispose of his work during 10 months in the year by merely giving up to it a quarter of an hour daily.

Loans are granted by the directors, who are generally selected from different parts of the district covered by the society's operation, in order that among them they may have as wide an acquaintance as possible with the characters and circumstances of the members.

A person who desires to obtain a loan is obliged to satisfy the association on the following four points:—

(1) He must notify at an early date his application either to the director or to the accountant of the association; (2) he must explain for what purposes he requires the money; (3) he must state how much he can pay back yearly; (4) somebody, with whom he is on friendly terms, must go bail for him.

As regards the third point, it is a standing rule of the associations only to lend out money when there is a certainty that a part will be paid back yearly. However, respites are granted, and the repayments made during the year may be in the smallest sums. As those who go bail for their friends are entirely responsible, it is their interest to be vigilant to see that the loan obtained is used for the purpose given.

It will be seen that the loans are lent upon personal security, the repayment being guaranteed, first by the personal solvency of the borrower, and secondly by that of his sureties. Loans are sometimes made upon mortgage, and in such cases the associations adopt the ordinary procedure followed by financial institutions. Loans on behalf of the association are negotiated by the directors, who act within the limits fixed by the general assembly of members. The general assembly determines the amounts of money to be borrowed and the rates of interest. According to Mr. Vansittart, most of the existing Bavarian associations pay $3\frac{1}{2}$ per cent. interest on loans required by them and charge 4 per cent. on loans made to their members.

Attempts have been made on several occasions to unite groups of the Raiffeisen associations in the establishment of central banks, so that associations having a surplus of capital might be brought into relations with those having a deficit, to their mutual benefit. The Bavarian Landesverband, which was formed in 1893, is described in Mr. Vansittart's Report as a co-operation of agricultural associations for advancing money, its principal object being to promote agricultural co-operative societies and the credit system. It is estimated that the total amount of business transacted by the Landesverband in 1894 represented a turnover of 396,071*l.*, and that during the same year the accounts of 143 local associations were revised. The Landesverband receives an annual subsidy of 1,275*l.* from the Ministry of the Interior.

In addition to the Raiffeisen associations, there are in Bavaria a number of credit banks working upon what is known as the Schulze-Delitzsch system, but these are not so popular as the former in the purely rural districts. The Schulze-Delitzsch banks were designed by their founder, after whom they are named, mainly for the benefit of mechanics and small tradesmen in towns, and although one of the chief features of their business is the provision of loans on favourable terms, they also perform all the functions of a savings-bank and encourage their members, as well as other persons, to open deposit accounts, bearing interest. One reason why the Schulze-Delitzsch banks have not gained much ground in the agricultural districts lies in the fact that they grant loans only for a limited period, usually three months, and, as has been frequently pointed out, this term is, as a rule, too short to enable a farmer to derive any advantage from the application of the loan. The Raiffeisen associations, on the other hand, make their loans for a term of years, and in

this way they afford better accommodation to the needs of agriculture.

Comparing the merits of the two systems, Mr. Wolff* says: "Both have grown up amid essentially different surroundings, in different spheres of action, with different tasks. The Raiffeisen Banks are, in the late Felice Mangili's words, an anomaly, but an anomaly which is justified by its circumstances and its results. Schulze worked in a town, among townsmen, and for the benefit of townsmen, not of the poorest class. His banks could not benefit the very poor. And as little could they benefit agricultural cultivators, for whose requirements long credit is absolutely indispensable—as everybody writing on the subject, including Schulze-Delitzsch himself, has acknowledged. Herr Raiffeisen's specific object was to benefit both the classes left out in the cold, and to benefit them in the most effective way. So he came to the conclusion that he must exact nothing from members joining, and that he must make long credit the rule. Calling upon a poor man, who deliberately joined in order to borrow, to pay down money, would to his mind have amounted to sheer mockery. His very reasonable principle was this: to make a loan at all serviceable to a poor or embarrassed man, it must be made to repay itself; to tax other resources for repayment would be, not to help, but to cripple the borrower. He might want the money for buying manure, or seed, or feeding stuffs. In that case he could scarcely be expected to repay it before a twelvemonth. He might want it to improve his herd of live stock, or to build a barn, or sink a well, or else drain a field. In such cases he must be given credit for two years, for five, or ten, or even more."

The rate of interest on loans demanded by the Schulze-Delitzsch banks is generally higher than that required by the Raiffeisen associations. Some of the credit banks undertake financial business on commission, and many of them have taken up other branches of trade for the benefit of their members, such as the supply of seeds, manures, fodder, and fuel.

* *People's Banks*: H. W. Wolff. Longmans, Green & Co.

THE FROZEN MUTTON TRADE OF NEW SOUTH WALES.

The fall in the price of frozen mutton during the past few years has entailed heavy losses upon the flockmasters in New South Wales who are engaged in the export trade in mutton. In colonial official circles the fall is ascribed partly to the fact that the merino, which has hitherto been the most popular breed of sheep in Australia, is not regarded with favour in the British market, and partly to the defects of the present system of distribution and sale.

Until a comparatively recent period, it was considered that cross-breeds would thrive only in a few districts where the temperature was moderate and the rainfall good, but it appears that several owners have succeeded in breeding and fattening crosses on the natural grasses in parts of New South Wales where the conditions as to climate and moisture were regarded as unfavourable to cross-breeding. Furthermore, experiments carried out at the Government station at Wagga Wagga have proved that turnips can be grown over a much wider area than was originally supposed, and it has been ascertained that in at least one fourth of the colony farmers and graziers can, if they choose, adopt a rotation of crops which will enable them to breed, and fatten at very early ages, cross-breeds and lambs suitable for freezing and export. The facts demonstrated by the Wagga Wagga experiments are recognised as being of the very highest importance to the agriculturists in the eastern and more temperate districts of the colony, especially to those farmers who combine sheep-farming with tillage, and it is urged that to restore the frozen mutton trade to a remunerative level it is essential that cross-breeding should be at once adopted in such localities as are suitable for the purpose.

As regards the sheep which make the most saleable mutton, it is the experience of Australian breeders that first-cross merinos are undoubtedly the best for freezing, and fetch the best price in the British market. The popularity in the London trade of the first-cross merinos places the New South Welsh flockmasters in an advantageous position for testing the system of cross-breeding, inasmuch as they will be able to avoid any risk of upsetting entirely their present methods until they see how the cross-breeds will answer. Under these circumstances, Mr. Bruce, the Government Inspector of Stock, urges them to breed as speedily as possible at least as many cross-breeds as are required for the export trade.* To meet this demand, it is estimated that the annual production of 1,500,000 head of merino crosses would be sufficient for the next few years, until more provision is made for freezing.

* *The Meat Trade of Australia*, by Alexander Bruce. Sydney: Charles Potter, Government Printer, Phillip Street.

While crosses are regarded as the most suitable for the frozen mutton trade, it is a matter of some concern to Australian breeders to determine how far cross-breeding should be extended beyond what is necessary to satisfy the requirements of the export trade, for while the change from merinos to crosses would be comparatively easy, it would be a tedious and difficult matter to revert to the true merino type after having freely used English rams among the flocks. To arrive at a sound conclusion on this question, Mr. Bruce holds it to be essential to consider, in the first instance, how far other wool-growing countries and colonies are likely to go in for cross-breeding, and, secondly, what are the prospects of an improvement in the returns from merino mutton and merino wool. With respect to the first point, he estimates that the present number of English and cross-bred sheep in the mutton exporting countries of the world is approximately 85,000,000, and that in five years time this number will have increased to 100,000,000. These calculations are based upon somewhat defective data, but Mr. Bruce thinks that if the matter is looked into and the available information carefully weighed, the estimate of the probable increase of cross-bred sheep will be found to be rather under than over the mark. This conclusion appears to be justified when the advantages possessed by cross-breds over merinos in the following qualities is taken into account, viz., their earlier maturity, heavier weight, more saleable mutton, higher market value, and the superiority of cross-bred lambs. As regards the prospects of a rise in the price of wool, Mr. Bruce expects that there will be a great increase in the American demand for the finer sorts of merino wool, but, as he points out, the rise in price would need to be very considerable to make up the difference between the return from cross-bred mutton and that from merino mutton, while this difference might be reduced to a greater extent by paying more attention to the shape of the merino, and by adopting a better system of marketing the mutton of the breed. In view of these considerations, it is suggested that owners of merinos might put British rams to their old ewes for the last crop of lambs and fatten off the greater part of the "drop" ewes as well as wethers, reserving a few of the best cross-bred ewes for breeding, until they see how cross-breeding answers.

Of the English breeds adapted for crossing with merinos, the Lincoln is, it seems, considered the most suitable in districts where the pasture is rich, or where the pasture is fairly good and a supply of cultivated food available. If the land is not of the best description or the grass not very fattening, or if a sufficient supply of cultivated food is not forthcoming, sheep-breeders are recommended to try the Border Leicester, the Shropshire, or the English Leicester, taking them in the order in which they stand, while South Down rams are equally esteemed, more particularly for the production of fat lambs for export. The use of Romney Marsh rams for crossing, is recommended in districts where the land is unsound and where there is a risk of

fluke or foot-rot. The Hampshire and Oxford Downs, as well as the Cotswold and Wensleydale, are said to be too large to mate safely with the merino.

In the work already referred to, the following description is given of the best sheep for export. "A perfect frozen sheep for the Smithfield Market should weigh from 55 to 60 lbs. It should be round in the shoulder, rather short and broad in the back and loin, with both fore and back ribs well sprung, and little or no hollow between the last rib and the hip. It should be short on the leg, and the jigget or hind leg should be plump and full right down nearly to the hock. Its outward appearance should be bright and full of bloom, and along the back and loin should have but a thin coating of fat, and the saddle when cut off and turned up, should show a large share of red mutton, and comparatively little fat."

To prepare Australian mutton for export and place it in the best possible condition on the market, it is maintained that strong joint stock companies must be formed with a view to the erection of extensive and efficient chilling, freezing, boiling, and tinning works; the provision of the necessary cold storage accommodation in the countries to which the meat is sent; and the completion of effective and commercial arrangements for the transport of the meat from the colonies and for its distribution and sale in the British and foreign markets. New South Welsh farmers and graziers are accordingly advised to join some of the existing meat companies or to take a substantial interest in any which may be in course of formation.

There are four modes in which meat is prepared for export in Australia—viz., freezing, tinning, salting, and boiling-down. The ammonia system of freezing and chilling in some form or other is that now generally worked, for in addition to being highly efficient and easily managed, it has been found to be the most economical. The great importance of refrigeration to the foreign provision trade of New South Wales and of the neighbouring colonies has led to a proposal for the establishment of a school of refrigeration and the appointment of a qualified teacher who would, besides imparting the necessary instruction to his pupils, carry out such experiments as were required in the chilling, freezing, keeping, and transport of meat, poultry, game, dairy produce, fruit, vegetables, and other products. Tinning is considered an essential adjunct to either boiling-down or freezing works. This process, as well as salting and boiling-down, is utilised largely for the disposal of second-rate stock. The boiling-down of cattle and sheep for tallow is in general use, and it is reported to be the best method of disposing of stock which cannot be turned to better account. Boiling is practised more or less by packing companies and butchers in the course of their business, and to a very much greater extent at the tinning factories, where, it is said, as much tallow—within a pound and a half or two pounds—is boiled from the carcase of a sheep which is preserved as from

one simply melted for the tallow. A process has recently been discovered whereby oleo, which is estimated to be worth about 40*l.* a ton, can be extracted from mutton tallow, as it has been for some time from beef. This discovery is of considerable importance to the meat companies, as it foreshadows the possible development of a new branch of business, viz.: the manufacture of margarine. It has been found, too, that the extraction of the oleo largely increases the proportion of stearine in the residue, which is used for the manufacture of the better sorts of candles.

It seems that for some time after the initiation of the Australian frozen meat trade there was a difficulty in getting mutton freight. At first, the shipping companies insisted upon receiving a guarantee that a certain amount of meat had been received for their vessels at stated periods, before they would be provided them up and send them to the ports at which they would agree to fit load the meat for London. This had the effect of retarding the development of the trade; and it was not until within a few years ago that a change began to take place in this respect, partly through the increase of the meat export trade, partly through the freezing companies and their export trade, partly through better understanding, and partly also through the development of a trade in other produce, such as butter, cheese, and fruit. Within the last three or four years, considerable additions have been made to the fleet of steamers carrying frozen meat, and the cost of freight has been lowered very considerably. The charge for freight, which at the commencement of the trade, was as high as 2½*d.* per lb., has fallen to 1*d.*, and sometimes to ¾*d.* per lb.

The situation of the Australian colonies as regards climate and distance from the principal markets of the world renders it absolutely necessary that there should be ample cold storage accommodation both in the colonies and in the countries to which colonial produce is exported. Every year more cold storage is being provided, not only in Great Britain and Ireland, but also on the Continent, and there are indications that the demand for this description of accommodation will continue to increase, especially as its cost is diminishing, while the uses to which it can be turned are multiplying, and its benefits are being more widely acknowledged. It has been suggested that if sufficient cold storage accommodation could be provided at a reasonable outlay in the Colonies a good deal might be done by storing at home to prevent the glutting of the London markets, without taking the extreme step of closing the meat works in Australia. The cost of cold storage in London is said to be about one-eighth of a penny for four weeks, including receiving and delivering.

It may be interesting to show here the quantities of fresh mutton imported into the United Kingdom since 1885 from the several Australian colonies and from New Zealand,

together with a statement of the value of the total quantity received from these sources and the average value per cwt.

Year.	New South Wales.	Queensland and Victoria.	New Zealand.	Total.		Value per Cwt.
				Quantity.	Value.	
	Cwts.	Cwts.	Cwts.	Cwts.	£	£ s. d.
1885	9,085	49,489	284,013	337,587	836,558	2 9 6
1886	4,762	32,919	316,565	354,276	842,409	2 3 10
1887	20,927	21,518	395,638	438,083	918,816	2 1 11
1888	44,489	—	498,628	543,117	1,104,173	2 0 7
1889	30,999	11,101	568,499	610,599	1,287,955	2 2 2
1890	90,329	19,497	787,322	897,148	1,823,478	2 1 0
1891	100,954	66,377	896,126	1,063,457	2,108,610	1 19 8
1892	188,671	23,055	765,668	977,394	1,981,162	2 0 6
1893	197,995	89,163	900,300	1,187,458	2,304,719	1 18 9
1894	349,356	118,894	971,072	1,439,502	2,772,947	1 18 6

As regards the imports from Queensland and Victoria, it should be observed that the figures in the above table represent for the years 1885 to 1887 inclusive imports from Victoria only; while for the years 1889 to 1892 inclusive the figures relate solely to Queensland. In 1893, the imports from the latter colony amounted to 57,006 cwts., and in 1894 to 27,482 cwts. The extreme decline in the declared value of fresh mutton imported from Australasia in the decade is equivalent to a fall from 5½*d.* per lb. to 4½*d.* per lb. Since 1886 the value has never exceeded 4½*d.* per lb.; and for the last two years it has been approximately 4½*d.* per lb.

Although great improvements have been made during the past few years in the arrangements for the transport and cold storage of frozen mutton, the export trade has been handicapped to a large extent by the want of efficient means of controlling the output, and of a more economic system of distribution and sale. The remedy suggested for these disadvantages is co-operation among stock owners, not only in their respective colonies, but throughout Australia, and particularly in New South Wales and Queensland. Co-operation has been already tried with encouraging results in the colonial dairy industry, and Mr. Bruce has attempted to set out the conditions under which it might be applied to the meat export trade. As a preliminary step, the graziers' meat export-companies in each of the colonies would bind themselves to grade their meat and other animal products closely and fairly; to ask for and accept only such share of freight, cold storage, and sales as would be allotted to them on the basis of the relative number of stock owned by their holders; and to co-operate in the shipping, storage, distribution and sale of the meat in the countries to which it is exported. Boards of advice would be formed in each colony to consider the market reports and to determine what quantity of meat should be shipped, while, in order to secure inter-colonial co-

operation, a council would be formed consisting of delegates selected from their own number by the members of the several boards of advice. The business of the boards, so far as it had an inter-colonial bearing, would come before the council for confirmation, and the decision of the latter body would be binding on the boards and on the companies they represented.

As regards the control of the trade in London and other consuming centres, this would be effected by the association of the agents of the several companies in the appointment of a committee with power to decide what quantity of the various kinds and grades of Australian meat should be put on the markets weekly. This committee would also fix weekly the minimum prices at which the meat should be sold during the week, and they would advise the boards of advice and the inter-colonial council upon all points connected with the state and general prospects of the trade. These are the principal features of the scheme put forward by the authority mentioned above. It will be seen that it is based to a large extent on the co-operative system of distribution and sale which has operated so successfully in the Danish butter trade, but experience only can show whether its application to a large industry already established, under conditions entirely different in many respects from those prevailing in Denmark, is likely to be attended with the same degree of success. One of the main objects of the Australian scheme is to bring about an improvement in the price of frozen meat by curtailing the shipments, but although the supplies from the Antipodes may be controlled by the adoption of the measures described, there is always the possibility of increased consignments from other directions. In spite of this risk, it is, however, maintained that there are so many other ways in which co-operation would be of great benefit to colonial stock owners, that the doubt which exists with respect to the results of a combined and systematic curtailment of shipments of Australian meat ought not to prevent the adoption of co-operative principles. Indeed, the fact that this doubt exists is used as an argument to demonstrate the folly of meat companies, not to speak of stock owners, attempting single-handed to put the export trade on a satisfactory footing, or imagining that an improvement will be effected until this is done.

Discussing the prospects of an extension of the frozen meat trade to the continent of Europe, Mr. Bruce says, "While it is a matter of the highest importance to obtain a good footing on the continent of Europe, and every endeavour should be made to open up markets there for our meat and other produce, we ought not to overlook the necessity for the co-ordinated and combined work in the way of extending the export trade in Great Britain and Ireland, for not only would the results be more immediate, so far as regards the meat, than

It may be expected from any endeavour on the Continent, mutton imported from the Continent, but the frozen meat trade carries from the several Aus butter, cheese, fruit, game, fish, and poultry,

as well as that of other articles which need the help of refrigerators in the course of their transport from Australia to Europe, and protection till they can be sold; and although the necessary refrigeration, freight, and cold storage might to some extent be provided for these other products independently of the frozen meat, it has only been through the establishment of the frozen meat trade that the business in the other products was initiated, and it will only be by the extension of the frozen meat trade that the trade in the other products will be established and extended; for they could not of themselves to any great extent afford to provide the necessary machinery, appliances and accommodation to allow of a safe and profitable business being done."

FLAX FARMING ON THE CONTINENT.

In view of the attention which is being directed both in this country and abroad to the subject of flax culture, it may be of interest to review shortly the conditions under which the crop is cultivated for fibre on the continent. According to the Agricultural Returns, the principal flax-growing countries are Russia, Austria, France, Belgium, and Italy, but the acreage under the crop in question in the first-named country is nearly six times the aggregate area similarly cultivated in the remaining four. The latest official estimates of the flax acreage in the several centres referred to are as follows:—

Country.	Acreage.
	Acres.
Russia in Europe - - - - -	2,955,417
Austria - - - - -	200,759
Italy - - - - -	128,000
Belgium - - - - -	98,993
France - - - - -	72,988

Flax culture has long been a characteristic of Russian agriculture. As early as the sixteenth century there was a considerable export trade in raw flax from the Baltic ports, and at the end of the eighteenth century Russia exported annually about 36,000,000 lbs. of flax. The bulk of the crop is grown in the northern division of the empire, where it is cultivated both for seed and fibre, while in the Black Soil provinces of the south a curly variety of flax is grown which produces a large quantity of seed but very little fibre. The average yield of fibre per acre varies from 2 cwts. in the northern districts to 1½ cwts. and less in the south.

The processes in vogue among Russian growers for the preparation of the fibre are for the most part of a primitive nature. Dew-retting is still the most popular method of manipulating the raw material, although the practice of maceration or "water-retting" is increasing in several provinces. Renouard says* that in the vicinity of Riga the peasants do the retting in the branches of the Duna, without employing crates, holding the flax as best they can; while in the vicinity of St. Petersburg the retting of flax in running water is entirely prohibited, and the operation is carried out in stagnant water, or the process of dew-retting is employed.

The breaking of the flax is usually performed by means of hand breakers; for scutching, the ordinary appliances in use are a wooden knife and a scutching board.

* *Études sur la Culture du Lin.* A. Renouard, fils. Paris: Eugène Lacroix, 112, Boulevard de Vaugirard.

Little or no attention is paid by the Russian flax farmer to the grading of his produce, he sells it indiscriminately to the small dealers or middlemen, who again dispose of it to the merchants or exporters by whom it is assorted. It seems that more than a hundred different marks or varieties of flax are recognized in the Russian trade, although only a few exhibit any remarkable difference of quality, as it frequently happens that the mark merely indicates the locality where the fibre was grown.

Large quantities of Russian flax are grown for seed, but in general the importance of the flax seed is only 35 to 40 per cent. of that of the fibre. It has been estimated that the annual average production of flax fibre in Russia is about 5,625,000 cwts. The exports of flax seed, flax fibre, and of flax tow or codilla from Russian ports since 1890 are shown below:—

Year.	Flax Seed.	Flax Fibre.	Flax Tow or Codilla.
	Cwts.	Cwts.	Cwts.
1890 - - - - -	7,797,857	3,898,607	378,000
1891 - - - - -	5,341,500	3,642,428	442,607
1892 - - - - -	3,830,786	3,872,571	439,071
1893 - - - - -	4,158,964	3,942,643	428,464
1894 - - - - -	4,700,250	2,829,857	430,714

Flemish flax, which is grown in western Belgium, has the reputation of being the finest flax produced in Europe. Its superiority is generally attributed to the peculiar properties it acquires by being retted in the waters of the River Lys, which flows through the town of Courtrai, the chief centre of the Belgian flax industry. Flax is also cultivated in other parts of Belgium, considerable quantities of a blue variety being grown in Brabant. Belgian flax growers pay great attention to the selection of the seed. The usual practice is to import fresh seed annually from Russia or Holland. In some districts, however, imported seed is planted in the first year, and the seed obtained from this crop is planted the second year, while for the third year fresh imported seed is again used. The system of cropping on the flax farms varies in different districts, a common rotation appears to be clover, oats, rye, wheat, but the Belgian rotation is frequently given as flax following wheat or oats after potatoes, mangold, or beet. An interval of eight years is generally allowed between two crops of flax on the same soil. In order to obtain a fine tough fibre the flax is pulled before it is fully ripe. The average yield of fibre per acre in Belgium is about 4 cwts.

In the Courtrai district, the retting is done in crates anchored in the running waters of the Lys. Dew-retting is practised in Brabant, while in eastern Belgium pit-retting is largely em-

ployed. The latter process consists in steeping the bundles of flax in tanks or pits filled with water for a period ranging from 5 to 10 days, according to circumstances. When the crates containing the bundles have been removed from the water the flax is spread out on the fields to dry previous to being broken and scutched. Sometimes branches of alder are placed in the retting pits to impart colour to the flax.

The operation of retting in the River Lys, or as it is sometimes called the "Golden Lys," has been described as follows:— "On both sides of the narrow stream, reminding one more of a canal than a river, though there was no tow-path, back for 50 rods or more, and as far into the distance as the eye could reach, one saw only flax. There were immense stacks containing tons, and thatched as carefully as the roofs of the peasant cottages. There were acres of 'hedges,' as the 'cord wood' piles are called, and long lines of the big bundles made up ready for immersion, while farther back in the fields were the opened bundles or beets, tied at the top and spread apart at the bottom in circular form, like bell-tents, the plan always adopted for drying the flax that has been immersed. This is the manner of packing the bundles for immersion: crates or frames of wood are used, having solid floors of boards, the sides being open. These measure about 12 feet square and perhaps a metre in height, or a little over a yard. First a strip of jute burlap is carried round the four sides, on the inside, coming well to the top rail of the crate. This is to strain the water, or to keep out floating particles or dirt which would injure the flax by contact with it. The bundles, which measure 8 to 10 inches through, are composed of beets laid alternately end for end, so that the bundle is of uniform size throughout. They are stood on end and packed so tightly into place that they cannot move, each crate holding out 2,000 to 3,000 pounds of straw. When a crate is filled, the entire top is covered with clean rye-straw and launched and floated into position in the stream. It is then weighted with large paving blocks or other stones until it has sunk to the top rail, when it is left for the forces of Nature to do the remainder. The time of immersion is from 4 to 15 days, dependent upon the temperature of the water and of the air, the quality of flax, and other influences. There are several delicate tests which indicate when the flax should come out, although the near approach of the time is made known by the self-raising of the crate out of the water (often a foot or more), caused by the gases of decomposition."

It is usual to repeat the retting process, and the better kinds of flax are sometimes steeped three times. The breaking and scutching of the flax are now performed for the most part in factories.

The cultivation of flax in Flanders has been decreasing for several years past owing to the fall in price of fibre. It is expected, however, that with an improvement in prices the crop

* *Flax Culture for Fibre*, by C. R. Dodge. U.S. Department of Agriculture. 1892.

will be restored to the important position it formerly held in the two Flemish provinces.

Flax-farming in France is practised chiefly in the provinces of Normandy and Picardy and in the Departement du Nord. The rotations commonly adopted are those whereby the flax follows oats after roots abundantly manured. Flax after clover is also considered an excellent rotation, and sometimes it is sown after hemp. An interval of seven years is generally allowed between two crops of flax. The average yield of fibre per acre in France is officially estimated at nearly $5\frac{1}{2}$ cwts.

Retting in running water is practised in some districts of France, particularly in the neighbourhood of the River Deule, but pit-retting is the process most in vogue. Dew-retting is, however, still followed in some localities of the Departement du Nord and elsewhere. The methods of breaking and scutching are similar to those adopted in Belgium, and these operations are now, for the most part, carried out in scutching mills. Both in France and in Belgium it is becoming more and more the practice for the flax merchants to purchase the pulled straw from the farmers, buying the crop as it stands, and to undertake all the subsequent processes of manipulation. France imports large quantities of flax from Russia.

In Austria, flax farming is carried on mainly in the provinces of Bohemia, Moravia, and Silesia. The system of rotation followed is similar to that in use in Belgium and France, though in some parts of Bohemia flax follows potatoes. The rotation recommended by the Flax School at Trautenau is potatoes (manured), oats, clover, clover (manured), rye, mixed fodders, flax manured with kainit, phosphates and nitrate of soda, and rye. Dew-retting is customary on Bohemian flax farms, but pit-retting is practised elsewhere.

The area under flax in Austria has decreased by about 10 per cent. since 1890, when it was 223,700 acres. The average yield of fibre per acre is officially estimated at about $3\frac{1}{2}$ cwts. Austria imports annually about 340,000 cwts. of flax-fibre.

Flax-farming in Italy has remained more or less stationary for the past five years. This is attributed partly to the low prices obtained for fibre and partly to the effects of municipal regulations which impose restrictions on the processes of retting in order to prevent contamination of streams and running waters. The average produce of fibre per acre on Italian flax-farms is about $2\frac{1}{2}$ cwts.

The demand for flax in Italy has been in recent years practically met by the home production leaving in some years an insignificant balance in favour of the exports.

The acreage of flax in the United Kingdom in 1894 was 102,622 acres, this being the largest area under the crop returned since 1889 when 116,192 acres were grown. The bulk of the crop is grown in Ireland, only 1,760 acres having been cultivated in Great Britain last year, all of which, with the

exception of 10 acres, was returned for English counties, and mainly from Somersetshire and Yorkshire. Twenty years ago about 12,000 acres of flax were cultivated in England, but the area has steadily declined since the early seventies.

The imports of flax fibre and tow into the United Kingdom in the five years 1890-94 are shown below, distinguishing the countries contributing to the supply of each year.

	1890.	1891.	1892.	1893.	1894.
DRESSED OR UNDRESSED FLAX.					
From Russia - - -	Cwts. 1,195,115	Cwts. 1,010,510	Cwts. 1,070,485	Cwts. 895,800	Cwts. 997,380
" Germany - - -	26,932	33,483	31,310	49,660	42,280
" Holland - - -	91,456	78,674	79,538	69,220	38,340
" Belgium - - -	221,296	277,548	255,270	218,560	136,800
" France - - -	8,685	9,914	11,602	6,480	7,220
" other Countries - -	38,365	63,006	19,876	4,680	17,020
Total - - -	1,581,849	1,473,135	1,468,081	1,244,400	1,239,540
TOW OR CODILLA.					
From Russia - - -	Cwts. 138,023	Cwts. 130,578	Cwts. 116,673	Cwts. 102,360	Cwts. 121,980
" Germany - - -	3,066	11,128	22,077	20,120	13,220
" Holland - - -	7,007	8,430	22,617	33,460	17,300
" Belgium - - -	67,000	45,986	59,657	37,000	36,460
" France - - -	3,128	7,246	13,936	8,020	6,260
" other Countries - -	396	1,440	53	—	260
Total - - -	218,620	205,808	265,013	200,960	195,480

The average annual import of flax seed during the past five years has amounted to nearly 2,000,000 quarters.

THE ARGENTINE LIVE-STOCK INDUSTRY.

The prospects of a greater development of the live-stock industry in Argentina have been already discussed in an earlier number of this Journal,* particularly with reference to the growing importance of the export trade in live cattle from the River Plate to the United Kingdom. Some further information bearing on the same subject has been recently issued by the Foreign Office in a report,† compiled by Mr. Peel, Second Secretary to Her Majesty's Legation at Buenos Ayres.

The system of stock raising in Argentina is not in all respects similar to that followed in Australia and New Zealand. Mr. Peel says that the breeder in the Argentine runs both cattle and sheep on the same pastures, finding that, owing to the variety and nature of the grasses, the presence of both are necessary to the maintenance of the best feeding herbage. The combination of agriculture with stock-breeding is but little practised, except in the great lucerne lands of Santa Fé.

Stock is principally bred by the landed proprietor, or "estanciero," who exploits his land by breeding horses, cattle, and sheep on it. An estancia varies in area from 3,000 to 6,000 acres.

Another and less important class is formed by the renter of land, who pays from 8 up to 12 per cent. rental on the value of the land. A large number of these renters occupy a run sufficient for one flock of sheep, in area from 600 up to 900 acres. They are successful shepherds and estancia labourers, who have economised sufficient to purchase a flock of 1,000 sheep. They pay a rent that represents approximately one national dollar (1s. 3d.) per sheep per annum.

Finally, there is the grazier, who buys cattle and fattens them for market upon land kept more or less free of breeding stock. He is termed in Spanish an "invernador," i.e., one who winters stock. He also generally rents the land he exploits. This class is confined to the lands within about 200 miles of the city of Buenos Ayres. It is the practice with some "estancieros" to reserve certain paddocks for the purpose of buying and fattening stock. The "invernador" is practically the middle man between the producer and the consumer.

The original cattle of Argentina were small, long-horned, thick-hided, slow-growing beasts, of every conceivable colour. But for the last 20 years a brisk reformation has taken place, and there are few herds left now that do not own to some degree of English blood. The most popular breed for crossing purposes is the Durham shorthorn, and this still continues to be most in demand. The Hereford also has many advocates,

* *The Journal of the Board of Agriculture*, Vol. II., No. 1.

† *Foreign Office Report, Miscellaneous Series*, No. 369. Price 1½d.

and this breed is regarded as more hardy, and more suitable, therefore, for rough outside or frontier lands. The live export trade has drawn considerable attention to the polled Angus, and it may be expected that in the future there will be a greater demand for this breed. The practice of dehorning cattle for live export has already been instituted, which explains the attention now paid to poll stock.

The stock intended for local consumption and for export to Chile is generally of an inferior quality, and both steers and cows are supplied. There are times when the export trade is dull, and fat steers of a good class are thrown into the Buenos Ayres butcher market; but, as a general rule, the butcher prefers a cheap animal. The prices ruling at the date of Mr. Peel's report were from 1*l.* 15*s.* to 2*l.* 5*s.* for three-year-old steers, and from 18*s.* to 1*l.* 4*s.* for cows.

The trade that is carried on in steers with Chile is small, and of little importance. The Chilean traders are the buyers. They come over to the frontier lands and buy the poorest description of cattle, removing them to the eastern slopes of the Cordilleras to winter, and driving them over the mountains when the passes are open. Their prices range from 14*s.* to 18*s.*, and the cows from 9*s.* to 12*s.*

By far the greatest number of the steers go to the "saladeros." This industry is of most ancient origin, and until within very recent years was the only outlet of the surplus cattle stock. The steers are slaughtered, their hides removed, and the meat taken from the bones in great portions of 3 by 2 feet, and of the thickness of four fingers. These portions, termed "mantas," are salted and sun-dried, or jerked. The hides are steeped in salt, and exported in that state to Europe. The meat is exported to Brazil and the West Indies. The bones and refuse are boiled down, and the grease extracted and finally exported to Europe for the purposes of manure.

The "saladerista" does not demand a highly-bred animal; for his business the hide is an important factor, and in improving the quality and fattening propensities of stock the hide loses in weight and thickness. He is, therefore, an important element in the buying market, as he willingly takes the animal unfit for live export.

The Argentine Republic has not yet succeeded in exporting chilled beef to Europe. The export of live stock to Brazil and Europe has only sprung up within the past five years, and in that period has already developed in a marvellous manner. In 1892, 40,000 sheep and 125,459 cattle were exported. This increased in 1893 to 71,167 sheep and 201,645 cattle, and in 1894 to 122,218 sheep and 220,400 cattle.

The steer exported to Brazil is that which is considered too good to sell to the saladero, and not good enough for Europe. The live weight demanded is that of 1,100 lbs. and upwards, and includes old bullocks and cross-bred steers of inferior

quality. The price paid in Buenos Ayres to the producer is 3*l.* 10*s.* The trade has recently been at a standstill owing to quarantine measures.

For the European trade a first-class cross-bred steer, three years and upwards, is demanded, of not less than 1,320 lbs. live weight, and the price paid locally by the exporter is from 6*l.* to 8*l.* per head. The cost of freight is 5*l.* per head; fodder, attendance, and incidental expenses being about 3*l.* 10*s.* per head. The steers realise from 16*l.* up to 24*l.* at Deptford and Liverpool.

It is with reference to the above trade that the importance of the lucerne lands in Santa Fé becomes manifest. The lucerne graziers buy store stock from the breeder, and keep them until fit for shipment. The lucerne man calculates to fatten a store steer in about four to six months, and to make a profit of about 1*l.* to 1*l.* 10*s.* in doing so. He can, therefore, afford to buy the store steer, of a first-class quality, at from 4*l.* to 5*l.*, and realise a handsome profit on selling him to the exporter. Lucerne lands can be stocked all the year round at the rate of one steer per three acres, and the value of land in lucerne, fenced in and provided with a good water supply, may be taken at about 2*l.* per acre. Thus, with a good year, free from the visitation of the locust, and with little expense beyond the drawing of water, the grazier can make about 1*l.* per acre, of which at least 60 per cent. is net profit.

As to the capabilities and development of stock-breeding in the Argentine Republic, Mr. H. Gibson, a prominent member of the Argentine Rural Society says "there are still vast tracts of land in the north of the province of Santa Fé, in the territory of the Central Pampa, and all the south of the Republic, capable of producing store-stock at cheap prices, and as yet unpeopled. It is difficult, moreover, to indicate the limit of the lucerne growing lands. Thus with, on the one hand, room to produce the store animal in far greater numbers than the Republic at present does, and at prices which can fall lower and still be remunerative to the breeder; and on the other hand, the spread of the lucerne fields to receive this store stock, and prepare it for the consuming market, I think I am almost justified in stating that the Argentine Republic can afford to undersell the whole world's meat trade, and remain sole caterer."

The sheep stock in the Argentine is said to have received greater attention at the hands of the breeder than either the cattle or horses. Up to 1880, the sheep were almost entirely of a merino strain, but about that period the industry of freezing mutton was first instituted, and the breeders, finding the carcass of the merino of little value for export, turned their attention to English breeds, and particularly to the Lincoln sheep. A rapid, indeed an unprecedented, change appears to have taken place between 1884 to 1894, viz., the conversion of approximately 30,000,000 sheep from merino into Lincoln, being nearly all the sheep stock of the south of the province of Buenos Ayres. The

breeds of Leicester, Cotswold, and Romney Marsh have also been introduced, but in a smaller degree. Oxfordshire Downs, South Downs, and Hampshire Downs are to be found, but in very limited numbers, chiefly in the lucerne lands of the province of Santa Fé, where they appear to do well.

Argentine wool is chiefly consumed in France and Germany. It is sold locally in the Buenos Ayres wool markets. It is not washed on the sheep's back, but is all sold dirty and in the grease. The general fall in wool prices is reported to have been felt most acutely in the Republic, where the deficiencies in careful breeding, and the prevalence of the scab disease, occasion the production of the "inferior classes of wool" which have been most severely punished in the present declining market.

The markets for the consumption of Argentine mutton are—local consumption; meat-freezing establishments; and export of live wethers to Europe.

The local consumption is estimated at 5,600,000 head per annum.

The rapid development of the export trade in live sheep has been already referred to. The minimum live weight demanded by the exporter is 132 lbs., and the price paid by him for the wether in Buenos Ayres is 12s. The cost of freight is estimated to be from 12s. to 14s., and fodder, care, and incidental expenses may be calculated at another 7s. to 8s. The wethers are reported to sell in the markets of Liverpool and Deptford at from 1*l.* 15s. to 2*l.* 4s.

The export is almost entirely limited to England. A limited number find their way to France, but the protective measures of that country, including the cutting up and marking of the carcase, have discouraged the exporter, who finds his best market to be England.

The meat-freezing trade, instituted in 1882, has been for the past decade the most important outlet for the Argentine wether. There are at present five freezing establishments, capable of exporting between them all 3,000,000 frozen carcasses per annum. They are private enterprises and not supported by Government. Their export since 1891 is as follows:—23,278 tons in 1891, 25,436 tons in 1892, and 25,041 tons in 1893.

It is pointed out, however, that the constant fall in the price of frozen mutton is naturally producing a corresponding decline in the value of the wether for freezing purposes, and that if the fall in frozen mutton continues it will threaten the existence of the meat-freezing trade.

In conclusion, Mr. Peel states that there is still one beneficial result, so far as the English breeder is concerned, of this growth of the live export business in the Argentine Republic, viz., the demand for bulls and sheep for breeding, particularly the latter, which may be expected to continue for some time.

AGRICULTURAL DEPRESSION IN GERMANY.

In a report on the agricultural position of Germany,* prepared by Mr. Whitehead, Second Secretary in Her Majesty's Embassy at Berlin, it is stated that German agriculture has been subject to recurring depressions during the whole of the present century. In the days before the means of communication had been so highly developed, and before foreign competition had become a factor in the matter, both good harvests and bad harvests gave cause for complaint. In the former case, the price of grain fell; in the latter, the amount of the crop was too small to be remunerative. During the latter half of the century, the conditions of agriculture have undergone a complete change, and it has in general passed from a system of low or "extensive" to high or "intensive" culture, but the complaints of agriculturists have remained the same.

In consequence of the complete failure of the cereal crop, the year 1817 was one of famine prices in Germany. In the following years, 1820–30, a succession of good harvests brought prices to their lowest level, and reduced German agriculture to the worst straits it has known during this century. This was attributed at the time to the improvements in agricultural methods and the establishment of agricultural schools, by which production had been increased to such an extent that it could no longer pay. Young people were warned against adopting the agricultural profession, and the value of landed property sank to the lowest point.

In the following decade, 1830–40, the complaints of agriculturists continued, but as there had been occasional bad harvests, the trouble was no longer attributed to over-production. The most conflicting remedies were proposed, some looking for relief to free trade and condemning the closing of the frontier, and *vice versa*. Since that time, the increase of the population and industrial enterprise has gradually transformed Germany from a self-supporting agricultural country into a grain-importing State, and the influence of foreign competition upon the price of agricultural produce has made itself felt.

Mr. Whitehead observes that there can be no doubt that a severe depression in agriculture exists at the present time in Germany. The unanimous opinion of all the Parliamentary representatives of the landed interest, both in the Prussian Landtag and in the Reichstag, the formation of a distinct Agrarian party, and the efforts made by that party to obtain some means of relief, are sufficient proof of this; and the present

* Foreign Office Report, Miscellaneous Series, No. 361. Price 4½*d.*

abnormally low prices of wheat and rye, which are admittedly below the cost of production, are in themselves a sufficient cause.

Count v. Kanitz-Podangen, one of the principal agrarian members of the Reichstag, in a pamphlet published in support of a proposal for the State monopoly of the import of grain, asserts that German agriculture began to take a downward course 25 years ago, and considers that this was principally due to the competition of new countries, to whom the improved means of communication by sea and land had given an opportunity of flooding the central European countries with agricultural produce at prices which made it impossible to farm profitably at home.

The depression is now general throughout the country, but it began earlier, and is more accentuated in the eastern provinces of Prussia—which are purely agricultural and far from the great markets—than in any other part of Germany. In the west, owing chiefly to the beet sugar industry, which is encouraged by bounties, the depression was warded off for some time, but beet growing having now almost ceased to pay, it is felt all the more acutely.

The principal grain crops, rye, oats, and wheat, are the most important products of German agriculture, and it is generally assumed, and often insisted upon by the representatives of the agricultural interest in the Prussian Parliament and in the Reichstag, that the prosperity of German agriculture depends almost entirely upon the relation between the market price of grain and its cost of production. They point out that the expenditure of a landed estate is permanent, or tends gradually to increase in consequence of higher wages, the contributions to the State insurance of labourers, increased taxation, &c., whereas the market price of grain is variable and has now fallen to such a point that, even with the greatest care and economy, profitable farming has become impossible.

The question of the cost of production of cereals in Germany is an exceedingly difficult one, and the estimates and assertions that are made on this subject are said to vary too much to afford any reliable data. Corn-growing, cattle breeding, and other branches of agriculture are carried on simultaneously on nearly all farms, and the differences in the quality of the soil and climatic influences make a general estimate impossible. On the same field the crop in one year may, in consequence of different conditions of weather, be twice what it is in another, while the outgoings remain the same. At the same time, the system of book-keeping employed by agriculturists is not usually a very careful one, so that their calculations are seldom reliable, and in spite of many investigations by writers on agricultural subjects, and by the Royal Experimental Stations, no certain scale of cost has as yet been attained. The opponents of the Agrarian party attribute the high cost of production complained of exclusively to the

unnecessarily high price of land, to the heavy mortgages which have been placed upon it, and to the extravagant mode of life of the landed proprietors.

The fairest and most impartial observers are of opinion that, taking the question of corn-growing as a whole, and putting aside extreme cases, whether favourable or unfavourable, it must be admitted that the majority of landowners and farmers are unable to carry on this principal branch of German agriculture at a profit while the present prices continue. It should not be forgotten, however, that a short time ago prices were double what they are now, and that the average for a period of 10 years, say, from 1883 to 1893, ought not to show a balance on the wrong side.

In spite of the depression of 1885 to 1887, and of the present time, no great change has taken place in the areas under wheat and rye cultivation. In a country like Germany, where agriculture is for the most part carried on by traditional methods, changes of this kind are necessarily slow, especially as in the greater portion of the northern plains neither climate nor soil are favourable to the conversion of arable into grass land.

Planting has not taken place to any great extent of late years in Germany, and where it has it has consisted mostly in afforesting waste lands, or in replanting recent clearings.

The forests in private hands show a decrease; it may be assumed, therefore, that agriculturists have not as yet sought relief in this direction.

The severe depression in agriculture is too recent to have brought about extensive changes in the relative areas of arable grass and woodland; its real results in this respect will not be seen till much later.

In the many proposals made by agriculturists and others for meeting the existing depression, no mention is made of changes in cultivation. In individual cases such changes are no doubt occasionally made, but on an extensive scale there is no question of it, the agriculturists apparently fixing all their hopes upon legislative measures which will raise the price of grain and so relieve their distress.

The Agrarian party propose two far-reaching measures for their relief—the State monopoly of the import of grain and bimetallism. The Government, on the other hand, propose a number of small palliative measures, such as the construction of canals and light railways, a law for preventing gambling on the corn exchanges, cattle disease regulations, remission of land tax, &c.

As Count Kanitz's proposal has been finally disposed of by a resolution of the Council of State, it is not likely that the far more difficult suggestion of a State monopoly of the production of bread, which has been proposed by several writers, will be seriously brought forward. It has the advantage, however, of considering the interests both of producers and consumers in the bread question.

Suggestions of a more practical kind, but based on the same arguments, have often been made to the effect that agriculturists should establish large co-operative flour mills and bakeries in their districts, and sell bread instead of corn, in this way securing for themselves the profits of the miller and baker. Some co-operative bakeries are already in existence in country districts, and have given very good results, but up to the present they have only worked for local consumption. With the present facilities for transport, however, it ought not to be a difficult matter to extend their operations to the towns, as has been done in the case of butter by the dairy associations, which exist in great numbers throughout Prussia.

As regards this question of co-operation, in a report by Sir Charles Oppenheimer,* it is stated that, while in Prussia an attempt is being made to organise chambers of agriculture, in Bavaria agricultural unions, which have existed there for many years, are being re-organised and transformed into a free agricultural society approved by the State and in close connexion with State officials. It will in future consist of district unions, to which every community can send one representative. At each district union, business departments for membership, for effecting the sale of agricultural products and the purchase of agricultural implements, as well as for insurance, are to be formed. The district union can also create further sub-committees, and it is desired to bring about a closer intercourse with the farmers through their representatives. Above the district committee is the committee of the province, which has to look after the agricultural interests of the province. Above these in their turn is to be the Bavarian Agricultural Council, consisting of 56 members. The duties of this Agricultural Council are enumerated as follows:—To guard the entire agricultural interests of the country; to take the initiative in suitable undertakings for the union, and to co-operate therein; to send in reports about legal or other measures which touch the field of agriculture; also on topics such as credit, trade, customs and taxes, as well as commerce, in so far as they exercise an influence on agriculture. The agricultural council has to form ten business branches and is to organise also an office for the exchange of merchandise.

The arguments of both sides on the currency question were heard in full in the sittings of the Commission appointed in 1894 to consider "the means of raising and establishing the value of silver." This Commission was presided over by Count Posadowsky-Wehner, the Imperial Secretary of the Treasury, who stated that the Imperial Government would submit the proposals made during the proceedings of the Commission to a careful examination, and that any proposals which were found to be practicable and promising would form the basis of a further consideration of the question.

* *Foreign Office Report, Annual Series, No. 1586. Price 3d.*

The following measures constitute the programme of the Prussian Government for the relief of agriculture in the kingdom as stated by the Minister of Agriculture in the House of Deputies:—The reduction of the land tax; the construction of canals; light railways; reduction of railway freights; measures for the prevention of cattle disease; further protection of the sugar industry; changes in excise duties on spirits; and reform of the corn exchanges.

By the Prussian law of July 14, 1893, a radical change has been made in direct taxation. Landed property was formerly doubly taxed by the State, as the landowners were assessed for income tax in the ordinary way, and had besides to pay land- and buildings-taxes assessed according to the estimated revenue of their property. This double taxation was all the more oppressive as the land- and buildings-taxes did not take debts or mortgages into account. On the other hand, the communes were in want of means, and it appeared to be a suitable arrangement to hand over to them the land- and buildings-taxes. Hence the law of July 14, 1893, prescribes that on and after April 1, 1895, the land- and buildings-taxes, and the corresponding industrial taxes, shall cease to be levied for the benefit of the State. They will continue, however, to be assessed and administered by the Government authorities, as a knowledge of the assessment is required for other branches of the administration (registration of Parliamentary electors, contributions to poor law unions, &c.) and is also the principal basis of local taxation. The land- and buildings-taxes are now therefore in reality parish rates, although they still keep the form of State taxes.

This transfer will prove a great alleviation to landed property, as a very considerable reduction in local rates as hitherto levied will become possible. The total amount of the land tax which has been transferred to the communes is about 1,950,000*l.*, the buildings tax about 1,565,000*l.*, and the industrial tax 929,000*l.* Of the above land tax, the cities pay 164,000*l.* and the country districts 1,786,000*l.* Of the buildings and industrial taxes, the towns naturally pay the larger share. It is estimated, however, that the total relief afforded to agricultural property by this measure is between 2½ and 3 millions sterling per annum.

The Prussian Government has for years past been very energetic in combating the spread of infectious diseases of cattle in the interior of the country, and with fairly good results. It is generally believed, however, that these results would be far greater if the importation of infected cattle from abroad could be more effectually prevented. Regulations for this purpose are a matter which concerns the Imperial Customs, and it is proposed therefore to request the Imperial Government to issue stricter instructions on the subject, to establish quarantine stations at the frontiers, and cause all cattle and meat entering the country to be more carefully examined. The proposals above described, with some others of minor importance, such as

appointment of agricultural attachés abroad, &c., formed the principal features of the Government programme for the relief of the agricultural depression in Prussia, as stated by Baron v. Hammerstein, on January 29, 1895.

The Council of State, while supporting all these proposals, added the following, which may now also be considered as part of the Government programme :—

“To limit the use of transit warehouses in which customs credit is granted (bonded warehouses for goods in transit) to goods really intended for transit, and not to allow them to be used for the storage of goods, especially grain, which will eventually be sold in the interior ;

“To grant State assistance for the establishment of co-operative grain depôts (? elevators), in order to improve the conditions under which the producers can dispose of their grain ;

“To effect an alteration in the system under which the business of flour mills is carried on, in the sense of removing the advantages at present enjoyed by foreign grain in the mills, and ensuring that home-grown grain shall not in future be placed at a disadvantage in this respect ;

“To encourage the formation of agricultural communities by means of the existing laws relating to the purchase of small holdings (*Rentenguts-gesetze*) by granting State assistance for this purpose, especially with a view to increasing the number of labourers' allotments ;

“To take steps for the improvement of agricultural credit by the conversion of existing private mortgages with a high rate of interest and without sinking fund into cheaper mortgages, granted by public institutions, which cannot be called in at will but have compulsory amortisation ; for this purpose to alter the limit of credit fixed by law for the *Landschaften* (co-operative land banks) and similar public institutions, if necessary with the assistance of State credit, and at the same time to make the credit given by these institutions more generally accessible, especially to small proprietors ;

“To establish, for the extension of personal credit, a State bank (*Landeskreditinstitut*) perhaps in connexion with the *Seehandlung* (a Prussian State bank dating from the time of Frederick the Great), by means of which rural co-operative and other associations could obtain the capital they require under conditions suitable to the nature of their organisation. This institution could also grant credit to other co-operative organisations of small producers, especially to co-operative associations of artisans (*Handwerker*) ;

“To form a State fund for general land improvements (drainage, reclaiming of waste lands, &c.), and to encourage such improvements by the appointment of a greater number of technical experts, and by the execution, at Government expense, of preliminary surveys.”

REPORTS ON FOREIGN CROPS.

CROPS IN THE UNITED STATES.

The latest reports of the Statistician of the Department of Agriculture of the United States furnish the following particulars as to the condition of crops in that country. The preliminary returns of the acreage under wheat indicated an area under this crop equivalent to 97·1 per cent. of the acreage harvested in 1894, this being a decline of 1,000,000 acres, or 33,870,000 acres as compared with 34,882,000 acres. The average condition of spring wheat on August 1st was 95·9. This represents a decline of 6·3 points since the previous month. But the August average is the highest for this month in recent years ; last year at the same period it was 67·1, and in 1893 only 67.

The acreage planted to maize is returned as 107·8 per cent. of the area similarly planted last year, which was 76,000,000 acres, this being an increase of nearly 6,000,000, and making the area planted this season 82,000,000 acres. On August 1st the average condition of the crop was reported to be 102·5, the highest August average reported for some years.

The average condition of oats in August was 84·3. Last year the condition of the crop at the same date was 76·5. The preliminary returns indicated the acreage of oats to be 103·2 of last year's area, or 27,888,000 acres as compared with 27,023,553 acres in 1894.

On August 1st the average condition of barley stood at 87·2, a decline of 4·7 points since the previous month. The barley acreage was returned in June at 104 per cent. of the area under the crop in 1894, or 3,297,000 acres as compared with 3,170,602 acres last year.

The average condition of potatoes on August 1st was 87·7, a decline of 3·8 points from the previous month. In August 1894 the condition of potatoes stood at 74, and in the same month of 1893 at 86.

The hay acreage is reported to be 91·5 per cent. of that of last year, or 44,214,000 acres as compared with 48,321,272 acres in 1894. The condition of timothy on August 1st was 69·9, a decline of nearly a point from the previous month.

On August 1st the condition of apples was reported to be 71·2 ; at the same period last year this crop stood at 44 only. On the whole the condition of the crop would appear to be fair, though in some States the orchards had been severely injured by the spring frosts.

The prospects of the peach crop were more favourable on August 1st, when the condition was estimated at 83·3.

As regards cotton, the general average condition of the crop on August 1st was 77·9, which is the lowest average that has ever been reported for that month. The low average is attributed generally to excessive moisture, although in South Carolina drought has been the principal cause of injury.

The returns relating to the wool sheared in the autumn of 1894 and the spring of 1895 made the average weight per fleece for the country 5·6 lbs. In 1894 and 1893, the average stood at 5·3 lbs. The State averages are reported to vary widely, ranging from 2·4 lbs. in Georgia to 8·1 lbs. in Wyoming.

THE WHEAT CROP OF INDIA IN 1894-95.

The Board of Agriculture have received from the Department of Revenue and Agriculture of the Government of India a copy of the final memorandum on the wheat crop for the season ending 31st March 1895.

In this memorandum it is stated that the character of the harvest differed considerably in the various provinces of the country. In the Punjab it was again excellent, in the North-Western Provinces and Oudh it was unfavourable, while in the Central Provinces it was decidedly bad, being even worse than last year. In the other provinces, the harvest was moderately good. The chief characteristic of the season was the abnormally heavy and late autumn rain, which in some places prevented the preparation of lands and restricted the area sown, while in others it caused the grain already sown to rot in the ground, necessitating re-sowing.

In Bombay and Sindh, the season was on the whole favourable, the area under wheat being 8 per cent. above normal and 6 per cent. above the area sown last year. The out-turn was also satisfactory, the increase over the figures for last year being proportionate to the increase in area. In Berar, owing to the heavy rains at the time of sowing, the season was not so favourable, and rust was common throughout the province. The normal area was put under wheat, but the out-turn fell off by 8 per cent. as compared with the average of previous years, and by 17 per cent. as compared with the figures of last year. In Bengal, although in consequence of the late monsoon rains the area sown was 4 per cent. less than last year, the out-turn was slightly better, owing to the more favourable character of the later part of the season. In the Central Provinces, the area under wheat was 19 per cent. below normal, and as the crop

suffered severely from the heavy rain at the time of sowing, while the excessive moisture favoured the spread of fungoid diseases in many districts, and especially in Damoh and Jubbulpore, the out-turn for the year scarcely amounted to a half of what it should have been, the total yield being 11 per cent. below that of last year, and 37 per cent. short of the average of the last three years. In the Jubbulpore district, the out-turn was merely nominal and so light as barely to stand winnowing. In the North-Western Provinces and Oudh, the main feature of the season was the continuance of excessively heavy rain throughout the province, especially in the central and eastern districts. The acreage sown was slightly below normal, but the out-turn shows a decrease of 22 per cent. as compared with the preceding year, and of 30 per cent. as compared with the average of the last seven years. In the Punjab, the harvest was excellent, being nearly as favourable as that of last year, which is said to have been the best known for twenty years. The area sown was 19 per cent., and the out-turn 26 per cent., above the average of the last nine years, and the crop has been estimated as at least "a full 16-anna" one. The province has been fortunate in having enjoyed three exceptionally good spring harvests in succession. Stocks have been fully replenished and are probably very large, especially as the autumn harvest have also been good.

The exports of wheat from India during the 12 months ending 31st March 1895 amounted to 345,000 tons as compared with 608,000 tons in the preceding 12 months, the proportion of exports to out-turn being 5·4 per cent. against 14 per cent. and 8·8 per cent. in the previous two years. There was an increase in the amount of wheat exported from both the North-Western Provinces and the Punjab, but in other provinces there was a falling off. In the Central Provinces especially, the export trade is at a very low ebb, the quantity exported from the province during the nine months ending with April 1895, having represented only one-fourth of the traffic in the corresponding period of 1892-93 and one-third of the traffic of last year. The collapse of the wheat trade of these provinces in 1893 led to an extraordinary fall in prices, but in consequence of the poor harvests, prices of all food grains have risen since January 1894. The rise was most marked in Chattisgarh, where at the close of the year wheat was selling at 25 per cent. to 33 per cent. more than at the end of the preceding year. In the North-Western Provinces and Berar, the price of wheat ruled higher than last year, and this was also the case in the Punjab, owing chiefly to the greater briskness in the export trade to Europe and other provinces, from some of which there was at one time a strong demand. In Bombay, with the exception of a few places, and in Bengal, prices were either normal or lower than in the preceding year.

The following table shows the final forecast of the wheat crop of the season 1894-95 in the several provinces :—

Province.	Acreage. 000 omitted.			Yield. 000 omitted.		
	Of Crop of 1894-95.	Of previous Year's Crop.	Average.	Esti- mated Yield of Crop of 1894-95.	Yield of previous Year.	Average.
Punjab - - - -	Acrea. 8,082	Acrea. 8,265	Acrea. 6,758	Tons. 2,305	Tons. 2,560	Tons. 1,900
North-Western Provinces and Oudh.	4,614	4,827	4,864	1,141	1,473	1,635
Central Provinces - -	3,309	3,086	4,977	512	575	820
Bombay - - - -	2,601	2,525	2,513	729	762	674
Sind - - - -	665	531	512	205	161	169
Berar - - - -	889	928	800	80	97	87
Bengal - - - -	1,401	1,461	1,719	486	459	713
Rajputana - - - -	1,529	1,640	1,782	368	380	407
Central India - - -	1,429	1,412	1,396	284	178	285
Hyderabad - - - -	1,520	1,166	1,342	74	109	105
Kashmir - - - -	23	31	31	4	8	8
Total - - - -	26,082	26,778	25,884	6,278	6,771	6,803

The statistics shown for Central India are for eight agencies only. The figures for Kashmir are approximate. The wheat area in Madras, Mysore and Assam is unimportant and the statistics for these provinces have therefore been excluded.

CROPS IN RUSSIA.

Mr. J. Michell, Her Majesty's Consul-General at St. Petersburg, writing on July 23rd, stated that according to accounts received by the Russian Department of Agriculture, the condition of winter-sown cereals at the end of June last was satisfactory in 352 provincial districts, and in parts good; while in 254 districts it was either unsatisfactory or promised only middling results.

Spring-sown crops were satisfactory and good in 442 districts, and not promising or of medium growth in 164 districts.

A very good yield of hay was expected in the region stretching between the Volga and the Dnieper, but rain had somewhat interfered with hay-making.

In the Grand Duchy of Finland the condition of the rye, oats, and other grain crops was reported to be very promising. Hay, however, owing to a prevalence of rain, would not yield as satisfactorily as was at first anticipated.

Mr. H. Grant, Her Majesty's Consul-General at Warsaw, writing on August 1st as to the harvest prospects in the kingdom of Poland, stated that it seemed certain that the Polish harvest this year would be a very poor one.

The winter corn had suffered considerably by the excessive falls of snow, and matters were made worse by the lateness of the spring thaws, which did not begin until the end of March. The almost uninterrupted drought which had prevailed ever since had further contributed to the deterioration of the standing crops, and the spring crops had also suffered very much from the drought.

In the western governments the harvest began as early as the end of June, but no particulars were known as to the results.

Beetroots and potatoes had suffered greatly from the prolonged drought, and poor yields were anticipated.

CROPS IN AUSTRIA.

Quoting from the official reports of the Austrian Ministry of Agriculture for the middle of July, the *Wiener Landwirtschaftliche Zeitung* states that the weather had continued fairly favourable to the growth of the crops. Excess of rain, which had prevailed in certain districts, had, however, nowhere done much damage; the only districts to suffer being those subjected to drought, which particularly affected the north-west.

The season had been particularly favourable to rye. Very little complaint was heard as to lodging, rust, or ergot; on the contrary, reports spoke generally of tall strong straw, and long well-filled ears with heavy grain. A satisfactory harvest was therefore to be expected.

The wheat harvest promised to be better than the rye, and appearances were more favourable than immediately after the winter. The crop was generally heavy, but had in many cases been much laid (especially in Galicia). There were complaints of smut in some localities; various insect pests had also appeared in the north.

Winter barley in the southern districts was for the most part harvested in fair condition. Spring barley and oats varied very much in condition. In districts which had suffered from drought the straw was short and weeds were abundant, particularly charlock. In north-west Bohemia, the barley in places had not germinated. On the whole, except in Carniola, the outlook for the two cereals referred to was satisfactory, the barley being better than the oats. There was a certain amount of smut, and field-mice had done some damage in north-west Bohemia, where there had been much drought.

Maize was promising except in the neighbourhood of Trieste, where it was bad.

Peas and beans nearly everywhere presented a very satisfactory appearance, although they had suffered somewhat from drought, and here and there from insects.

Of millet, except in East Galicia, there were good reports. Buckwheat, the principal crop in Galicia, was likewise good.

Rape was, generally speaking, very good. In Galicia bad weather during the harvest had an injurious effect on both quality and yield of rape seed.

A good yield of flax was expected, and the plant was reported to be very high.

The general condition of potatoes was also excellent, although here and there they were patchy or unsatisfactory in consequence of rotting of the seed potatoes in wet soil, and of the quantity of weeds, cockchafer grubs, &c. Except in the northern districts, very little damage had been done by potato-disease.

Sugar-beet, the area under which had been reduced in the north-west, had come on well, except where it had been affected by drought; it was generally satisfactory, particularly in Moravia.

Hay-making was partly over and partly in full swing, especially in the north-east, where, owing to the occurrence of rain, middling harvests had been secured instead of the very inferior crops anticipated. Still, the quantity was then far below the average, and it had been much damaged by the rain. Elsewhere good harvests predominated, and the hay was usually in good condition. The aftermath promised well in Alpine countries.

Vines were progressing in nearly all cases very satisfactorily, though here and there some damage had been caused by fungoid and other pests. Fruit generally promised well.

CROPS IN HUNGARY.

According to the *Wiener Landwirtschaftliche Zeitung*, which quotes from the Report of Hungarian Ministry of Agriculture, the weather until 15th July was very variable, and the crops in Hungary had been considerably damaged by wind, rain, and hail. Rust and mildew were very common in some districts, and the Hessian fly was also troublesome. As a consequence, the cereal crops were very uneven, and it was expected that the harvest would certainly not be above the average. Wheat was the best in condition, but in many places, particularly beyond the Danube, the heat had already damaged the crops to the extent of 20 per cent. Wheat occupied some 7,410,000 acres, and the harvest was expected to be over 17½ bushels per acre. In some localities threshing had begun.

The area under rye had decreased, mainly on account of the winter being unfavourable, and it amounted to about 2,500,000 acres. The harvest was in full progress, in many places it was

over. The quality was unexceptional. The yield was expected to be about 15 bushels per acre. Winter barley was being cut in the higher lands, but the harvest was over elsewhere. The yield varied, owing to the damage caused by rust in many places. Spring barley was short in straw. Rust and mildew had done much damage; otherwise the condition was good, and possessed brewing qualities. A return of about 19½ bushels per acre was expected from rather more than 2,470,000 acres.

Oats had suffered less from the weather, and it was expected that the 2½ million acres under this cereal would probably yield 23½ bushels per acre. Rape had proved a middling crop, but was better in many cases than had been hoped for. Market garden produce and cabbages appeared very good. The weather was also favourable for maize and especially for all roots and grasses. Potatoes were a good average crop of fair quality. Beetroot was up to the average; and hemp, flax, and tobacco were satisfactory.

CROPS IN BELGIUM.

The reports published at the beginning of August indicated that wheat would be a satisfactory crop, the harvest was in full swing in most districts. Rye and oats were reported to be less promising; the bulk of the rye crop had been carried in poor condition, and oats were backward and had suffered from the heavy rains.

Disease had made its appearance among potatoes in several localities.

CROPS IN DENMARK.

Reports published in the *Ugeskrift for Landmænd* of August 2nd, indicated that in many districts where the cereal crops were in an advanced condition, it was feared that the quality of the grain had been seriously injured by the heavy rains.

The rye harvest was expected to begin early in August, and the wheat harvest about eight or ten days later.

Swedes, mangolds, and sugar beet, were in a flourishing condition at the date of the report, and, with favourable weather during August and September, these roots promised to furnish heavy crops of good quality. Turnips had profited by the heavy rainfall, and as a rule looked well. Early potatoes had yielded satisfactorily.

Clover and grass were in excellent condition. The hay harvest had been retarded by the unsettled weather and much of the hay had been injured by the heavy rains.

CROPS IN FRANCE.

The French Ministry of Agriculture issued, at the end of July last, a report respecting the condition of the crops on the 15th of that month.

This periodical report is tabulated from the observations made and supplied by the departmental professors of agriculture, and the following numerical scale is adopted to indicate briefly the state of the crops:—100 implies "very good"; 80, "good"; 60, "rather good"; 50, "passable"; 30, "indifferent"; 20, "bad."

The following table gives the relative index numbers as regards winter and spring wheat in the various "regions" or groups of departments into which France is divided for agricultural purposes:—

Region.	Condition on 15th July of	
	Winter Wheat.	Spring Wheat.
1. North-west - - - - -	77	80
2. North - - - - -	79	84
3. North-east - - - - -	87	88
4. West - - - - -	88	85
5. Central - - - - -	84	88
6. East - - - - -	83	88
7. South-west - - - - -	76	57
8. South - - - - -	74	84
9. South-east - - - - -	73	74
10. Corsica - - - - -	50	—

The acreage under spring wheat in France was very small compared with that under winter wheat. There are 36 departments where no spring wheat was grown at all.

The state of the rye, oats, and barley crops was considered favourable, although their appearance in the early summer promised a better result.

The hay and forage crops were reported to be abundant, almost without exception, throughout the country.

The appearance of the potato crop was reported to be "very good" in 19 departments, "good" in 54, "rather good" in 11, "passable" in 1, and "indifferent" in the remaining department.

CROPS IN GERMANY.

From the official reports of the German Imperial Statistical Office, summarised in the *Deutsche Landwirtschafts Zeitung* of 27th July, it appears that the injurious influence of the drought has been less felt by winter corn than by plants used for fodder.

The prospects for rye had somewhat improved during the month, while wheat had rather fallen off.

In many cases, particularly in the eastern districts, the rye was badly developed. Harvest had begun: the number of sheaves was generally smaller than in 1894, as the rye was thinner, owing to its not having wintered very well; nevertheless it was hoped that the grain would thresh out better this year. Here and there complaints were made as to rust.

The want of sufficient rainfall had seriously hindered the spring cereals. Fields and districts where sowing had been late and the soil was light had particularly suffered, the copious rains having brought relief only in exceptional cases.

In North and Central Germany barley had stood the drought better than any other crop, owing doubtless to its deeper cultivation. Oats, on the contrary, had everywhere deteriorated, and would by no means give the high yield of 1894; weeds formed a common subject of complaint.

Potatoes had developed satisfactorily, and a good harvest was confidently calculated on in South Germany. In the north and centre, in spite of the dry weather, there was abundance of leaf; but rain was then urgently needed to swell the tubers.

Clover and lucerne almost everywhere gave an unusually high yield at the first cut, whereas the second cut, with few exceptions, was much below expectations.

Only in South Germany and in some parts of the north-west was the root crop satisfactory.

Haymaking was over, and the hay had almost everywhere been got in under good conditions. The yield of meadow hay, as regards both quantity and quality, had not been exceeded for very many years, but the outlook for the aftermath was very poor.

The condition of all the crops in the middle of July was statistically estimated by the Imperial Statistical Office as follows (where 1 represents the expectation of a very good harvest, 2 good, 3 average, 4 poor, 5 very bad):—

Winter wheat, 2·5; spring wheat, 2·7; spelt, 2·5; winter rye, 3; spring rye, 2·6; barley, 2·6; oats, 2·8; potatoes, 2·4; clover and lucerne, 2·5; meadow hay, 2·3.

The condition of the crops was very much better in the south-west than in the north-east, the worst outlook being in Prussia proper. Nearly all crops were expected to give good yields in Alsace-Lorraine.

CROPS IN ITALY.

The *Gazzetta Ufficiale* of July 29th, 1894, contained the usual report of the Ministry of Agriculture at Rome on the condition of the crops in Italy. As regards wheat, the harvest was reported to be generally good and abundant. Maize promised

well, especially in Venetia and Emilia, and in the western districts, where potatoes also were expected to turn out an abundant crop.

Hay was everywhere abundant, and of excellent quality. Vines had suffered generally from *Peronospora*, considerable damage having been done by this fungus in vineyards in Latium, Campania, Apulia, and Calabria. The reports as to the condition of olives were generally satisfactory.

CROPS IN MANITOBA.

The August bulletin published by the Department of Agriculture and Immigration, Manitoba, gave the area under wheat in 1895 as 1,140,276 acres, as against 1,010,186 acres in 1894. The greater part of this increase occurred in the South-Western District, while the North Central District showed a slight decline from the figures of last year. The acreage under cereals in the different districts is shown below:—

District.	Wheat.	Oats.	Barley.
North-Western	82,445	58,183	14,348
South-Western	465,680	181,080	33,700
North Central	200,743	62,827	29,500
South Central	304,864	127,568	54,978
Eastern	86,544	53,000	21,313
Total, 1895	1,140,276	482,658	153,839
Total, 1894	1,010,186	413,686	119,528

The area under all cereals showed an increase; the only crop exhibiting a decline in the Province being roots, which had decreased from 7,880 acres in 1894 to 6,685 acres in 1895. Flax showed a remarkable development, the area under this plant being nearly trebled, there being 82,668 acres under flax, instead of 30,500 acres as last year. 16,716 acres were planted with potatoes, as against 13,300 acres in 1894.

Very heavy yields of cereals were expected. The total wheat harvest was estimated at 29,139,815 bushels, representing an average of 25.5 bushels per acre for the whole province, while oats and barley were expected to produce 21,887,416 and 5,597,310 bushels (45.3 and 35.8 bushels per acre) respectively. The estimated total yield of flax was 1,240,020 bushels. Potatoes and roots promised well. Reports from different districts placed the yield of hay at from 1.1 to 1.5 tons per acre from prairie hay, and 1.3 to 2 tons in the case of cultivated grasses. Continued rains had flooded the meadows so that it had been impossible to cut them, though dry weather might still enable farmers to secure their hay from this source after harvest.

There were nineteen creameries, of which twelve had commenced operations this year, and 42 cheese factories in the province.

CROPS IN THE NETHERLANDS.

According to the *Landbouw Weekblad* of July 20th, the barley crop was in splendid condition in the Netherlands. Wheat, beans, and peas were reported to be rather backward. Potatoes promised well, but disease had made its appearance in potato fields in the northern districts.

Later reports indicated that some damage had been done to the crops by the heavy rains at the beginning of August.

CROPS IN ROUMANIA.

According to the *Curierul Financiar*, the latest reports transmitted to the Roumanian Ministry of Domains show that the cereal harvest promised to be abundant throughout the country. The fears which were beginning to be expressed on all sides as to the failure of the maize crop owing to the dryness of the weather had been completely dispersed. After the copious rains which fell in all parts of the country at the beginning of August, there was every prospect of a good harvest of this cereal. The wheat harvest was reported to have turned out well, and the quality of the grain was said to be excellent.

INJURIOUS INSECTS AND FUNGI.

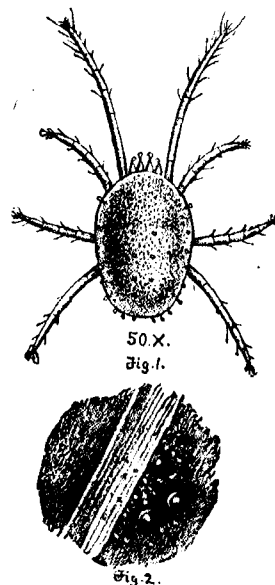
THE DAMSON MITE (*Bryobia pruni*?).

Fig. 1. Mite, magnified 50 times.
 „ 2. Part of leaf with eggs, magnified.

Damson trees have suffered severely in many places from the action of this mite, which is apparently a new species of *Bryobia*. It is distinct from *Bryobia pretiosa*, which infests and much injures gooseberry trees, and in the absence of any evidence as to its nomenclature, it may be described as *Bryobia pruni*. Soon after the leaves were formed on the damson trees little reddish specks were seen on their under sides. In course of time the leaves became dull yellow, and the whole tree presented an unhealthy appearance which was noticeable at a considerable distance. The leaves fell in some instances, in others they seemed as if stricken by drought or frost. Mites of all sizes in mature and immature stages, and of many shades of colour, swarmed on the lower parts of the leaves, which were also dotted with eggs, especially along the sides of the midribs. Trees that have been badly infested by these mites seemed to be generally in a very unhealthy condition, and some have died.

Life History.

This species of *Bryobia* found upon damson trees appears to be undescribed. It differs in colour and shape from *Bryobia pretiosa*, which attacks gooseberry and currant trees. Professor Riley alludes to a species of *Bryobia* that infests plum trees in the Pacific Coast regions, but was not able to find any characters

to separate the mites obtained in Oregon, California, and Montana, from those obtained from Central and Eastern States. Another species, *Bryobia pratensis*, is found upon peach, apple, and other trees in the United States.

This Damson mite, *Bryobia*, belongs to the family of *Tetranychidae*, and is found on the damson leaves as soon as they are formed. Generation succeeds generation with rapidity. Larvæ of all sizes are seen upon the leaves and quantities of eggs, generally fastened near to the midribs. At first, the globular egg is whitish, but it gradually becomes crimson, and is dark red before the larva is hatched. The larvæ are red while they are young, but become more of a brown, and in some cases a greenish-brown colour, as they get older. In the first stage, the larva has three pairs of legs. After the first moult there are four pairs of legs of which the anterior pair are extremely long. The legs have six joints, and at the ends of the tarsi there are four hairs with knobs, and two hairs at the base without knobs. There are peculiar scales arranged along the body of the mite, in four pairs. From each of these a long spine, or bristle, extends. There are also scales with hairs at intervals round the body. The two eyes are placed far back upon the thorax, in the centre of dark red spots. There is no web in connection with this species. The larvæ take refuge under the ribs of the leaves. During the winter, the larvæ may be found under the bark of the damson trees and in the little tufts of mosses and lichens upon the bark. Eggs can also be seen in the interstices of the bark.

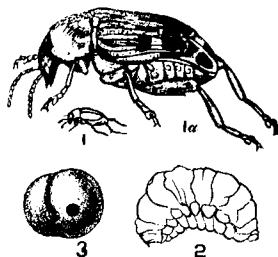
Modes of Prevention and Remedies.

When trees are infested, it is desirable to throw very finely powdered lime over them in damp weather, in the late autumn, or early spring, to kill the mosses and lichens which harbour the mites and their eggs. Syringing the trees with a solution of sulphate of iron at the rate of one pound of sulphate of iron to one gallon of water also kills the mosses and lichens as well as the mites where it reaches them.

Infested trees should be syringed directly the blossom is well set, with soft soap and quassia, put on with a fine jet, so that every part of the leaves is sprayed. This will render the leaves distasteful to the mites. Paris Green solution will make the foliage poisonous to the mites, but it must not be used stronger than at the rate of one pound to 275 gallons of water.

Soft soap and petroleum, or kerosene oil, mixed well together, is valuable. But it must be thoroughly incorporated. Kerosene "emulsion" is made in America according to the following formula:—

Kerosene oil, six pints; water, four pints; soft soap three and a quarter pounds. This is well mixed and diluted twenty-five times with water and put on in a fine spray.

THE PEA BEETLE (*Bruchus pisi*).

1 and 1a. Beetle; natural size and magnified. 2. Larva, magnified. 3. Pea.

The Pea beetle has been long known in this country. Kirby and Spence, writing in 1815, speak of it as injuring peas in England, and at the same time they say: "It is most alarmingly destructive in North America, its ravages having been at one time so universal as to put an end in some places to the cultivation of peas." Curtis says: "The *Bruchus* which abounds in fields and gardens in this country, if not originally a native species, is at any rate perfectly naturalised, and the importation of foreign peas and beans for seed is annually increasing the numbers."

The pea beetle, or "bug," is very common and destructive in the United States, and, according to Professor Riley, "it is supposed to be an indigenous North American insect, and to have been first noticed many years ago around Philadelphia, from whence it spread over most of the States where the pea is cultivated. This supposition is probably the correct one, and it is certain that, as the cultivated pea was introduced into this country from abroad, our pea beetle must have fed on some other indigenous plant of the pulse family. It is at present found in the more southern parts of Europe, and it is one of the few injurious insects which have found their way thither from this country." In Canada, the pea beetle is even more prevalent and destructive than in the United States. It did such harm in 1880 in Middlesex county, Canada, that pea-growers were advised to discontinue growing peas for a season or two. The seed peas grown in Canada have so high a reputation among seedsmen in America and Europe that large quantities are sent to be grown there. There is no doubt that the beetles are carried into Canada in the peas to be grown for seed, and are exported so with the seed peas from thence to various countries.

Considerable quantities of seed peas are grown in the United States, Canada, and New Zealand, for English seedsmen, as in these countries the climate and weather conditions during the period and the harvest are more favourable for the pea than in this country. These advantages, however, are counterbalanced by the large per-centage of the peas which are infested with the larvæ of the pea beetle, *Bruchus pisi*, which materially injure and, in some cases, altogether destroy their powers of germination. Some British seedsmen will not buy peas for seed from certain countries, and many object to have peas from these countries in their warehouses, because they are liable to be infested by the pea beetle, which is most difficult to get rid of when it has been introduced.

This insect has been confounded with another beetle known as *Sitona lineatus*, whose habits and history are quite different. This latter insect lives in the earth, and does not enter the peas either in larval or in beetle form. In larval form, it attacks the roots of peas and other plants; in its beetle form, it attacks their foliage, and sometimes, as in the spring of this year, 1895, causes serious injury to the pea-crop.

Life History.

The pea beetle, *Bruchus pisi*, is about the sixth of an inch long. It is black in colour, and thickly covered with brownish-grey hairs. Its antennæ are red and have eleven joints. The head is long and drooping, and terminates in a short snout, at the end of which is the mouth, furnished with strong jaws. There is a white spot on the lower part of the thorax, and two large distinct black spots upon the end of the abdomen, which is not nearly covered by the wing cases. The legs are reddish in colour, and the hind legs are very stout and long. The beetle can fly for a long time and for long distances. It may be seen flying about pea plants when they are in blossom. When the pods have been formed, the female beetle places long, spindle-formed, yellow eggs upon their surface, fastening them with a sticky substance. A yellow larva with a black head comes from the egg in a few days, and bores through the skin into the nearest pea, and feeds upon its contents, remaining in the pea, it may be, throughout the autumn and winter following. It then changes to a pupa, from which the beetle is soon produced. There is hardly any trace of the presence of the larvæ in peas infested in this way, so that, until pupation takes place, it is most difficult to discover whether they are infested. Before this, the larva "cuts a circular hole quite to the thin outer membrane of the pea, thus providing for the future exit of the beetle, which has only to eat through the thin membrane left by the larva. It has been proved that the beetle would die if the larva had not prepared this passage way, and it has been asserted that it will perish if the hole is pasted over with a piece of paper thinner than the hull itself."*

Some of the beetles emerge from the peas in the autumn, but, as a rule, they do not make their appearance until the spring. In fine warm days, in the early spring, they may be seen in sunny windows and on the walls of warehouses and granaries which contain infested peas. As the weather becomes warm

* *Insect Life*, edited by Professor Riley, Vol. IV., p. 298.

the beetles use their wings freely, and find their way into fields and gardens. Some beetles are sown in the seed peas, and either die or make their way to the light, and in due time pair and deposit eggs upon the young pea pods. No writer upon this insect has suggested that the beetle feeds upon the pea plants, although careful observations have been made by many economic entomologists respecting its habits. Directly there is sufficient warmth, the beetle takes to its wings, and may or may not feed upon other plants, or it may not feed at all, existing—as a French entomologist suggests in the case of the Apple Blossom Weevil, *Anthonomus pomorum*—upon a reserve of fat (*corps gras*) stored up in its body. The construction of its head, snout, and jaws is not at all fitted for feeding upon pea plants in the same way as the Pea Weevil (*Sitona lineatus*).

It was supposed by early writers upon the *Bruchus pisi* that the larva did not touch either the germ, or gemmule, or the radicle, and that therefore the germination of the pea would not be materially interfered with. Even supposing that the gemmule and radicle were left untouched, the cotyledons, or seed leaves, which are essential to the proper development of the plant, are invariably destroyed, and the stores of starch laid up for its use in the ovules are consumed. In many cases, germination does not take place at all, and in all cases of infested seed, the germination must be more or less enfeebled. Professor Popenhoe has made experiments in this direction recently at the Kansas State Experiment Station. He sowed 500 "buggy" peas of 10 different varieties, of which only one-fourth germinated, and the partial destruction of the cotyledons seriously affected the growth of this proportion. In another experiment, the Professor sowed 23 different varieties of peas, 100 peas of each variety, with the result that the peas of 10 varieties did not germinate at all, and of the 13 others, only 58 peas germinated, of which only 49 grew to average size and strength. Popenhoe found that of 275 "buggy" peas there were only 69 in which the germ was not entirely or partially destroyed.

Mr. Fletcher, the Canadian entomologist, carefully tested two measured pints of a sample of peas grown in Canada in 1891, with the following results:—No. 1 pint gave 717 uninjured seed peas; 413 injured, none of which grew; and 64 injured peas which grew. No. 2 pint gave 613 uninjured; 479 injured, of which none grew; and 49 injured which germinated.

Infestation of peas by this beetle has most serious consequences. The crop may be so bad that it must be ploughed up, or so enfeebled that it would pay better to plough it up. The greatest care should, therefore, be taken to avoid sowing "buggy" peas. Not only is the crop more or less a failure, but the beetles in the peas are distributed in the neighbourhood of the field or garden, and will certainly infest the peas growing near.

Remedies and Methods of Prevention.

There are obviously no remedies. After "buggy" peas have been sown there is nothing to be done but to await the result. Manuring and cultivation will be of benefit to plants whose constitution has been radically weakened. In bad cases it would be better to plough the land deeply at once in order that the beetles may be buried.

There would be some difficulty for seed-pea buyers to ascertain the exact per-centage of "buggy" peas in a sample until the winter had passed. At least this would depend upon the climate of the country from which the peas came. Careful examination should be made of all seed peas, and if tiny black specks are seen in them the whole bulk should be distrusted, and not issued for seed purposes. Cultivators should also carefully examine samples of peas offered for seed, and ascertain the number of peas having black specks on them in a given quantity, as well as of those having large holes in which beetles are still ensconced, or from which they have escaped (Fig. 3). In either of these cases, the germination of peas thus spotted, or having holes in them, should be considered as being seriously injured, and such peas regarded as unfit for seed.

Professor Riley suggests that suspected peas should be put into water, when the "buggy" ones will float. These should be removed and destroyed, sound ones only being planted.

Where there is a small proportion of seed peas in which there are beetles and larvæ evidently turning to beetles, the peas may be kept for two years in a close bin or receptacle, at which time the beetles will be all dead, and there will be no risk of spreading infestation by sowing the seed.

Steeping the infested seed peas in the various compounds used for seed wheat kills the beetles within them if the operation is performed carefully and thoroughly. Ordinary brine which is very frequently used for seed wheat would be even better for infested peas than sulphate of copper solutions and composite steeps sold for wheat.

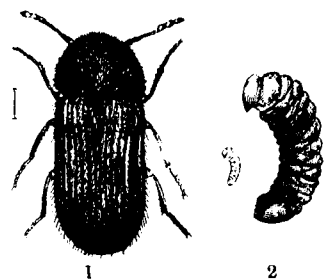
Bisulphide of carbon is used in Canada and America with beneficial results when the beetles are in the peas, though it is not effective against the larvæ while sealed up within them. Mr. Fletcher reports that nearly every large pea-grower treats peas with bisulphide of carbon. If the apparatus used in applying this treatment is properly made it works well. He quotes a correspondent who says: "It must be perfectly tight to be of any use. Some use tin, others cement and paint and paper lining with a double floor, with tarred paper between. The pan in which we put the carbon is about 3 feet across and only about 4 inches deep. The chemical is thus exposed to more air than it would have in a deep dish, from which it would not evaporate quickly enough to do good service. I put my pan up close to the ceiling above the peas because, the vapour being

so much heavier than air, it works down through the peas." It is estimated by Professor Riley that one pound of bisulphide of carbon is sufficient for 1,000 cubic feet of space.

Dipping infested peas in boiling water immediately after they are harvested and threshed has been recommended as certain to kill the larvæ within the peas, but it is feared that this would at the same time destroy germination.

Beans are infested by a similar beetle, *Bruchus fabæ*, Riley. This insect is smaller than the *Bruchus pisi*, and several beetles are often found in one bean. The female beetles deposit eggs first of all on the pods of the beans in the same way as the pea beetle, but they also breed in the beans when stored. Professor Riley first made this interesting discovery in 1882. Beans, especially "broad beans," are largely imported from abroad, and quantities of beetles are brought in with them, although *Bruchus fabæ* has been known in this country as long as the pea beetle. Purchasers of beans should carefully examine seed beans before sowing them. Infestation is somewhat difficult to discern before the larvæ changes. Methods of prevention to be adopted in this case are the same as in the case of *Bruchus pisi*, except that infested beans must be treated with bisulphide of carbon, or disposed of as quickly as possible, as infestation rapidly increases in stored beans.

THE BREAD BEETLE (*Anobium paniceum*, L.; *Sitodrepa panicea*, Thoms).



1. Beetle magnified; line showing actual length.
2. Larva—natural size and magnified.

This is a cosmopolitan insect, being conveyed from country to country in the numerous articles upon which it feeds. It is called the bread beetle because it is found sometimes in bread, biscuits, and other farinaceous compounds. It does not, however, by any means confine its attentions to these, as it is found in drugs, in the backs of books, collections of herbs, skins, the feet of stuffed birds, and many other substances.

It is stated in *Insect Life*, 1892-3, that specimens of old-fashioned gun wads sent from Pachuta, Missouri, had been riddled by *Anobium paniceum*. About a dozen wads were received, each one perforated from top to bottom by many holes, while between the upper and lower surface the substance of the wad was reduced to powder. It is also said that larvæ of this beetle were sent from Hertford, Connecticut, which had been found living in commercial chocolate. They were first noticed by a druggist, who upon applying to the wholesale dealer was told that the little white bits were not really alive, but were only small lumps of chocolate. Professor Riley has found this beetle in *Stramonium*, *Atropa belladonna*, *Hyoscyamus niger*, and other dried compressed medicinal plants, as they occur in drug stores. Westwood speaks of it as having been found in ginger, cayenne-pepper, rhubarb, and wafers.

It has been proved recently that the *Anobium paniceum* is particularly fond of oilcake. Samples of linseed cake had been sent to the Board of Agriculture, and after some time, small brown beetles were noticed in various parts of the room in which the cake was kept. They were pronounced to belong to the species *Anobium paniceum*, and upon a search being made the oilcake was found to be swarming with these insects in every stage of life. The surface of the cake looked exactly like a honeycomb, though the holes were much smaller, and the substance was being rapidly devoured by the larvæ and beetles.

Life History.

The beetle is from $1\frac{1}{2}$ to 2 lines (about a sixth of an inch) long. The males are smaller than the females. The colour varies from dark red to chocolate, becoming darker as the beetle gets older. The head is very deeply set in the thorax, which has unusually deep flaps, or sides. The eleven-jointed antennæ have three long joints at the extremities, and, like the legs, are of honey colour. Upon the wing cases there are finely punctured striæ as well as a fine down which is also found upon the thorax. The insect has well-developed wings which it uses very freely. The female has a long retractile ovipositor with three joints.

The eggs, which are white and nearly round and opaque, are laid in the retreats of the beetles—herbs, bread, chocolate, oilcake—and larvæ come from them in about 10 days. The larva has three pairs of legs armed with a brown, sharp, single claw. Its head is light brown. It has a few bristles on the upper side of its body, and a fine downy substance on the under side. When extended, it is rather more than the sixth of an inch long, but it generally lies in a circle with its head packed close to its tail. The pupal state is assumed in about three weeks. The pupa is milky white, and of the same length as the larva.

In the oilcake infested with this insect there were series of cells with smooth linings in which pupation took place, and

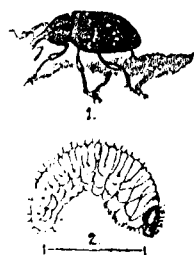
young beetles and pupæ in various stages were found in these cells, which were arranged with some regularity, resembling in some degree the cells of bees.

Methods of Prevention and Remedies.

Exposure to heat is a means of freeing infested substances from these beetles. Heat will cause them to come out from their retreats, when they can be destroyed. The infested oilcake was put in the sun, and in a few minutes the beetles swarmed out of it. Infested drugs, herbaria, books, leather, and similar substances might be subjected to considerable heat, which would not injure them and would rout the beetles.

In the case of oilcakes and biscuits where infestation is noticed, careful examination must be made, and all that are infested should be subjected to heat, or destroyed, as the beetles can run quickly and fly well, and they soon multiply in a store or granary.

THE PINE BEETLE (*Curculio abietis*, L.; *Hylobius abietis* Schon.).



1. Beetle, natural size.
2. Larva, magnified. Line showing natural length.

In June last, some specimens of an insect, which had caused serious injuries in larch and Scotch fir plantations in Scotland, were sent to the Board of Agriculture for identification. They were found to be pine beetles, known as *Curculio* (*Hylobius*) *abietis*, which are great scourges in plantations and forests of firs, especially of larch and Scotch firs. In this case, the beetles had so injured the larch and Scotch firs upon a "break" of fourteen acres that the greater part of the trees died during this summer.

This "break" was planted in November 1894, two-thirds of it with two-year-old larch, and one-third with two-year-old Scotch fir, with a double row of two-year-old spruce around the margin of the "break." The attack was noticed first upon the 15th of May. It had doubtless begun much earlier, for although no great harm had been done when they were discovered, beetles

could be found all over the "break." In a few weeks, the greater part of the trees had succumbed entirely to the onslaughts of the beetles, except the spruces, which were not touched until the others were destroyed. Numbers of the trees, which were only from 9 inches to 15 inches high, were barked all round.

This plantation was surrounded with firs blown down by the memorable gale of the 17th November 1893. Other plantations on this same estate are also surrounded with fallen fir trees, but are not at present infested.

The beetles injure fir trees by biting away the rind from the stems, the shoots, and the branches. In bad attacks the rind is bitten off completely round the stems and branches, deep into the sap wood, so that the tree dies or the branches and shoots dry up. The beetles are especially fond of the larch, and strip the rind off below the groups of leaves, or needles, with great rapidity. They are also fond of Scotch firs, Weymouth pines, *Pinus maritima*, so largely grown in France, and deodaras.* Sap and resin escape freely from the wounds made by the insects in the *Coniferae* they infest, and the trees soon show signs of exhaustion and quickly die. Young trees from two to seven or eight years old are principally attacked, and it is rare to find beetles upon trees of more than 14 years.

In the middle of the young plantation destroyed in Scotland, there was a small group of larch 12 years old, which was not touched. When newly-planted trees, fresh from the nursery, are attacked, as happened in the case in Scotland cited above, especially if they are planted in the spring, and a dry season follows, they cannot resist the onslaughts of numerous beetles. Although these beetles prefer varieties of the *Coniferae*, they are sometimes found upon the oak, ash, birch, apple, and other deciduous trees. They are very troublesome in continental woods and forests. It does not appear that they are known in America. Packard, in his comprehensive report on forest insects in the United States, 1888-1890, does not mention *Hylobius abietis*.

Life History.

The beetle is large and very conspicuous. It is rather more than half an inch in length when fully grown. Its ground-colour is pitchy black. Its head and thorax are thickly covered with punctures. The very long rostrum or snout has a deep groove on both sides, into which the antennæ, or rather their lower joints, can be conveniently packed. The wing-cases are deeply punctured, and marked with patches of yellow hairs arranged in somewhat irregular transverse rows. There are small patches of yellow hairs upon the thorax and a fringe of

* Some of these beetles kept in glass boxes preferred branches of *Cedrus deodara* to larch and Scotch firs.

yellow hairs beneath it. The legs are black with yellow hairs, but the feet have a yellow or ferruginous tinge, and the tips or clubs of the antennæ are ferruginous. Canon Fowler says that the colour of some of these beetles is pitchy ferruginous, and the legs reddish or pitchy red. It is probably in those which have hibernated that the lighter shades of colour appear.

Towards the end of April, if the weather is suitable, the beetles come forth and soon lay large whitish eggs, about the eighteenth of an inch long and somewhat barrel-shaped, in the stumps of conifers cut the preceding year, in freshly cut logs, and unbarked pieces of wood, in which the sap-wood is sufficiently moist to support the larvæ, and upon the lower parts of the stem and exposed roots of dead trees. The eggs are laid singly. The larva, which comes from the egg in about sixteen or seventeen days, is yellowish white, without legs, having a brown head thickly covered with bristles. The upper part of its body is considerably thicker than the lower part. It makes mines or passages in the sap-wood, upon which it feeds during the autumn and winter, and changes in the early spring to a pupa in a cocoon. The larva is found only in the stumps and logs of fir trees. Ratzeburg, however, says that it has been found in juniper and yew stumps, which belong, or are closely allied, to the *Coniferae*. The larva is never seen in living trees. Some of the beetles live throughout the winter in moss, grass, weeds, and rubbish. It is asserted by several observers that some of the beetles live for three years, but this has not been proved.

Methods of Prevention and remedial Measures

It is most important to remove all fir logs, stumps, and timber from the neighbourhood of young fir plantations, and land that is to be planted with firs, especially larch, Scotch fir, and Weymouth pine.

After a fall of firwood, where there is any fear of infestation, the land should not be planted again for at least three years. In the second year, the grass, weeds, rubbish, and remains of wood should be burnt by firing it in dry weather, so as to destroy all wood that may be lying about and the larvæ and beetles that may be present.

It is most desirable that the stumps and roots of felled firs should be raised and cleared away if possible. If this is not possible, the land should not be planted again until the stumps are completely decayed.

Where infestation is frequent, German and French foresters arrange their "breaks" of fir forest so that no "break" shall come to be cut close to another "break" where the trees have been recently planted, in order that there may be no stumps, logs, or bits of wood for the beetles to deposit eggs in, adjoining or near newly planted fir trees. Brehm says this plan has been most successful in the Hartz Mountains.

Continental foresters dig trenches by the sides of young fir "breaks," or "sections," from 12 to 15 inches wide and about the same depth. Freshly cut branches of fir or freshly cut pieces of fir wood are put into them to entice the beetles, which may be stamped to death, or collected by women and children. In four years, from 1880 to 1884, no less than 9,852,600 beetles were collected in seven Royal Forest districts of Saxony.*

Traps of freshly cut fir wood may be placed with the rind downwards in infested plantations. Also pieces of fresh bark will entice the beetles, and bundles of fresh fir branches are particularly attractive to them. The traps should be frequently examined and the beetles collected. Such traps are extensively adopted in the continental pine forests.

Gathering the beetles from the young firs by hand is practised abroad, and in Scotland. The beetles are large and easily seen, and being sluggish in the daytime can be taken without much difficulty. In the plantation in Scotland alluded to previously, 8,000 beetles were gathered in this way, but the mischief had been then practically done. Smearing the stems of the trees with some sticky and unpleasant material, such as petroleum oil or carbolic acid mixed with soft soap, would keep the beetles from crawling up the trees. This would be a costly process, and it is not clear that the beetles might not fly on to the lower branches of the trees, though they are not easily moved to flight, and fly heavily and awkwardly.

THE CUCUMBER AND TURNIP MILDEW (*Oidium balsamii*).

This fungus has been somewhat unusually prevalent this season on cucumber plants, both in frames and houses, and in the open air. It appears in the form of white patches upon the upper surfaces of the leaves, and, in circumstances favourable to its development, it spreads very rapidly and soon affects the health of the plant. The leaves dry up after a time, the blossoms fall off, and the cucumbers that had formed cannot grow out properly.

Oidium balsamii is also frequently seen upon swede turnips. The leaves of whole fields of these are powdered with white mildew, which comes off upon the clothes of persons walking through the turnips.

It is easily distinguished with a microscope by its peculiar barrel-shaped conidia or spores. The mycelium, like that of many of the *Erysiphæ*, does not penetrate into the leaf, as in the case of the potato fungus. Its filaments traverse the upper and under surfaces of the leaves, and, forming a thick mass of

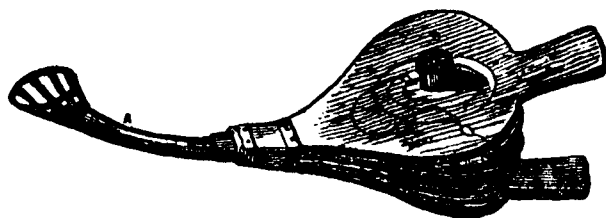
* *Lehrbuch der Mitteleuropäischen Forstinsektenkunde*, Von Dr. J. F. Judeich und Dr. H. Nitsche.

filaments upon them, hinder respiration, and make the leaves and the whole plant unhealthy, causing deficiency in the crop.

The complete history of this fungus has not been made out clearly. It is supposed to be a stage of another fungus, just as *Oidium Tuckeri* is the *Oidium* or conidia-bearing form of a fungus not at present defined.

As a remedy for this fungus attack upon cucumbers, it was recommended that powdered sulphur should be sprinkled upon the infected leaves. This has been adopted and found to give satisfactory results. Sulphate of copper and lime solutions were also suggested.

In frames, or houses, cucumber plants should be sulphured as the heat and moisture will cause considerable volatilisation of the sulphur. In the open air, there is but little volatilisation of sulphur, and there is no concentration of the fumes. The sulphur should be of the finest and lightest description, and blown all over the leaves, and under them, with a soufflet, or bellows, as figured below.



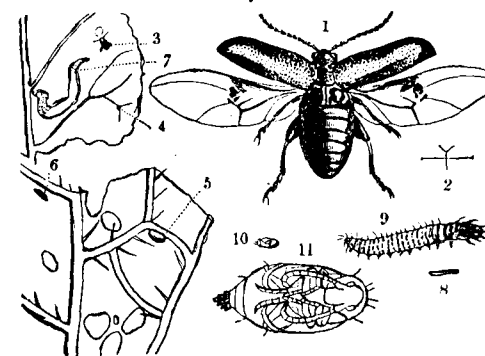
A., tube with perforated end. B., stoppered inlet for powder.

It is not necessary to put much sulphur on the leaves, and it should be as fine as possible.

For cucumbers grown in the open, a weak bouillie is better than sulphur. The strength of this should be 10 lbs. of pure sulphate of copper and 10 lbs. of pure lime to 100 gallons of water, applied with a knapsack machine and a very fine jet. This should be used, if possible, before the cucumber plants blossom. If the fungus spreads rapidly, and it is necessary to spray when the plants are in flower, the action of the bouillie upon them must be carefully watched, and its strength lessened if it changes the colour of the flowers or burns them.

Swedes affected by the mildew may be advantageously sprayed by means of a horse-spraying machine, like that in use for spraying potatoes. The bouillie in this case may be made somewhat stronger, with from 12 to 15 lbs. of sulphate of copper, and the same quantity of lime, to 100 gallons of water. It is necessary to mix the sulphate of copper and the lime in separate vessels, and to strain the lime-water before it is mixed with the sulphate of copper. The colour of the bouillie should be cerulean blue.

THE TURNIP "FLY" OR "FLEA" (*Phyllotreta nemorum*).



1. Beetle much magnified; 2, length and wing expanse; 3, natural size; 4, 5, egg, nat. size and mag.; 6, 7, mine, and cuticle eaten away by larva; 8, 9, larva, nat. size and mag.; 10, 11, pupa, nat. size and mag.

The Turnip Fly or Flea is a small beetle which thrives in dry, dusty, and cloddy soil, and in dry seasons causes much harm to turnip plants, as they cannot grow away from its attacks. Directly the leaves come from the seeds, the young plants are riddled with holes and can make no further progress; or, if they continue to grow, they are in most cases so weakened as to be practically useless. In conditions favourable to the propagation of the beetles, they increase with wonderful rapidity. Generation succeeds generation, clearing off every particle of growth as it appears. The beetles do not flourish in showery weather, and as this suits the turnip plants; it is only in times of drought that irretrievable harm is done. In such seasons, turnips have often been sown three times, and each crop has been successively cleared off. In 1881, enormous losses were sustained by farmers in many parts of England and Scotland. These were so great and so widespread that an inquiry was instituted by the Royal Agricultural Society of England, and in the Report of the Society, compiled by Miss E. Ormerod, it is stated that, in very many cases, turnips and swedes were sown three times without any crop resulting. The losses, as estimated in this Report, for seed, expenses of sowing, and re-sowing, in the season of 1881, amounted to over half a million of money, quite independent of the enormous losses and inconveniences sustained, in many parts of the kingdom, from the entire failure of the turnip crop.

Though the main and most dangerous attack of these beetles is undoubtedly when the plants are just starting, and until they are fairly in strong "rough leaf," it is by no means unusual in periods of drought to find that even if the plants manage to grow away from the first onslaughts, they are so steadily and constantly beset by the insects, and their leaves are so much bitten, that they never make good roots. When the roots are formed, and are of some size, late generations of beetles pertinaciously stick to them, in some seasons even until September.

The flea-beetle not only attacks turnips and swedes, but is often very destructive to rape, mustard, cabbage, kohl-rabi, and other cultivated cruciferous plants.

There are at least two other species of flea-beetles which are injurious in a less degree to turnips and other plants of the same order. These much resemble *Phyllotreta nemorum*, and can only be differentiated by close observation. Of these *Phyllotreta undulata* is the most common. It resembles *Phyllotreta nemorum*, but is rather smaller, and the yellow stripes on the wing-cases are somewhat differently arranged.

Life History.

The Turnip Flea is very small, being only about one and a quarter lines long, as shown in Fig. 3 of the above illustration, which Messrs. Blackie and Son have courteously allowed to be reproduced. It is black, with a broad yellow stripe down each elytra or wing-case. The antennæ have three ochreous-coloured joints nearest the head, and eight dark-coloured joints. The legs are ochreous, or yellow, and the thighs, which are very stout, are well adapted for the long jumps which this insect can make. Curtis states that it can jump 18 inches, or 216 times its own length. It passes the winter in beetle form under clods and stones, in tufts of grass, among weeds, and under rubbish of various kinds, by the sides of fields, hedgerows, and ditches. It is thus sheltered during the winter, and it is sustained throughout the early spring-time until the turnips have sprouted, upon wild cruciferous plants, such as charlock, hedge-mustard, and wild radish. It has large and powerful wings, expanding more than the fourth of an inch (Figs. 1 and 2), and takes long flights in search of congenial food, which, some say, it scents from a distance. It attacks the young turnips, biting and devouring their soft tissues, and lays eggs on the under sides of their second or "rough" leaves. From these eggs, tiny yellow larvæ come at the end of from seven to eight days (Figs. 8 and 9), and make mines (Fig. 7) in the leaves, feeding upon the soft tissues, and much weakening the plants. When full grown, the larvæ are rather more than $2\frac{1}{4}$ lines long, with six feet and a caudal proleg, or "sucker foot." They have dark marks upon the anterior and posterior parts of their bodies. In the course of from five to seven days, they fall to the ground and change to pupæ (Figs. 10 and 11), from which, in about 12 days, the perfect beetles come and proceed to attack the turnip plants. It is said that as many as six generations may be produced in a season, if the conditions are suitable.

Methods of Prevention.

Sowing upon a "stale furrow" is calculated to prevent the attacks of this beetle. A stale furrow usually implies a "good

season," or a fine tilth or seed-bed, whereas fresh-ploughed land does not usually work down well, but is unkind and cloddy. Moisture also evaporates more quickly from land that is cloddy, or rough, than from well comminuted soil. The beetles object to moisture, and moisture naturally helps the young plants to grow away from their foes.

If it is inconvenient to provide stale-ploughed land, and if it is found necessary to move stale-ploughed land that may have been beaten down by rain, it is better to work it with cultivators than to plough up sticky unkind soil difficult to pulverize, from which moisture would soon evaporate.

Rolling down the land after the drill should be adopted, as this keeps in the moisture and levels the earth, enabling the plants to come away as quickly as possible. Artificial manure mixed with well-powdered ashes, or mould, should be drilled in with the seed so that it may be close to the plants to help them to grow as quickly as possible away from the onslaughts of the beetles. The ashes and mould should be moistened. Putting in turnip seed with a water drill has certain advantages on some soils where the beetles are known to be particularly troublesome. An objection to the water drill is that the moisture soon evaporates in a dry season, and though it starts the germination of the seed rapidly, this is liable to be checked and the vitality of the seed injured unless rain soon comes.

Plenty of seed of the preceding year's harvest should be used—examined, or guaranteed, as to its germinating powers, and as to its freedom from other seeds. The importance of having seed of good germinating power can hardly be insisted upon too strongly.

It has been stated that steeping turnip seed in paraffin oil before it is sown will prevent this attack. A careful experiment has been recently made with seed soaked in paraffin oil, but without any good results. The plants from this steeped seed were as much riddled as those close by whose seed was not steeped.

Cruciferous weeds, such as charlock, encourage the beetles and furnish them with food until the turnip plants are ready for them. It has been often noticed that land on which charlock has been allowed to flourish is especially subject to the attacks of the flea beetles. It is desirable, therefore, that charlock should be kept down, as it harbours and feeds various injurious insects.

In some seasons, sowing mustard seed with turnip seed preserves turnip plants from serious injury, as it germinates and forms plants more quickly than turnip seed, but in very dry times, when the attack is virulent and generations of beetles follow rapidly, this has been found of little value. The beetles do not take to mustard plants in preference to turnip plants, but being ravenous, they attack the mustard plants, which come up first.

Remedies.

Dressings of soot are frequently of good service when beetles are thick upon the plants. Soot and lime, mixed in the proportion of two bushels of lime to one bushel of soot, form a very useful dressing. These dressings should be applied when dew is on the plants. Wood ashes, and peat moss, finely powdered, moistened with paraffin at the rate of 4 or 5 pints per cwt. have been used with some advantage.

A mixture, consisting of one bushel of lime, one bushel of gas lime, and 10 lbs. of sulphur mixed well together, is also recommended.

Very finely powdered lime alone is also of considerable service if put on when there is dew.

Dry substances like those cited above can be put on by horse distributors evenly and in small quantities without waste. Paraffin oil and carbolic acid may be distributed in the same way in very small quantities, so that each leaf is sprinkled and made distasteful to the beetles.

Extract of quassia chips mixed with soft soap and water has been tried and proved to be of some service. This mixture could be put on by horse distributors.

Rolling infested plants with a light roller frequently proves to be serviceable, especially if the soil is cloddy. It disturbs the beetles and presses the soil around the plants, keeping in the moisture.

Pushing a light wide framework upon wheels with well tarred boards fastened upon it, so as to come just over the turnip plants, has been found to catch many beetles, which, being disturbed, jump into the tar. Many acres can be got over in a day by a man pushing this machine, which should be made very light. The tar requires to be renewed as it gets dry, and the beetles, which accumulate in masses, must be scraped off.

CLUB ROOT, OR FINGER AND TOE.

A full history of this disease affecting turnips was published by the Board of Agriculture in 1893.* Club root was very prevalent in 1894, particularly in Scotland, and caused serious injury in several districts. It appears that there has been during the last 25 years a decided increase of this disease, which, as is now well known, is caused by an organism defined by Mr. Carruthers as a "fungus-animal" termed *Plasmodiophora brassicæ*. In consequence of this increase, an inquiry was instituted by the Royal Agricultural Society, with special reference to the relation between the composition of the soil and the liability of the crop to attacks of the *Plasmodiophora*.

* Report on Insects and Fungi injurious to Crops, 1892. Eyre and Spottiswoode, East Harding Street, E.C.

In connexion with this inquiry, Dr. Voelcker reported in 1894 upon experiments made by himself, and, after giving the particulars of the analyses of several soils, stated as follows: "If these analyses are compared it will be seen that the only strongly marked points of difference, as between soils liable to disease and those not liable, are in the relative proportions of lime contained and to a lesser extent in the potash. The latter may have something to do with the question, but this is not made clear by the analyses, the 14 per cent. of potash in No. 1 being practically the same as the 11 per cent. in Nos. 5 and 6. But the difference in the amounts of lime contained in the soils of either class are very striking, and clearly point to this feature of the presence or the absence of sufficient lime being intimately associated with the freedom from, or liability to, disease. All the soils on which 'finger and toe' never occurs are those which an agricultural chemist would describe as containing sufficient lime; all those which are subject to disease are those recognised as being deficient. As regards the actual per-centage of lime required, it would appear that the presence of 75 per cent. of carbonate of lime is enough to constitute a soil 'disease proof,' if, indeed, such a condition of soil can exist; while less than one half per cent. of carbonate of lime would seem insufficient to ward off the attacks of the fungus." Dr. Voelcker adds: "In saying this I am aware that it has not been shown that the fungus cannot thrive in a soil which contains three quarters of one per cent., or even more, of carbonate of lime; but the analyses I have set out show that none of the soils which are reported to be unaffected by disease have less lime than the first-named per-centage, and there is strong ground for concluding that in this lies the determining factor. For this reason I am of opinion that further inquiry should take the form of ascertaining whether it is possible to infect with the fungus land that is rich in lime, or whether the presence in the soil of lime in sufficiency has a destructive or retarding effect upon the vitality and spread of the fungus." Dr. Somerville has shown in the results of his experiments, given in the December number of the Royal Agricultural Society's Journal for 1894, that the application of lime to soil infected with *Plasmodiophora* prevented the spread of the fungus in proportion to the amount of lime employed. In one instance, a dressing of only 700 lbs. of very finely ground quicklime per acre nearly cured the disease in land that was infected. As Dr. Somerville points out, the experiment was made upon a small plot, and this small quantity of lime per acre would probably not prove so effective in ordinary field cultivation. But he goes on to say that by grinding the lime to an impalpable powder in the manner adopted in his experiments its spreading and mixing power is vastly increased; and that farmers who sow 5 cwt. per acre, as was done in some of the field experiments, maintained that the visible effects, so far as whitening the land was concerned, were as great as when 5 tons are applied in the usual way. The cost of grinding is

not a serious item, but the results of future experiments must decide whether it is profitable or not. It can be readily understood that lime applied in the form of a fine powder is far more effective than lime put on in the ordinary way, almost as it comes from the kiln, with large lumps scattered here and there which are allowed to "run down" gradually from the action of air and moisture. In these circumstances there is not by any means an even distribution of the particles of lime, and there is consequently a great waste of material.

Dr. Somerville emphasizes statements that have been made by other writers as to the very infectious nature of this disorder, which may be conveyed in infected soil or infected roots, and remarks that the main points to be observed in this connexion are:—

- (a.) That no diseased roots be consumed by stock at the homestead, for the fungus is thus certain to get into the farmyard manure in greater or less quantity, and will thus be conveyed to fields which will probably be used for the cultivation of turnips. Such roots should be consumed either where they grow or on a permanent grass field.
- (b.) That carts or horses should on no account traverse a diseased soil and afterwards go on to a sound one, for the soil thus conveyed on the wheels of the carts, or on the feet of the horses, will certainly contain the genus of disease, and will be the means of spreading it.
- (c.) That the headlands should be carefully watched, so that the disease may be stamped out by liming wherever it appears. As is well known, the headlands are generally more subject to the attack than any other part of the field, and in working the land the horses and agricultural implements carry away a certain amount of soil at every turn, and thus spread the disease over the whole field.
- (d.) That, unless conveyed mechanically, the disease is not apt to spread far. In the experiments above alluded to, two plots, which did not contain a single diseased root, were situated within 27 inches of two plots which contained only two sound roots between them, and yet this small interval was sufficient to prevent the passage of disease germs.

Experiments upon club root have been carried on during the past four years at the Royal Gardens, Kew, and the results were published in the Kew Bulletin of June and July 1895. These experiments, and the conclusions derived from them, are summarised in the Bulletin as follows:—

"1. Healthy seedling cabbages planted in soil that had two years previously produced a crop of diseased cabbages, became diseased. Check plants from the same batch of seed, grown in sterilised soil, remained free from disease.

"A. *Experiments conducted in a Sterilised Solution of Stable Manure.*

"2. The contents of two flasks were infected by adding crushed tubercles of a diseased cabbage root. Two per cent. of a saturated solution of potassium hydrate was added to the contents of one flask, and two per cent. of commercial sulphuric acid to the other. A young cabbage plant free from disease was then placed in each flask. At the end of two months the plant in the flask containing potassium hydrate was growing vigorously and perfectly free from disease, whereas the plant growing in the solution containing sulphuric acid was badly diseased, much more so than check plants growing in infected soil free from acid, for the same period of time. Similar experiments made during successive years always yielded the same result.

"3. Two young cabbage plants showing decided symptoms of disease were placed in flasks containing the same proportions of potassium hydrate and sulphuric acid respectively as in Experiment 2. At the end of two months the plant growing in the solution containing potassium hydrate appeared to be perfectly healthy, the indications of nodules present on the root at the commencement of the experiment having become effaced by subsequent growth. The plant growing in the solution containing sulphuric acid was badly diseased.

"Similar results were obtained in Experiments 2 and 3, when potassium hydrate was replaced by ammonium hydrate, and sulphuric acid by hydrochloric acid.

"4. Two diseased seedling cabbages were placed in separate flasks of the sterilised solution. The liquid in one flask was saturated once a week with carbonic dioxide, the contents of the second flask not being interfered with in any way. At the end of two months both plants had the disease developed to the same extent, proving that carbonic acid is neutral as regards the development of *Plasmodiophora*.

"B. *Experiments conducted with Sterilised Soil.*

"5. Two pots of soil, sterilised by steam, were infected with the crushed roots of diseased cabbages. The soil in one pot was mixed with quicklime; that in the other with bone manure, having an acid reaction. A healthy cabbage seedling was planted in each pot, and at the end of two months the plant in the pot containing lime was perfectly healthy, whereas the plant in the soil containing acid bone manure was badly diseased.

"6. Two pots containing soil mixed with quicklime and acid bone manure respectively had a diseased cabbage seedling placed in each. At the end of two months the disease was more developed in both seedlings than at the time of planting; proving that the presence of lime will not arrest the disease when the plants are once attacked.

“Summary.”

“The foregoing observations and experiments demonstrate the following points:—

“1. That in addition to cultivated plants, several common weeds belonging to the order *Cruciferae* are attacked by the *Plasmodiophora*. Hence the necessity for preventing the growth of such weeds in fields and hedge banks.

“2. That the germs of disease are present in soil that has produced a diseased crop, and retain their vitality for at least two years.

“3. That the development of *Plasmodiophora* is favoured by the presence of acids, and checked by the presence of alkalies, agreeing in this respect with the fungi rather than with bacteria.

“4. For the purpose of sterilising infected soil, experiments prove that either a dressing of lime or a manure containing potash salts is effective, the last being most valuable, as it not only destroys the germs in the soil, but also arrests the disease in seedling plants, and at the same time supplies one of the ingredients necessary for the healthy growth of turnips.”

The practical outcome of the various experiments that have been carried out in connexion with club root up to this date is that infection may be diminished both by precautionary and by remedial measures. The first of these include the destruction of diseased roots as far as possible, the prevention of the transport of the germs by carts and horses, the suppression of cruciferous weeds liable to be attacked by this fungus, and caution in the use of acid manures. The remedy consists in the application, in proper quantities, of lime and of potash, which appear to have considerable influence upon the progress of the fungus.

GENERAL AGRICULTURAL NOTES.

FARRIERY SCHOOL AT GRATZ.

In 1842, an institution was founded at Gratz, in Austria, for the teaching of veterinary medicine and the training of practical farriers. This institution was closed in 1879 and reopened five years later as the present School of Farriery. One of the objections to the old institution had been that, owing to its dual functions, the class of instruction provided was inadequate to meet the requirements of the veterinary profession, and exceeded what was necessary for the practice of farriery. The school opened in 1883 is intended solely for the technical training of skilled farriers. Candidates for admission must have passed through an elementary school, and have served for at least two years as assistant in a smithy. In 1894, there were 57 students, most of whom were between 20 and 25 years of age, though a few were under 20, and several were over 30 years old. Sleeping accommodation is provided for all the students, but they have to board themselves.

The school buildings comprise, in addition to the usual class rooms, a smithy with two forges, an anatomical museum, and a hospital for animals, the latter furnishing, on the one hand, the clinical material required for purposes of instruction, and, on the other hand, a centre for the rational treatment of sick and injured animals.

The teaching staff includes the director, who is a qualified veterinary surgeon; a teacher of farriery, also a qualified veterinary surgeon; a farrier; and three shoeing-smiths.

The course of instruction is of twelve months' duration, divided into two terms of six months each. The subjects of instruction are the anatomy and physiology of the hoof and foot; shoeing and manufacture of horses' shoes; shoeing of abnormal hoofs and feet; recognition and treatment of diseases of the hoofs and feet; the diagnosis of infectious diseases of the horse; the diagnosis and first treatment of acute diseases of horses and cattle.

It is regarded as necessary that a farrier should be thoroughly acquainted with the symptoms of infectious diseases of the horse in order that he may be able to adopt the necessary measures to prevent the spread of infection when present in horses brought to his forge. It is also considered desirable that he should be able to render first aid in cases of acute diseases of animals.

Theoretical instruction occupies ten hours weekly, the remainder of the work is of a practical nature and includes seven hours' clinical practice in the hospital each week.

As regards practical work done in the smithy, it may be mentioned that in 1894, 5,942 horses and 41 oxen were shod at the school, and 18,971 shoes were made and fitted.

The examinations at the conclusion of the course extend to both theory and practice. In the practical examination every student is expected to make an ordinary horseshoe and a shoe for an abnormal hoof. He is also required to go through the entire operation of shoeing a horse, including the removal of the old shoe, the preparation of the hoof, and the fitting and putting on of the new shoe.

The theoretical part of the examination is for the most part oral, upon the different subjects taught during the course.

The school is supported by an annual grant of 100*l.* from the Ministry of Agriculture, by a smaller grant from the local authorities of Gratz, and by the income derived from the smithy and the hospital.

FORESTRY ADMINISTRATION IN INDIA.

The report on the progress and condition of India to which reference is made in another part of this Journal, contains some information relating to the Indian forests. It seems that a beginning was made in the forest administration and conservancy of Southern India in 1844; 10 or 12 years later similar work was begun in Western and Northern India, and was taken up systematically all over India when the Mutiny troubles were over. Within the last 20 years, forest laws have been enacted for, and forest administration has been placed upon a permanent basis in, every province of India. The superior officers of the forest service have been, for the most part, selected by competition, and have been trained in forestry, either in Germany, or in France, or at Cooper's Hill College. During the past year, it has been decided that 20 per cent. of the superior posts in the forest department shall eventually be filled by selected officers from the subordinate or provincial branch of the department. Some of the subordinate officials are trained at a forest school near Dehra in the sub-Himalayan country of the North-Western Provinces, and this system of professional training at local centres will be gradually extended.

The first object of the forest administration is to select, acquire, and mark off as reserves, an area of State forest in every province sufficient to supply the wants of the neighbourhood and the province in respect of timber, firewood, bamboos, canes, and other forest produce, and sufficient also for supplying the foreign demand for such articles as teak timber, sandal wood, and rubber. The reserves are, or will be, surveyed, conserved, and worked on sanctioned plans, designed so as to obtain the largest possible permanent yield in the most economical way. Private rights in the reserves are bought out or otherwise adjusted. Among the most important measures of conservancy are the prevention of the yearly fires which used to devastate forests,

the maintenance of adequate seed-bearing trees, and the regular reproduction of timber of the more valuable kinds.

At the present time the reserves cover an area of nearly 72,000 square miles; and they may hereafter be further extended in Madras and Burma, where the work of reservation is as yet incomplete. Outside the reserves are about 36,000 square miles of State forests, some part of which will be eventually brought within the reserve area, and all of which are managed and worked for the benefit of the people, of their cattle, and of the public revenue. The limited areas of private forests are, except where they have been leased to the Government, being gradually exhausted; and as yet few private and no communal forests have been successfully brought under conservancy. In every province a very few of the most valuable timber trees are declared to be reserved trees, and can only be felled under special licence; outside the reserves, the country folk are generally allowed to obtain from the State forests timber, bamboos, firewood, and grass for their own use, free of charge; inside the reserves, only persons specially licensed are allowed to extract timber or other produce on payment of fees.

Forest revenue is raised by royalties on, or by the sale of, timber or other produce, and by the issue, at specified fees, of permits to graze cattle, or to extract for sale timber, firewood, charcoal, bamboos, canes, and other minor forest produce. In the year 1893-94, the gross forest revenue of British India was Rx 1,723,000; the expenditure was Rx 906,000; and the net forest revenue was Rx 816,000, as compared with Rx 726,000 in the previous year. Some of the better managed Native States, such as Mysore, Travancore, and Baroda, following the example of the British Government, have organised systematic forest administration, and enjoy a considerable forest revenue. Mysore has nearly trebled its forest revenue since the country was restored to Native rule in the year 1881.

WHEAT GROWING IN VICTORIA.

According to the *Melbourne Weekly Times* one of the effects of the fall in the price of wheat has been to drive a good many wheat-growers off the land in Victoria, but in the majority of cases these were a class of farmers who would persist in pinning their faith to one crop only, and when that crop failed they failed with it. Low prices, on the other hand, have compelled progressive farmers to adopt a system of farming to suit the times, and this has resulted in more economy being exhibited in the methods of preparing the soil, and in the harvesting of their crops. In view of the great natural advantages soil and climate give to Victorian farmers, wheat growing, when combined with the other branches of farming, should, it is main-

tained, be made a fairly remunerative occupation so long as prices do not fall below 2s. per bushel for the farmers.

The low prices that have ruled for wheat are said to have taught landholders that even in the so-called "dry north," where at one time the soil was not considered good enough for wheat growing, co-operative butter factories and creameries can be made to pay. Experiments made in the cultivation of flax have also proved that fibre can be produced in the wheat-growing areas in payable quantities. In various other directions it has been demonstrated that the Victorian soils are capable of producing returns more profitable than growing wheat at 1s. 6d. a bushel on the farm.

It is held, therefore, that should circumstances ever again reduce wheat to an eighteen-penny-level, the experience of the past four years and the knowledge that has, so to speak, been forced upon landholders, ought to put them in such a position as to be practically independent of any collapse in wheat values.

DAIRYING IN THE PROVINCE OF SAXONY.

According to the annual report of the Central Agricultural Association of the province of Saxony, co-operative dairying continues to spread in that province. In 1892, the number of co-operative dairies was 77; a year later, 91 of these establishments were at work, and by the end of 1894, the number had increased to 109. Most of the dairy associations confine their operations to the manufacture of butter and return the separated milk to their members for feeding young stock, but in districts where no breeding is carried on, some of the dairies make cheese as well as butter, and fatten swine. The milk is usually paid for according to its fat contents, and this system is in many cases facilitated by an arrangement whereby the milk is sent for analysis once a month to the laboratory attached to the experimental station at Halle. From the business reports of 77 of the dairies, it appears that they dealt with about 13,000,000 gallons of milk in 1894, from which about 4,000,000 lbs. of butter were produced. The payments made to the members of the 77 dairies concerned amounted to 287,500*l.*

SWINE BREEDING STATIONS IN HANOVER.

In an article which appeared in a recent number of the *Landwirthschaftliche Jahrbücher* it is stated that the importance of swine breeding as a branch of agricultural industry in Hanover is increasing from year to year. In 1883, the number of swine in the province amounted to 762,881, while in 1892, the number was returned as 1,037,104. The most popular

breed is a cross of the German swine with the white English breeds, mostly Yorkshire. In the district round Göttingen pure German sows are usually mated with English boars, but in the remaining parts of the province, where the former are not to be obtained, crosses are usually employed. In a few instances the sows of the first progeny of German sows and English boars, that is to say, half-bloods, are crossed again with English boars.

The value of German sows for breeding lies chiefly in their hardiness and fertility, and also in the fact that when crossed with English boars they produce a very serviceable pig. Besides the pure-blooded Yorkshire boars, several crosses are used, but chiefly those in which the English blood predominates. Berkshire, Tamworth, and Poland-China boars are employed in only a few instances.

Good breeding animals are to be obtained from several breeding stations in Hanover, one of which, situated at Eggersen, is worthy of some attention. This station was established in 1870 for the breeding of large white Yorkshire pigs. In order to prevent in-breeding and to maintain the blood pure, boars are obtained from the best English stocks, and only such animals are purchased as have an undoubted pedigree. The stock on the station consists of between 90 and 100 sows and 4 breeding boars. About 850 to 950 young swine are produced yearly, of which from 250 to 300 sows and boars are reserved for breeding. The remainder of the young pigs are castrated when eight weeks old, and subsequently removed from the sow. Young swine intended for breeding are left for ten weeks with the sow. Sows are not put to the boar until they are 11 to 12 months old. In this way larger and healthier litters are said to be obtained than is the case when mating takes place at an earlier period. The sows have litters twice in the year, and they, as well as the boars, are kept from four to five years for breeding purposes. The fodder used at the Eggersen station consists chiefly of bean husks, middlings, maize, whole wheat, turnips, and potatoes. Sucking sows are fed three times daily and sows in pig twice daily. Mangolds are also given in the evening. Young pigs are fed from three weeks, chiefly with middlings and whole wheat. Great attention is paid to cleanliness, exercise, and fresh air.

At another large station, where a stock of 5 boars and about 60 sows is maintained, attention is chiefly directed to the production of white English pigs, and of a local breed known as the "Improved Marsh" swine. The latter are distinguished from English swine by coarser hair and a few dark patches. At this station the system of feeding is very similar to that adopted at Eggersen, but maize is largely used. Warm foods are never employed, and milk and milk products have not been used for pig feeding for some time. The young pigs are induced to feed as early as possible during the sucking period; whole wheat is given to them in the first place and this is followed by a mixture

of maize and bean husks mixed with water into a stiff paste. In about eight weeks, the animals have become so accustomed to this food that their removal from the sow is said to have no effect in interrupting their development.

Another advantage which is claimed for this method of rearing young swine is the fact that there is no fear of tuberculosis being introduced amongst the animals by milk taken from infected cows. At this station, the swine are not prevented from wallowing in the earth, as is done at other stations. During the winter months earth is placed in the sties, and it has been found that the eating of earth by the young pigs has proved an invaluable remedy against scouring. Coal or broken cinder is also given to the animals once a week, and lime, which is so necessary as a bone-forming food, is given to the animals in the form of equal quantities of slaked lime and sand.

To this rational method of rearing, and also to the great attention which is paid to the cleanliness of the sties, may be attributed the fact that the herd at this station has never been visited by any infectious disease. The sties are cleaned out daily, even on Sundays when necessary, and the troughs, buckets, and other utensils are washed daily.

As regards early breeding, it is recognised by farmers in Hanover that the more rational system is to use for breeding animals which are nearly fully developed. Sows are seldom put to the boar at 6 months, as a rule they are kept till they are 9 months and even 12 months old before being mated.

MANUFACTURE OF BUTTER IN ARGENTINA.

According to the *Buenos Ayres Standard*, if there is one industry more than another that has taken root in the Argentine Republic of late years and escaped general observation, it is the manufacture of butter and cheese, which is now so extensive that not only is the local consumption amply supplied, but even foreign markets have been tried with a view to ascertaining what acceptance these products would find. Last year several consignments shipped to Rio Janeiro were snapped up immediately. Manufacturers are preparing to push on the enterprise, and it is felt that the export of butter on a very large scale is only a question of time. One of the most important butter manufactories is "La Escandinavia," in Jeppener. In this establishment only the most modern and approved machinery is used, and branches have been established at Gandará and Altamirano.

It may be noted here that 138 cwt. of Argentine butter were imported into the United Kingdom in the six months ended June last.

POULTRY STATIONS IN SAXONY.

A recent number of the *Landwirthschaftliche Jahrbücher* contains some interesting information respecting the poultry breeding stations established by the Union of Poultry Breeders' Associations in the province of Saxony. Already twenty-two of these stations have been started in the past two years, and it is proposed to open many others in the several districts represented by the twenty-five associations included in the Union.

The main object of the poultry breeding stations is to provide farmers and cottagers with a practical example of the advantages of rational methods of rearing fowls and to put at their disposal the means of obtaining useful birds at a reasonable price. A farm occupied by a member of the local association is usually selected to serve as the station, which is equipped with a stock of birds of various first-class breeds at the cost of the Union. The occupier of the station is bound by a contract to supply members of the associations with eggs for breeding purposes at the price of 1s. 10d. per dozen. He is also expected to keep a record of the productiveness of the different kinds of hen birds supplied by the Union.

The improvement of the ordinary breeds of poultry by selection and otherwise forms part of the experimental work carried out at the stations. Experiments are also made in the acclimatisation of French and other useful breeds, which under ordinary conditions are unable to stand the climate of Saxony.

ROUMANIAN SHEEP AND WOOL.

The Board have lately received from the Roumanian Government a copy of the Agricultural Statistics of that country which give, *inter alia*, the following information regarding the number of sheep, and the production of wool, in Roumania.

The number of flockmasters is stated to be 168,206 owning 4,530,000 sheep, and the quantity of wool produced yearly is estimated at 16,800,000 lbs. valued at over 400,000l. The price of Roumanian wool varies, according to the district in which it is grown and its quality, from 5d. to 9½d. per lb.

As regards the wool trade of Roumania, the latest statistics refer to the year 1892, when 2,833,000 lbs. of wool were exported, of which an amount equal to 24,000 lbs. was manufactured wool. During the same period, the total quantity imported was over 6,000,000 lbs., of which only 700,000 lbs. was unmanufactured.

The excess of imports over exports of wool during 1892 was therefore considerably over 3,000,000 lbs., and this difference becomes greater when calculated in the form of raw wool, for over 80 per cent. of the imported wool was manufactured.

It is inferred, therefore, that the number of sheep in Roumania is too small to supply the wool required for home consumption.

MANUFACTURE OF POTATO CAKE.

A recent number of *Le Bulletin des Halles* contains an article by MM. Nivière and Hubert, the Directors of the Agricultural Laboratory of Béziers, on the manufacture of potato cake.

These authorities states that they have made numerous experiments in the transformation of potatoes into the form of cake with most successful results. The method is to grate the potatoes and to press the pulp by means of a press, similar to that used for beetroot. Potato cakes prepared in this manner contain when dry about 95 to 97 per cent. of solid matter. They will keep for a considerable period, and can be very advantageously used for cattle. With the addition of meat or fish meal they are said to form an extremely nutritive and digestible feeding stuff for fattening stock. The liquid which is extracted from the potatoes by the press contains certain nutritive matter in solution, and need not be entirely lost, as it would be possible to utilize it to some extent in the feeding of stock.

The great advantage of the potato cake lies, it is maintained, in the concentration of the nutritive qualities of the potato in a shape easy of transport, and capable of being preserved for an indefinite period.

EXTRACTS FROM FOREIGN OFFICE REPORTS.

FRUIT GROWING IN CALIFORNIA.

In a report to the Foreign Office on the trade of the consular district of San Francisco for the year 1894, Mr. Wellesley Moore, Her Majesty's Acting Consul, states that owing to a number of causes, such as glutting of the market, hard times, unsatisfactory service, and the railroad strike, the prices realised for Californian green fruits in the Eastern States ruled very low in 1894. On account of the almost total failure of the crop there the season should have been a prosperous one for the Californian fruit grower, who, so to speak, had the great market of the east largely to himself. This market was, however, kept constantly glutted, and the prices to the grower thereby made ruinously low.

Such having been the case in 1894 with the eastern crop almost a total failure, it is stated that when the eastern crop is a normal one, or an unusually large one, the result will be one of disaster to the army of fruit growers in California and a serious crippling of the entire green fruit industry of that State.

In the earlier years of the auction plan of selling fruits (a system first introduced in connexion with the sale of Californian fruits in 1887), it was comparatively easy to regulate the distribution in the east from the fact that over 90 per cent. of the shipments were made through two mediums, which rendered it possible to regulate its distribution. Within the past year or two new conditions have arisen. In place of the great bulk of the fruit passing chiefly through two hands, a large number of co-operative companies, brokers, commission men and others have entered the field and have been making indiscriminate shipments to the various eastern markets, resulting in disaster all round. Each shipper has naturally endeavoured to hide his movements from the others, and the result has been that all have worked in the dark, and the forwarding of fruit has been almost entirely a matter of guesswork. With a view of distributing the fruits more intelligently, and thus preventing a glutting of the eastern markets, a Bureau of Information has been established, which will be supported by all persons engaged in the fruit business. This bureau will issue daily bulletins to all subscribers, keeping them fully posted as to the conditions of the eastern markets, so that they can intelligently determine where their fruit is required and can be disposed of to the best advantage. It has been decided to have only one auction room in each city.

The shipment of fresh fruit direct to London, which was tried as an experiment two years since and suspended in 1893, was again resumed in 1894. On August 5, a train consisting of 11 refrigerator cars was despatched to New York, and

the fruit was there transferred to fast steamers. The time occupied on the journey was $12\frac{1}{2}$ days, and the fruit is said to have arrived in good condition. This shipment was followed by others, but the expenses were very heavy, and it is felt that unless the fruit can be laid down at a smaller cost for transportation, and with a smaller percentage of loss, the English market will not prove a profitable field to work.

The unsatisfactory prices which growers have received from the commission men and jobbers have encouraged the growth of co-operation in the marketing of orchard products. The success of the Southern California fruit exchanges in the handling of citrus fruit and the Campbell Fruit Union of Santa Clara County, for the manipulation of preserved fruits, are said to have largely brought about this result. Various local exchanges sprang up throughout the State, and they have now effected a central organisation, known as the California Fruit Exchange, situated in San Francisco.

These exchanges handle all the produce of their members, which is sent to them direct from the orchards. It is then graded by machinery, and the grower obtains a receipt specifying the variety and weight of each grade. From this time its identity is lost, all being put together or dried together, as the case may be, sold by the association, and the proceeds distributed after deducting the necessary charges. The results attained are stated to be far more satisfactory than when each grower marketed his own fruit. The association is able to make better terms with the purchasers, handle the product with less expense, and prevent too much fruit being thrown on the market at one time, thus realising better prices than were obtainable under the old method.

Experiments in shipping fruit to the Eastern States by the Perkin system have been tried and have proved very successful. The principle is very simple. Attached to the locomotive is an air-compressor, in which the pressure of air reaches over 80 lbs. to the square inch. Air compressed to this extent becomes heated to such a degree that the germinal life it contains is destroyed. The sterilized air is passed into a receiver, where it is cooled and then forced into an air-tight car into which the fruit is placed. The germ-laden air is in turn forced out of the car, and the fruit is carried to its destination in perfectly pure air. With but little loss of power to the engine, this process is kept up during the entire journey. Where only pure air reaches the fruit, the process of decomposition is arrested for a long time. There is also a great saving effected by dispensing with the ice in the car, thus saving its cost and allowing more room for fruit.

The importation of beneficial insects from Australia to destroy pests that affected the fruit trees of California is said to have proved very successful; some of the pests, such as the cottony cushion scale and the black scale, having disappeared in many orchards.

Mr. Moore reiterates the advice given to intending settlers not to invest in land until they have been in California for one or two years and acquired some knowledge of the country and of the methods of doing business there. Under the present condition of things, many people consider it impossible to make a fruit orchard or farm pay. At all events, a man must be favourably situated to do so; and if he buys land without a full knowledge of what he is about, he is very apt to regret his bargain before he has been long in the country. Many new settlers fail through buying too much land and not keeping enough working capital in hand. Others buy orchards stocked with poor varieties of fruit trees, or badly arranged, and can never arrive at satisfactory results, no matter what capital and labour be expended upon them. There is no difficulty in renting or leasing land in any part of the State and thus ascertaining if they have an aptitude for the business of fruit-growing or farming before sinking their capital in an undertaking from which they will find it almost impossible to withdraw; certainly not without heavy loss.

[Foreign Office Report, Annual Series, No. 1576. Price 6d.]

AGRICULTURE IN THE UNITED STATES.

At the desire of the Royal Commission on Agriculture, the Foreign Office has published a Report on the agricultural condition of the United States which has been compiled by Viscount Gough, Secretary to Her Majesty's Embassy at Washington.

The report concludes with the following summarised statement of the position of agriculture in the United States:—

"Agriculture in the United States is now and has been for some years gravely depressed. In exceptional cases the depression of prices has been successfully met by the cheapening of cost of production. A widespread feeling exists that business generally, including agriculture, is about to revive.

"The depression is attributed to the fall of prices consequent on the appreciation of gold and to overproduction, and, even more generally, to the depreciation of silver. The depression began 20 years ago and has been progressive; the main cause of the fall of prices being the progressive competition in the world's market, owing to decreased cost of production and transportation, together with the great development of internal competition due to the improvement of industrial machinery.

"The area under wheat has been increasing, but less rapidly in recent years, and the system of cultivation tends to change.

"The popular remedy for the depression, advocated in meetings and writings, is national free coinage of silver independently of the action of other nations. Decrease of transportation charges, prohibition of speculation in the case of wheat, and prohibition

of imitation in the case of butter are also asked for, while almost all parties advocate an international bimetallic standard if possible.

"The Government is actively supporting and assisting agriculture in numerous indirect ways, such as inspection of meat products, with guarantee of their purity; information as to the requirements of foreign markets; advice on best modes of cultivation; bounty and protection for sugar; and in general by every means which suggest themselves to a highly trained and sympathising corps of experts held at the disposal of the Secretary for Agriculture since the year 1889.

"Protective duties exist, but as agricultural profits depend on the sale abroad of surplus produce, these duties do not serve their purpose. In the case of wheat especially there can be no protection against the competition of India and the Argentine Republic in the English market.

"The British agriculturist must probably in the future reckon with the same competition as heretofore in wheat, meat, and dairy produce. If anything, the competition would appear likely to become more severe as either the cost of production will continue to decrease in the same way as hitherto, or, should the United States change their currency basis from gold to silver, the cost of produce will be reduced when paid for in gold."

[*Foreign Office Report, Miscellaneous Series, No. 360. Price 2d.*]

APPLES IN MASSACHUSETTS.

In a report for the year 1894 on the agricultural condition of the Boston Consular District, Mr. M. Yeats-Brown, Her Majesty's Consul at Boston (Mass.), quotes the following remarks made by the Pomologist of the Board of Agriculture of Massachusetts in the report on the fruit crop of that State:—

"The good quality of our crop is much in favour of a large consumption, as the more good fruit the people have the more they want. Should the business interests of the country revive, we may hope for better prices by holding our winter fruit in cold storage or in good fruit cellars. If, however, one has not good facilities for storing, it will be best to dispose of the crop as harvested, if fair prices are offered. A good honest article, whether made in the factory or the farm, will command a fair price and lead to the largest possible consumption, and in the competition of fruit growing every one must make an effort to produce the best possible crop at the lowest possible cost; and those who succeed in reducing expenses, and at the same time improve the product, are sure of some profit, as in all other businesses. More brain work and better business management is what most of us farmers need. The waste products of many business concerns can be made a source of income, and in fruit

growing the lower grades of fruit, which would injure the sales of our main crop, should be utilised in every possible way.

"Thousands upon thousands of bushels of early fall apples go to waste every year, which, if taken in time and dried, would yield a large income. One bushel of ordinary apples, that would not sell for more than 10 to 25 cents (5d. to 1s. 0½d.) per bushel, with the added labour of paring and evaporating, would be worth 75 cents (3s.) at the present prices of the evaporated product; and cheap home-made evaporators can be made by anyone skilled in the use of tools.

"If the product is not large enough to warrant the use of an evaporator, all waste fruit should be fed to stock. It has been shown by repeated analyses that apples contain a food value, for cows and horses, of from 10 to 20 cents per bushel; and the cost of gathering as they fall can be but little.

"In addition to the value of the fallen apples for food, the fact that many insects are destroyed when they are thus utilised is of great importance, reducing the number of insects for the next season, and, consequently, the cost of production of succeeding crops."

[*Foreign Office Report, Annual Series, No. 1541. Price 1d.*]

THE VALUE OF CANALS TO AGRICULTURE IN FRANCE.

The Foreign Office has issued a report, compiled by Lieutenant H. E. O'Neill, Her Majesty's Consul at Rouen, which contains some interesting information, on the waterways of the basin of the River Seine.

In this report it is stated that it is impossible to illustrate by a parallel from the United Kingdom, the excellence of the water routes that radiate throughout the country from the lower Seine, but in point of distance it may be likened to the foreign imports required by Carlisle and Penzance reaching those cities by canal from the port of London. To show the difficulties surmounted in the construction of these waterways, it is mentioned that in the case of goods delivered at Roanne and on the banks of the Saône (by the Canal de Bourgogne) the canals have been carried over elevations greater than the Cotswold Hills at their highest point, or the Weaver Hills of Staffordshire, and equal to the Cornish mountains at the peak of Rough Tor.

As an instance of the value of canals to the agricultural interest, reference is made to the effect of the opening of the Canal de Sauldre upon the development of the unfertile district of France situated in the great bend made westward by the River Loire, which is known as the Sologne, "la triste Sologne." Nearly 1,000,000 acres, comprising no inconsiderable portion of three departments—Loir et Cher, Cher, and Loiret—

lie within that bend, and they are composed of a soil that, unfertilised, is of absolutely no agricultural value. Geologically, it is a quaternary or modern deposit of sand and clay, which together have an average thickness throughout the district of from 60 to 70 feet. In parts, the clay appears on the surface, but over the greater portion of its area the sand lies with some thickness upon a stiff impermeable clay. Left alone it will produce nothing of value. It is a country of sand and heather, broken up by innumerable ponds and marshy tracts as unhealthy as they are unprofitable. Immense efforts have been made for 40 years past to reclaim these lands by planting the sandy tracts with pines, by draining the stagnant surface waters, and by the transport thither, for intermixture with the sand, of a calcareous marl, which is obtained from the northern slopes of the Sancerrois Hills that limit this district on the south-east. Nearly 200,000 acres have been turned into pine forest; drainage of stagnant waters and proper irrigation have made good pasture land of much that lies in proximity to the rivers running through the district—the Cosson, the Beuvron, and the Sauldre. But nothing could have been done to fit the land for the culture of cereals and other more profitable products had not the Canal de Sauldre been cut right into the heart of the district from a more favoured country yielding the calcareous elements of which the soil of the Sologne was wholly deprived. For 40 years the transport of “marne,” or calcareous marl, has gone steadily on, and it is now computed that over 1,000,000 tons of this fertiliser have been carried by the canal and distributed over the poorer adjacent lands. The canal has been the main agent in the transformation of the country to a distance of 10 or 12 miles from its banks.

The influence of the canal upon the agriculture of the district is such that the selling value of land increases or decreases as it approaches or recedes from the banks of the canal, that is, from the means of obtaining at a low cost of transport the “improvements” of which, from the poverty of the soil, it stands in need. It seems that the inhabitants of the district now demand an extension of the canal to the banks of the Loire and the Cher, so that they may be put into communication by water with the navigable portions of those rivers. So far the chief function of the canal has been to bring them the fertilisers by which their land has been reclaimed; what they ask for now is its extension to assist them to carry off and find markets for its heavier products.

[*Foreign Office Report, Miscellaneous Series, No. 366.*
Price 11½d.]

FRUIT CULTURE IN GERMANY.

In a report on the trade of the consular district of Frankfort-on-Main, Sir Charles Oppenheimer, Her Majesty's Consul-General at that town, refers to the efforts which are being made in Germany to promote the culture of fruit and berries. Fruit growing is now, it seems, fostered a good deal by societies whose task it is to discuss the progress made in this field and to help their members practically and theoretically in the selection of the qualities and the treatment of cultivation. In the neighbourhood of Frankfort, there is especially the Royal College for fruit, vine, and floriculture at Geisenheim-am-Rhein, which exercises a very beneficial influence. It organises series of lectures for the instruction of suitable persons, who are trained as fruit or vine growers or florists. It also sends round travelling teachers, who give lectures on questions appertaining to this subject, and who also give advice as to the most lucrative way of disposing of the fruit crops, as to the best methods of drying and preserving kernel and stone fruits and vegetables, the packing of the fruit, the preparation of fruit syrups, jellies, marmalades, juices, and as to the preserving of the fruit. The culture of berry fruits has been especially promoted by the introduction of wines and other productions, made from different berries which have been brought before the consumers by the numerous exhibitions, where, by means of prizes, endeavours were made to increase the zeal of the growers to produce fruit suitable for the market.

Of late, special attention has been directed to the better disposal of the fruit crops, since the cultivation itself has made undoubted progress. Thus, at Frankfort a central dépôt for the sale of fruit has been founded which offers its services gratuitously. It accepts offers from the growers and hands them on as demands arise. It likewise arranges in autumn large fruit sales, at which the supply as well as the demand is very lively. During the season of 1894, at the commencement of August, goods had already changed hands at the central office to the weight of upwards of 2,200,000 lbs., almost exclusively berry-fruits. The central office gives its assistance to all interested parties, to buyers as well as purchasers, entirely free of charge. It does not even ask for the reimbursement of its own expenses. The enterprise is purely conducive to the public good, and is intended to promote German fruit cultivation. It has been successfully initiated already in a few South German cities, and it is intended this summer to establish similar institutions in other places after the Frankfort pattern. The wealth of the population has already been advanced, in some instances in quite a remarkable degree, by the culture of fruit and berry trees.

Sir Charles Oppenheimer refers to the cherry orchards at Guben, as well as to “the orchard of the capital,” for such is

considered the small harbour town of Werder, situated between Potsdam and Berlin, on white sand-hills near the River Spree. There the growing of fruit, notwithstanding the unfavourable soil, has increased wonderfully. The fruit excels by its superior quality and is preferred by consumers. The growers, who have organised themselves into trade unions, are now in possession of a harbour fleet of their own, and, during the season, ship their produce every morning in their own steamers to the markets at Berlin.

[*Foreign Office Report, Annual Series, No. 1586. Price 3d.*]

AGRICULTURE IN DENMARK IN 1894.

Captain James Boyle, Her Majesty's Consul at Copenhagen, has transmitted to the Foreign Office a Report on the Agriculture of Denmark for the year 1894, in which he quotes some remarks from a report issued by M. Lacour, President of the Royal Agricultural Society of Denmark, on the present condition and prospects of dairy farmers.

The year 1894 is said to have been a disappointing one, and to have contributed to increase the depression which, for a series of years, has affected Danish agriculture.

What especially lessened the value of the crops for the year 1894, were the low prices of wheat, rye, and other cereals. It was believed at the commencement of the year that prices could not possibly go any lower, but now that this has been proved not to be the case, it is asked with anxiety, whether a further fall in prices may be expected? M. Lacour states that it is difficult to answer this question on account of the enormous development of transport, and though hope is entertained that the prices of the two bread cereals are now so low, that it cannot pay for other countries to increase the culture of wheat and rye, it cannot be concealed that all reports from the great markets of the world, seem to indicate that the culture of wheat, &c., will be still exposed to very great and keen competition, if not, as hitherto from North America and the East Indies, at least from the Argentine Republic, with its virgin and fertile soil, and its developing and rapidly increasing means of transport. These remarks are said to be equally applicable for the most part to Russia as well.

In barley, and especially in fodder barley, prices in Denmark have fallen greatly. This is largely on account of its having to compete with Russian barley, which, in spite of its inferior weight, becomes more and more appreciated in England, and not only forces Danish fodder barley out of the market, but on account of its being used for food for horses, contributes very greatly to keep down and lower the price of oats. The fall of

prices caused several farmers to give up wheat and barley crops and turn to roots instead.

The prices of horses were rather lower in 1894 than in 1893, but the trade in this branch is still large owing to the decrease in prices of fodder. Exports and imports of horses continued about the same as in 1893. Horses are imported in considerable numbers from Germany and Sweden. A light draught horse is what appears to be in most use on farms, in fact, one that can be worked in a plough, and at the same time be used by the farmer himself to drive. Heavy draught horses are few and far between.

The breeding and keeping of pigs shows the best return for money invested in that particular line for the year 1894. From all districts and in all reports, this business is mentioned as the one that benefits the Danish farmers most, and the sale of pigs and pork is estimated at 40,000,000 kroners, or more than half the amount of the sale of butter. A good sort of pig is much wanted to improve the breed of swine in Denmark, and it is expected that in the future good boars will be introduced. Such breeds as Berkshire and Yorkshire would be considered the best to import.

The culture of beet is one of much importance, and it has been greatly developed in 1894, and is now carried on by six factories throughout Denmark. Taking into consideration the good prices that can be obtained for beetroot from sugar manufacturers, and the good it does to the soil, it was hoped that a larger area of cultivation would be given up to it, but as yet this has not been done owing to the want of money.

The enormous competition which has sprung up with other countries, and especially with Australia and New Zealand, where the Governments, through legislation and grants of money, assist the farmers and others employed in dairy farming, has roused the Danish farmers to take all energetic steps to maintain the high standard of butter, &c., which it now holds on the English market.

[*Foreign Office Report, Annual Series, No. 1614. Price 1d.*]

BELGIAN EGG TRADE.

A despatch has been received at the Foreign Office from Mr. G. R. de Courcy Perry, C.M.G., Her Majesty's Consul-General at Antwerp, enclosing two comparative tables showing the exportation of eggs from Belgium to foreign countries, and the importation of this article of consumption during the years 1892, 1893, and 1894. In the table of importation it is shown that over 100 million eggs are annually imported into Belgium, of which a large proportion are furnished by Italy, Germany, and Russia; of the 100 million eggs referred to, 40 millions are said to be

consumed in the country and the balance exported. The figures mentioned do not include the transit trade in eggs, which, in 1893, amounted to 300 millions.

The importation of eggs from the United Kingdom shows a considerable decrease. In 1893, over three millions of eggs reached Belgium from England, but in the following year that number went down to one million; on the other hand in 1893, 28 million of eggs were shipped to Great Britain; and in 1894, 30 million eggs went in the same direction.

Eggs are sold wholesale in Belgium by weight, the current price at present being 5*d.* per lb. A case of 1,440 eggs weighs approximately 120 lbs. The price varies according to the time of the year, the most favourable period being in the spring and autumn.

Eggs for the Antwerp market from foreign countries are usually packed in long cases containing each 10 gross, which are allowed to enter Belgium free of duty.

RURAL DEPOPULATION IN THE UNITED STATES.

In a report published by the Foreign Office on the trade of the consular district of Chicago for the year 1894, Colonel J. Hayes-Sadler, Her Majesty's Consul, states that the drift of population and immigration towards cities and towns, with a comparative decrease in rural population, have for some years been more or less marked features in all the States of his district. This movement, which has lately been accentuated by the financial crisis and the condition of the labour and produce markets, is attributed to modern inventions, the establishment of new industries in cities, and to the greater inducement to energy and the greater chances of advancement there offered than on the farm. The fancy for city life, together with the depression of agricultural interests, has led to the overcrowding of large cities, particularly in their poorer quarters. Notwithstanding the great increase of population in the State of Illinois, the rural population decreased by 114,000 from 1880 to 1890, even counting small town of 200 inhabitants in that denomination, while the urban population during the same decade increased 862,529, or more than 66 per cent. As in each successive year there is less public land remaining in the west for occupation, the competition for employment in the cities becomes greater, and this may eventually lead to a lower standard of wages. Although labour unions may have, up to the present time, been able to maintain the scale for their own members, it is considered doubtful whether the tendency is not towards a general fall, which they may be powerless to control, unless a change should occur in prospective conditions.

In Iowa, where the increase of population from 1880 to 1890 was 287,281, or 17·68 per cent., the increase of the urban population during that period was 261,187, or 50·68 per cent., while the rural population increased only 26,094, or 2·35 per cent. The total population in the State is now nearly 2,000,000.

[*Foreign Office Report, Annual Series, No. 1543. Price 3*d.**]

THE DAIRY INDUSTRY IN FIVE NEW ENGLAND STATES.

Mr. Percy Sanderson, C.M.G., Her Majesty's Consul-General at New York, in a Report to the Foreign Office on the Agriculture of the States of New York, New Jersey, Connecticut, Delaware, and Rhode Island, says that there is great difficulty in obtaining reliable statistics regarding the production of butter and cheese in those States.

The latest figures on the subject appear to be those given in the Census Reports of the United States for the year 1890, and even these are stated to be unsatisfactory, inasmuch as they appear on investigation to refer only to farms, to the exclusion of creameries and factories.

The dairy products of the farms of the five States in question are given in the following table, which shows that they produce about 11 per cent. of the butter, 24 per cent. of the cheese, and 15 per cent. of the milk of the United States.

State.	Butter.	Cheese.	Milk.
	Lbs.	Lbs.	Gallons.
New York - - -	98,241,813	4,324,028	663,917,000
New Jersey - - -	8,367,218	23,613	64,003,950
Connecticut - - -	7,196,000	112,566	54,413,000
Delaware - - -	2,026,490	359	10,699,362
Rhode Island - - -	965,456	24,631	10,610,547
Total - - -	116,796,977	4,485,197	803,643,859
„ United States -	1,023,821,770	18,725,218	5,207,121,309

The latest obtainable figures respecting the production of butter and cheese in factories and creameries in the State of New York are those furnished by the Commissioner of Agriculture in his report for the year ending September 30, 1893. This report shows that in 12 counties there were no factories of this nature, and that in the remaining 48 counties there were 255 butter factories and 1,156 cheese factories, also 213 factories making both butter and cheese. The whole number of factories was 1,624, and their product for the year 1892 was 19,497,257 lbs. of butter and 131,148,310 lbs. of cheese.

Writing on the 18th June last, Mr. Sanderson quotes a report recently received from Utica, one of the largest dairy markets in the State of New York, which states that the prices of dairy products are the lowest since 1879, the best butter being sold at 16½ c. to 17 c. per lb., cheese from 5 c. to 5½ c. (quotation of May 15), and milk is being sold to the factories at 4½ c. to 4¾ c. for each 10 lbs."

These prices represented about 8½d. a lb. for butter, rather over 2½d. for cheese, and a little over 2½d. per 10 lbs. of milk. They apply to *fodder* butter and cheese; when *grass* butter and cheese come on the market better prices are expected.

From statistics which have been compiled it would appear that between the years 1880 and 1890 the number of cows increased by 33 per cent., and the class of stock was much improved. At that time many creameries sprang up and there was a tendency towards over-production, but the fall in prices and the late general depression are reported to have checked production and discouraged breeding. It seems that the high price of beef which has ruled lately led to the slaughter of a certain number of cows, and it is stated that the number of milch cows in proportion to the population is lower now than it has been for years.

[Foreign Office Report, Annual Series, No. 1590. Price 1d.]

ACREAGE OF HOPS IN GREAT BRITAIN, 1895.

PRELIMINARY STATEMENT compiled from the Returns collected on the 4th June 1895, showing the ACREAGE under Hops in each COUNTY of ENGLAND in which Hops were grown, with a COMPARATIVE STATEMENT for the Years 1894, 1893, and 1892.

COUNTIES.	1895.	1894.	1893.	1892.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
BEDS -	—	11	11	10
GLOUCESTER -	38	39	33	39
HANTS -	2,875	2,911	2,795	2,775
HEREFORD -	7,553	7,525	7,079	6,797
KENT -	35,018	35,520	34,815	34,058
NOTTS -	—	—	—	14
SALOP -	150	140	123	117
SUFFOLK -	10	17	21	18
SURREY -	1,783	1,935	1,845	1,938
SUSSEX -	7,489	7,589	7,326	7,124
WORCESTER -	4,024	3,848	3,516	3,369
Total -	58,940	59,535	57,564	56,259

AGRICULTURAL RETURNS OF GREAT BRITAIN, 1895.

I.—PRELIMINARY STATEMENT compiled from the Returns collected on the 4th June 1895, showing the Increase or Decrease on the Returns for the Years 1894 and 1893 respectively.

A.—1895 compared with 1894.

CROPS AND LIVE STOCK.	1895.	1894.	In-crease.	De-crease.	In-crease.	De-crease.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Wheat -	1,417,641	1,927,962	..	510,321	..	26·5
Barley -	2,166,279	2,095,771	70,508	..	3·4	..
Oats -	3,235,905	3,253,401	42,504	..	1·3	..
Potatoes -	541,217	504,454	36,763	..	7·3	..
Hay:—Clover, & Rotation Grasses -	2,303,431	2,121,904	181,527	..	8·6	..
Hay:—Permanent Pasture -	4,760,889	4,852,442	..	91,553	..	1·9
Hops -	58,940	59,535	..	595	..	1·0
	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Cows & Heifers in Milk or in Calf -	2,485,820	2,460,086	25,734	..	1·0	..
Other Cattle:—2 Years & above -	1,431,525	1,516,672	..	85,147	..	5·6
" 1 Year & under 2 -	1,190,368	1,217,145	..	26,777	..	2·2
" Under 1 Year -	1,246,623	1,153,210	93,413	..	8·1	..
TOTAL OF CATTLE -	6,354,336	6,347,113	7,223	..	0·1	..
Ewes kept for Breeding -	9,663,129	9,668,002	..	4,873	..	0·1
Other Sheep:—1 Year & above -	6,334,386	6,342,730	..	8,344	..	0·1
" Under 1 Year -	9,794,680	9,850,768	..	56,088	..	0·6
TOTAL OF SHEEP -	25,792,195	25,861,500	..	69,305	..	0·3
Sows kept for Breeding -	415,210	351,119	64,091	..	18·3	..
Other Pigs -	2,469,221	2,038,907	430,314	..	21·1	..
TOTAL OF PIGS -	2,884,431	2,390,026	494,405	..	20·7	..

B.—1895 compared with 1893.

CROPS AND LIVE STOCK.	1895.	1893.	In-crease.	De-crease.	In-crease.	De-crease.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Wheat -	1,417,641	1,897,524	..	479,883	..	25·3
Barley -	2,166,279	2,075,097	91,182	..	4·4	..
Oats -	3,235,905	3,171,756	124,149	..	3·9	..
Potatoes -	541,217	527,821	13,396	..	2·5	..
Hay:—Clover, & Rotation Grasses -	2,303,431	2,047,008	256,423	..	12·5	..
Hay:—Permanent Pasture -	4,760,889	4,270,480	490,409	..	11·5	..
Hops -	58,940	57,544	1,396	..	2·4	..
	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Cows & Heifers in Milk or in Calf -	2,485,820	2,554,624	..	68,804	..	2·7
Other Cattle:—2 Years & above -	1,431,525	1,580,242	..	148,717	..	9·4
" 1 Year & under 2 -	1,190,368	1,354,523	..	164,155	..	12·1
" Under 1 Year -	1,246,623	1,211,237	35,386	..	2·9	..
TOTAL OF CATTLE -	6,354,336	6,700,676	..	346,340	..	5·2
Ewes kept for Breeding -	9,663,129	10,128,076	..	465,547	..	4·6
Other Sheep:—1 Year & above -	6,334,386	6,911,063	..	576,677	..	8·3
" Under 1 Year -	9,794,680	10,240,595	..	445,915	..	4·4
TOTAL OF SHEEP -	25,792,195	27,289,734	..	1,488,139	..	5·5
Sows kept for Breeding -	415,210	398,722	16,488	..	31·5	..
Other Pigs -	2,469,221	1,804,808	664,413	..	36·8	..
TOTAL OF PIGS -	2,884,431	2,113,530	770,901	..	36·5	..

II.—COUNTY SUMMARY.

PRELIMINARY STATEMENT of the ACREAGE under WHEAT, POTATOES, and collected on the 4th June 1895, with a

COUNTIES.	Wheat.		Potatoes.		Hay.			
					Clover, &c.		PERMANENT PASTURE.	
	1895.	1894.	1895.	1894.	1895.	1894.	1895.	1894.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
TOTAL FOR GREAT BRITAIN	1,417,641	1,327,962	511,217	504,454	2,303,431	2,121,904	4,760,899	4,862,442
ENGLAND	1,349,806	1,260,626	373,231	349,557	1,741,712	1,558,799	4,079,803	4,178,720
WALES	44,056	50,470	33,654	34,038	175,742	170,135	595,818	510,619
SCOTLAND	33,799	41,866	134,332	120,859	385,977	392,970	175,268	163,073
ENGLAND.								
BEDFORD	28,054	40,016	8,797	8,158	17,589	13,104	32,107	34,918
BERKS	24,708	38,867	2,176	2,107	34,625	29,419	75,975	77,059
BUCKINGHAM	24,058	38,383	1,732	1,720	27,119	22,145	92,184	98,856
CAMBRIDGE	81,329	96,658	20,253	16,834	36,366	30,876	43,349	39,622
CHESTER	9,364	12,621	21,298	22,204	54,899	53,996	105,552	107,757
CORNWALL	20,524	27,679	5,806	5,423	43,366	43,089	41,161	40,311
CUMBERLAND	3,596	4,510	10,699	9,150	40,577	40,721	72,053	71,375
DERBY	11,614	14,581	2,526	2,391	19,797	18,177	135,367	138,173
DEVON	43,577	62,901	12,323	11,934	76,113	68,562	121,374	124,424
DORSET	15,696	21,657	1,815	1,614	30,897	28,741	93,638	95,591
DURHAM	9,166	16,306	7,910	7,751	41,000	40,074	91,642	94,079
ESSEX	93,156	124,592	13,217	10,929	76,169	58,614	113,186	114,790
GLOUCESTER	37,509	49,381	4,638	4,173	56,026	59,483	151,772	160,024
HANTS	42,683	63,693	5,988	5,474	89,989	79,530	98,596	98,399
HEREFORD	17,131	28,291	1,855	2,037	26,923	23,316	89,518	82,609
HERTFORD	38,076	52,115	4,932	4,588	39,096	29,137	61,234	64,692
HUNTINGDON	24,911	32,639	8,552	6,715	14,362	12,121	28,949	28,230
KENT	28,399	57,927	11,865	13,400	42,754	39,397	114,245	121,877
LANCASTER	11,537	17,356	58,264	34,734	68,349	68,664	215,547	211,210
LEICESTER	17,578	23,213	2,231	1,936	19,206	18,234	90,630	99,125
LINCOLN	139,280	186,170	51,904	47,041	98,363	85,391	111,413	103,143
LONDON	205	343	577	574	218	157	4,679	5,165
MIDDLESEX	2,923	3,614	3,411	3,363	2,655	1,694	52,711	56,343
MONMOUTH	1,828	7,567	1,332	1,435	11,767	11,708	65,890	69,520
NORFOLK	106,812	125,734	6,469	5,926	142,962	124,738	68,403	72,637
NORTHAMPTON	31,329	46,261	3,202	2,915	26,587	21,589	81,199	92,290
NORTHUMBERLAND	4,627	8,655	4,351	4,136	45,152	46,210	69,912	71,469
NOTTS	30,125	39,330	7,443	6,661	39,190	27,191	67,372	67,636
OXFORD	23,188	37,448	2,603	2,391	39,117	32,124	74,333	77,020
RUTLAND	3,472	5,023	111	127	3,911	2,443	11,146	12,974
SALOP	23,698	31,896	6,112	5,817	15,898	43,210	104,280	105,995
SOMERSET	22,616	33,119	4,884	4,704	39,345	26,263	232,803	247,778
STAFFORD	16,359	22,373	9,714	8,829	34,369	32,988	127,021	127,869
SUFFOLK	88,264	106,020	2,773	2,283	78,350	61,616	74,574	73,755
SURREY	16,270	23,112	6,647	6,260	20,514	17,375	79,365	81,813
SUSSEX	45,333	61,249	3,314	3,026	47,103	46,190	133,205	138,192
WARWICK	26,429	38,577	6,437	5,871	28,220	24,099	101,589	107,342
WESTMORLAND	297	296	1,646	1,471	6,767	6,510	54,445	54,262
WILTS	42,442	55,334	2,577	2,404	60,476	55,081	141,962	149,948
WORCESTER	21,063	36,635	8,975	7,584	29,840	16,710	96,298	99,727
YORK, E. RIDING	42,161	60,700	12,698	11,867	25,193	21,648	44,567	49,973
„ N. RIDING	14,893	29,613	10,759	10,596	39,256	36,095	143,140	149,885
„ W. RIDING	35,915	46,478	23,975	22,164	48,926	48,636	275,119	272,853

—ACREAGE.

HAY in the several COUNTIES of GREAT BRITAIN, compiled from the Returns COMPARATIVE STATEMENT for 1894.

COUNTIES. (continued.)	Wheat.		Potatoes.		Hay.			
					Clover, &c.		PERMANENT PASTURE.	
	1895.	1894.	1895.	1894.	1895.	1894.	1895.	1894.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
WALES.								
ANGLESEY	246	356	2,881	2,980	17,027	16,058	17,635	18,862
BRECON	3,354	4,251	1,129	1,203	7,097	7,428	37,697	38,973
CARDIGAN	5,140	6,272	5,895	6,142	18,442	18,387	38,667	38,841
CARMARTHEN	7,720	8,679	3,696	3,670	16,993	16,219	77,959	78,599
CARNARVON	512	499	4,619	4,659	17,366	17,234	46,122	45,957
DELBIGH	4,507	6,616	3,438	3,383	22,095	20,303	59,667	59,221
FLINT	3,580	5,288	2,610	2,434	12,424	11,734	21,000	20,135
GLAMORGAN	4,133	5,540	1,907	1,975	15,615	15,858	72,829	74,050
MERIONETH	638	786	1,952	2,010	7,443	7,318	38,772	38,428
MONTGOMERY	9,215	11,518	2,097	2,169	16,596	16,037	47,188	48,114
PENBROKE	2,397	3,212	2,623	2,584	17,547	16,508	44,152	45,474
RADNOR	2,555	3,123	897	929	7,067	7,021	24,320	24,895
SCOTLAND.								
ABERDEEN	1	2	7,245	7,202	47,765	46,522	2,624	2,966
ARGYLL	..	1	4,901	4,861	10,633	10,560	14,587	14,234
AYR	980	1,164	8,607	8,370	27,487	29,355	21,989	21,390
BANFF	3	12	1,963	1,976	9,947	10,855	1,913	671
BERWICK	975	1,715	2,390	2,189	8,883	9,111	4,117	3,605
BUTE	..	..	1,036	979	2,192	1,987	761	708
CAITHNESS	15	1	1,653	1,758	9,585	9,832	3,251	1,817
CLACKMANNAN	215	241	373	344	1,210	1,395	932	743
DUMBERTON	678	797	2,357	2,149	6,418	6,134	2,854	2,549
DUMFRIES	224	49	4,061	3,723	17,946	18,211	18,513	18,307
EDINBURGH	2,097	3,380	4,841	4,621	11,552	11,945	3,271	3,004
ELGIN, or MORAY	583	960	1,679	1,701	7,426	6,345	1,220	629
FIFE	7,075	9,152	15,390	14,527	24,616	25,258	8,231	7,097
FORFAR	6,578	7,992	12,580	12,386	18,968	20,295	2,353	2,651
HADDINGTON	3,519	5,192	7,869	7,369	9,462	9,392	2,337	2,137
INVERNESS	2	8	6,297	6,329	11,599	12,331	5,836	5,415
KINCARDINE	228	410	2,661	2,536	11,810	12,558	372	445
KINROSS	..	11	658	574	2,424	2,512	1,390	1,573
KIRKCUDBRIGHT	50	45	1,542	1,521	8,705	9,502	13,099	12,606
LANARK	1,450	1,734	4,464	4,110	31,813	32,068	13,029	12,328
LINLITHGOW	844	1,029	1,704	1,609	6,130	6,462	2,270	2,286
NAIRN	16	15	325	342	2,011	2,019	717	539
ORKNEY	..	..	2,890	2,916	10,188	8,780	1,979	1,524
PERBLES	10	10	438	393	2,635	2,246	1,957	1,391
PERTH	3,708	5,626	13,717	13,214	28,093	29,543	14,863	13,335
RENEREW	1,335	1,462	3,220	2,997	12,204	12,768	7,986	7,257
ROSS and CROMARTY	444	914	7,066	8,032	13,502	14,003	3,574	3,502
ROXBURGH	131	367	1,442	1,404	8,497	8,289	5,925	5,598
SELKIRK	1	..	205	197	1,096	988	1,165	1,513
SHEPHERD	..	..	3,179	3,159	691	693	1,586	1,487
STIRLING	1,480	1,819	3,602	3,253	12,320	12,851	4,416	4,377
SUTHERLAND	1	2	1,673	1,697	4,089	3,783	1,783	1,570
WIGTOWN	256	456	1,484	1,530	4,640	4,437	4,177	4,124

II.—COUNTY SUMMARY.

PRELIMINARY STATEMENT of the NUMBER of CATTLE, SHEEP, and PIGS collected on the 4th June 1895, with

COUNTIES.	Cattle.		Sheep.		Pigs.	
	1895.	1894.	1895.	1894.	1895.	1894.
TOTAL FOR GREAT BRITAIN }	No. 6,354,336	No. 6,347,113	No. 25,702,195	No. 25,861,500	No. 2,884,431	No. 2,390,026
ENGLAND	4,472,565	4,450,607	15,557,571	15,509,095	2,471,020	2,013,823
WALES	703,824	695,000	3,000,841	3,078,641	260,091	227,068
SCOTLAND	1,177,947	1,201,506	7,233,783	7,272,864	153,320	148,535
ENGLAND.						
BEDFORD	30,023	30,772	96,278	100,411	32,826	26,564
BERKS	30,154	38,003	184,068	182,334	33,197	24,303
BUCKINGHAM	66,153	66,770	192,609	188,531	40,047	28,839
CAMBRIDGE	48,137	49,379	213,482	209,020	56,191	41,235
CHESTER	170,136	169,618	92,456	78,511	78,392	70,562
CORNWALL	193,900	190,749	421,443	415,031	100,074	78,761
CUMBERLAND	141,937	138,118	518,276	520,811	23,708	23,556
DERBY	136,111	141,010	176,998	186,188	40,919	34,504
DEVON	263,506	264,060	874,408	868,708	123,937	98,218
DORSET	83,071	79,955	370,947	383,693	66,211	53,760
DURHAM	71,968	71,899	235,041	217,788	12,894	12,065
ESSEX	79,632	72,932	282,586	276,269	107,811	84,115
GLOUCESTER	109,786	108,506	347,011	333,855	83,619	65,910
HANTS	76,402	74,979	366,004	385,133	82,434	68,019
HEREFORD	88,632	89,934	318,593	309,441	33,626	26,417
HERTFORD	30,088	30,951	121,480	115,474	33,689	24,281
HUNTINGDON	27,986	30,841	101,110	104,581	21,728	17,074
KENT	67,909	65,071	903,642	899,374	68,388	54,622
LANCASTER	224,234	225,439	306,954	308,264	60,421	55,386
LEICESTER	131,724	133,178	304,589	307,853	31,321	23,840
LINCOLN	233,382	237,055	1,161,958	1,153,863	114,278	91,121
LONDON	6,254	6,732	4,044	6,399	3,465	3,300
MIDDLESEX	15,751	16,222	21,473	18,792	15,548	12,417
MONMOUTH	45,542	45,433	201,274	193,005	18,877	15,093
NORFOLK	125,188	113,505	520,726	519,321	119,362	96,584
NORTHAMPTON	119,702	119,617	409,043	397,595	39,576	27,876
NORTHUMBERLAND	108,022	105,682	1,000,038	992,789	19,377	11,979
NOTTS	81,152	84,714	221,642	217,358	33,649	28,144
OXFORD	53,434	54,919	241,742	245,929	44,737	33,008
RUTLAND	17,512	17,613	82,509	83,152	3,244	2,406
SALOP	164,923	163,382	457,987	445,461	81,560	65,023
SOMERSET	221,177	212,476	638,757	524,097	140,833	123,833
STAFFORD	152,896	151,503	246,905	246,186	61,720	52,145
SUFFOLK	66,502	62,772	387,590	403,302	107,521	134,848
SURREY	41,282	40,764	78,605	74,467	27,229	22,429
SUSSEX	103,883	102,043	446,416	461,209	48,048	38,817
WARWICK	95,305	95,923	272,856	265,121	46,498	35,792
WESTMORLAND	64,167	62,935	359,978	356,080	4,735	4,318
WILTS	106,072	100,349	531,389	546,335	79,195	66,308
WORCESTER	60,319	60,175	164,999	137,976	51,007	37,691
YORK, E. RIDING	83,136	86,537	436,237	438,977	63,080	59,044
„ N. RIDING	164,254	167,651	676,762	676,427	58,067	53,903
„ W. RIDING	260,296	270,432	672,856	694,836	103,351	87,164

—LIVE STOCK.

in the several COUNTIES of GREAT BRITAIN, compiled from the Returns a COMPARATIVE STATEMENT for 1894.

COUNTIES. (continued.)	Cattle.		Sheep.		Pigs.	
	1895.	1894.	1895.	1894.	1895.	1894.
WALES.	No.	No.	No.	No.	No.	No.
ANGLESEY	49,249	48,501	59,315	57,662	18,560	17,230
BRECON	40,014	39,873	456,069	460,103	9,813	8,241
CARDIGAN	65,336	64,708	221,533	236,260	24,308	21,718
CARMARTHEN	115,564	113,481	234,606	239,295	39,644	34,328
CARNARVON	54,320	51,581	235,707	239,309	24,089	21,701
DENBIGH	65,401	65,024	296,794	301,983	30,458	28,395
FLINT	33,609	33,078	68,744	66,635	19,664	18,099
GLAMORGAN	52,203	49,915	292,786	291,867	18,892	15,970
MERIONETH	38,002	37,839	376,853	414,911	9,561	9,043
MONTGOMERY	69,950	70,283	367,856	382,039	27,141	22,114
PEMBROKE	87,543	87,974	119,817	118,149	32,278	25,568
RADNOR	32,633	32,743	270,761	270,408	5,692	5,256
SCOTLAND.						
ABERDEEN	173,961	179,346	183,951	184,219	10,379	9,922
ARGYLL	60,005	61,341	1,026,712	1,023,351	4,905	4,331
AYR	98,842	97,184	361,057	358,761	16,768	16,835
BANFF	41,764	43,760	62,703	66,740	2,461	2,841
BERWICK	15,936	17,570	307,365	296,548	4,530	4,001
BUTE	9,539	9,619	49,219	53,146	887	958
CAITHNESS	21,646	21,984	108,621	109,223	1,806	1,675
CLACKMANNAN	4,042	3,899	12,962	12,721	2,985	2,230
DUMBARTON	14,676	14,807	75,932	77,800	1,837	1,623
DUMFRIES	58,067	57,183	525,301	524,304	11,531	11,908
EDINBURGH	19,451	19,918	183,322	183,116	8,133	7,037
ELGIN, or MORAY	21,489	22,440	61,802	59,223	2,771	2,428
FIFE	47,912	50,236	94,578	97,826	6,532	6,309
FORFAR	49,163	54,406	146,329	148,093	7,951	7,942
HADDINGTON	9,506	10,103	127,483	127,406	2,138	1,792
INVERNESS	51,799	52,829	645,900	643,097	3,019	3,134
KINCARDINE	26,133	28,484	37,535	39,534	2,680	2,767
KINROSS	6,948	6,777	36,239	36,361	515	544
KIRKCUDBRIGHT	48,213	47,626	382,115	388,726	7,892	7,908
LANARK	71,367	71,004	232,673	234,919	8,560	7,788
LINLITHGOW	11,918	12,035	25,173	25,219	2,085	1,872
NAIRN	6,199	6,563	18,335	16,945	681	706
ORKNEY	26,882	26,256	32,050	30,864	8,580	8,496
PERBLES	6,789	6,981	186,221	189,143	807	811
PERTH	74,861	76,521	707,661	725,285	8,886	8,840
RENFREW	26,125	25,658	38,730	36,761	1,584	1,499
ROSS and CROMARTY	41,922	43,315	320,969	325,269	5,201	5,293
ROXBURGH	17,327	17,792	510,227	511,900	3,933	3,757
SELKIRK	3,418	3,626	181,031	183,421	509	546
SHETLAND	18,883	19,028	102,098	101,413	2,901	2,877
STIRLING	32,889	32,103	128,734	127,631	2,677	2,520
SUTHERLAND	12,002	12,580	203,681	213,330	953	906
WIGTOWN	46,323	47,833	117,974	119,669	11,236	11,419

IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE
IN THE SIX MONTHS ENDED JUNE 30TH, 1894
AND 1895.

I.—IMPORTS OF CATTLE AND SHEEP.

Countries from which exported.	Cattle.		Sheep.	
	26 Weeks ended June 30th, 1894.	26 Weeks ended June 29th, 1895.	26 Weeks ended June 30th, 1894.	26 Weeks ended June 29th, 1895.
	No.	No.	No.	No.
United States - - -	207,975	131,336	83,179	248,342
Canada - - - - -	23,834	24,654	9,670	9,787
Argentine Republic - - -	6,662	16,622	39,492	183,703
Channel Islands - - -	741	848	—	—
Chili - - - - -	—	—	—	85
New South Wales - - -	—	173	—	—
New Zealand - - - -	—	—	—	523
Norway - - - - -	—	104	—	—
Queensland - - - - -	—	114	—	—
South Australia - - -	—	—	—	210
Total - - - - -	238,712	173,851	132,341	442,650

The above table, which has been compiled from returns furnished weekly by H.M. Customs, shows that the imports of live cattle in the first six months of 1895 were about 27 per cent. below those of the corresponding period of the previous year. The decrease in the current year is more than accounted for by the smaller shipments from the United States, the fall in the supplies from this source having been as much as 37 per cent. On the other hand, there was an increase in the receipts of Argentine cattle, which amounted to 16,622 head as compared with 6,662 head in 1894. In the first six months of 1893 the imports of cattle from Argentina numbered only 3,691 head. A novel feature of the import trade in live stock is the entry of 287 live cattle from Australia. The consignment from New South Wales amounted in all to 206 head of cattle, but 33 of the animals were slaughtered on board the vessels, which had entered a port in a country whence importation of animals is prohibited.

The total number of sheep imported in the 26 weeks ended June 29th, 1895, were more than treble the number received in the corresponding period of last year, and the great increase in the supply was due almost entirely to the heavier consignments

from Argentina and the United States. More than four and a half times as many came from the former country, while the number entered from the United States exceeded by 165,000 head the receipts from that country in the corresponding period of 1894.

The number of swine imported in the 26 weeks ended June 29th, 1895, was 189, of which 128 were received from Canada, 59 from the United States, and 2 from Argentina. In the first six months of 1894, only 9 swine were imported and these came from Argentina.

II.—IMPORTS OF HAY AND STRAW.

The quantities of hay and straw returned by the Customs as imported in the first six months of 1895 and 1894 respectively are shown below, distinguishing the several countries contributing to the supply:—

Countries whence exported.	Hay.		Straw.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Tons.	Tons.	Tons.	Tons.
Algeria - - - - -	453	4,189	—	—
Argentine Republic - - -	606	772	—	306
Belgium - - - - -	1,986	162	1,195	117
Canada - - - - -	13,208	4,813	—	—
Cape of Good Hope - - -	1	—	—	—
Channel Islands - - - -	—	—	2	—
Chili - - - - -	4,002	12	—	—
Denmark - - - - -	3,545	423	1,905	936
Egypt - - - - -	—	—	8	—
France - - - - -	2,324	5,340	2,019	14,326
Germany - - - - -	1,675	249	1,872	584
Holland - - - - -	9,067	3,985	17,074	2,139
Italy - - - - -	125	—	—	133
Newfoundland - - - -	23	—	—	—
New South Wales - - -	—	4	—	—
New Zealand - - - -	22	—	—	—
Norway - - - - -	2,433	339	274	11
Russia, North - - - -	25,971	90	624	—
" South - - - -	997	—	511	—
Spain - - - - -	364	—	—	—
Sweden - - - - -	—	—	5	—
Tripoli - - - - -	3	—	—	—
Turkey, European - - -	476	—	—	—
" Asiatic - - -	542	—	—	—
United States - - - -	116,912	22,680	412	4
Uruguay - - - - -	—	2	—	—
Victoria - - - - -	—	10	—	—
Total - - - - -	184,735	43,070	25,901	18,556

The receipts of hay were thus 140,000 tons short of the quantity imported in the corresponding period of 1894, and nearly 20,000

tons less than the 62,731 tons received in the first six months of 1893. It will be seen from the table that the decline was due mainly to smaller shipments from the United States, while the supplies from Canada and Holland were also much lighter than in 1894. Imports from Russia and Chili appear to have nearly ceased.

The quantity of straw imported was about 7,400 tons less than that received in the six months ended June 1894, but only 700 tons short of the 19,234 tons imported in the corresponding period of 1893.

III.—IMPORTS OF HORSES.

The importation of horses is shown in the table below. The figures for this table and the remaining tables of imports have been taken from the monthly Trade and Navigation Returns:—

Horses.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	No.	No.	£	£
Stallions - - -	191	229	13,348	50,469
Mares - - -	1,760	3,983	40,873	111,765
Geldings - - -	8,478	10,603	199,430	277,040
Total - - -	10,429	14,815	253,651	439,274

The total number of horses imported in the first six months of 1895 exceeded by nearly 50 per cent. the number imported in the corresponding period of 1894. It was, moreover, more than double the imports of the six months ended June 1893, which were 6,815 head only. The increase was mainly due to the augmented shipments of mares and geldings from the United States of America. Of the 3,983 mares imported, 2,441 came from this source as compared with an importation of 388 mares from the same country in 1894. The United States contributed 4,632 geldings to the total number imported, which included also 2,286 Canadian geldings; in the corresponding period of 1894 the two countries named sent 2,516 and 1,031 geldings respectively.

IV.—IMPORTS OF FRESH MEAT.

From the table given below it will be observed that there was a slight increase in the importation of fresh meat in the six months ending June last as compared with the receipts of this article in the corresponding period of 1894, the

augmentation being due to larger shipments of mutton, pork, and rabbits, while in beef there was a slight decline:—

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Beef - - -	1,047,497	1,038,512	2,174,564	2,057,064
Mutton - - -	1,034,507	1,305,076	2,068,600	2,323,172
Pork - - -	77,972	125,858	190,446	284,169
Rabbits - - -	40,770	43,383	112,072	112,226
Total - - -	2,200,746	2,512,829	4,545,682	4,776,631

Of the total quantity of beef imported, 840,665 cwts. came from the United States. This is about 70,000 cwts. less than the quantity received from the same country in the first six months of 1894. The increase of 270,000 cwts. in the importation of mutton is made up almost entirely by larger receipts from Australasia and the Argentine Republic.

Taken in conjunction with the large increase in the arrivals of live sheep, it is noteworthy that, roughly computing the number of carcasses represented by the total weight of mutton received, and adding these to the sheep imported alive into the United Kingdom, the total receipts of mutton, live and dead, indicate an importation equivalent to 3,000,000 head of sheep in the half year ended June 30th last.

V.—IMPORTS OF MEAT SALTED AND PRESERVED.

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Salted beef - - -	125,641	100,926	189,898	132,461
„ pork (not hams) - -	112,072	109,435	184,274	148,939
Bacon - - -	1,832,235	2,030,249	4,041,107	3,821,890
Hams - - -	551,898	611,130	1,311,591	1,337,134
Meat, preserved, otherwise than by salting (chiefly canned).	243,329	355,705	689,012	883,170
Meat, unenumerated, salted or fresh.	101,409	141,189	224,585	293,240
Total - - -	2,966,584	3,348,634	6,640,467	6,616,834

The increase in the importation of bacon is accounted for to a great extent by larger receipts of this article from the United States, whence we received 1,466,963 cwts. in the first six

months, of this year, as compared with 1,344,388 cwts. and 1,036,963 cwts. in the corresponding periods of 1894 and 1893 respectively. The imports of Danish bacon also showed an increase of nearly 60,000 cwts., as compared with the quantity received in the six months ending June 1894. As regards the imports of hams, the United States was responsible for nearly the whole of the increase, the total weight of hams received from that country having been 593,588 cwts. during the first six months of 1895, while in 1894 the imports amounted to 537,955 cwts., and in 1893 to 423,807 cwts. There was also an increase in the quantity of hams imported from Canada, the receipts in the first half of 1895 being 15,996 cwts., as compared with 12,113 cwts. in the corresponding period of the previous year.

VI.—IMPORTS OF DAIRY PRODUCE, EGGS, AND LARD.

The imports of dairy produce, margarine, eggs, and lard in the period under review are given in the table below:—

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Butter - - - -	1,340,784	1,456,690	7,169,332	7,243,861
Margarine - - -	602,049	418,187	1,647,712	1,228,385
Cheese - - - -	717,196	765,355	1,878,834	1,790,041
Lard - - - - -	723,614	906,128	1,456,864	1,588,582
Condensed milk -	279,273	262,025	569,027	524,293
	Gallons.	Gallons.		
Fresh milk and cream -	69,940	117,353	3,811	17,910
	Great	Great		
Eggs - - - - -	Hundreds.	Hundreds.		
	6,163,051	5,963,357	1,948,771	1,860,410

The imports of butter in the six months ended June last showed an increase of 116,000 cwts. on the quantity received in the same period of last year. It is to be noted that over a third of this increase was due to larger receipts of butter from Australia, both Victoria and New South Wales having materially increased their exports of butter to this country, while New Zealand, on the other hand, sent rather smaller consignments during the period under review. There was also a slight augmentation in the imports of Danish and Swedish butter, while France also increased her shipments of butter to the United Kingdom, as compared with the first six months of 1894, though the 215,618 cwts. received this year were 30,000 cwts. short of the quantity of French butter imported in the six months ending June 1893. An increasing supply of butter from North Russia is now being received, the quantity imported from this source having been 68,000 cwts., as compared with 37,883 cwts. in 1894 and 21,000 cwts. in

the same period of 1893. It may be of interest to note that 138 cwts. of butter were received from the Argentine Republic in the six months ending June last.

The principal countries contributing to the butter supply of the United Kingdom in the two half years are distinguished in the table below, which indicates the important position now occupied by Australia in this trade:—

BUTTER.

Countries.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
From Denmark - -	554,048	582,896	3,037,825	2,897,916
„ Australasia - -	198,004	241,665	974,930	1,076,418
„ France - - - -	192,235	215,618	1,109,954	1,163,311
„ Sweden - - - -	131,216	152,031	718,085	816,233
„ Holland - - - -	66,347	84,567	334,615	405,609
„ Germany - - - -	94,818	77,710	497,616	387,857
„ other countries -	104,116	102,203	496,307	496,517
Total - - - - -	1,340,784	1,456,690	7,169,332	7,243,861

Compared with the receipts of the first half of 1894, the imports of margarine in the six months ended June last exhibited a remarkable decline. The quantity received in the earlier period was 602,049 cwts., while in the first half of the current year the imports of margarine amounted to 448,187 cwts. only.

The quantities of cheese imported from the different countries contributing to the supply of the United Kingdom are shown in the following table. The increase under the head of other countries was due entirely to larger shipments from Australia, the receipts of cheese from this source in the first six months of 1895 having been 85,968 cwts., as compared with 42,418 cwts. and 35,396 cwts. in the corresponding periods of 1894 and 1893 respectively.

CHEESE.

Countries.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
From United States -	349,592	331,863	567,485	754,288
„ Canada - - - -	175,742	168,615	432,001	359,799
„ Holland - - - -	130,253	140,683	331,858	337,701
„ other countries -	91,609	124,794	217,190	318,253
Total - - - - -	747,196	765,355	1,878,834	1,790,041

The following table shows the quantities of eggs received from the principal countries interested in the egg trade of this country. It will be observed that the decline in the quantity of eggs received from Germany and Belgium, and the slight increase in the supply of French eggs, are movements in the opposite direction to those noted at the end of 1894. The increase of 250,000 great hundreds received from other countries was mainly accounted for by larger consignments from Russia. The quantity of Russian eggs received in the first six months of this year amounted to 961,425 great hundreds, as compared with 674,325 and 576,603 great hundreds respectively in the corresponding periods of 1894 and 1893.

EGGS.

Countries.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Great Hundreds.	Great Hundreds.	£	£
From Germany -	1,857,439	1,718,600	531,299	464,228
" Belgium -	1,627,932	1,182,080	489,615	359,489
" France -	1,354,997	1,486,020	545,334	585,426
" other countries -	1,322,683	1,576,657	382,523	451,267
Total	6,163,051	5,963,357	1,948,771	1,860,410

VII.—IMPORTS OF GRAIN AND FLOUR.

The half-year's supplies of grain and flour are shown in the table below. The imports of wheat in the first six months of this year showed an increase of 7,000,000 cwts. over those of the same period of 1894, and of 11,500,000 cwts. over those of the first half of the preceding year. The receipts of barley were 5,000,000 cwts. short of the quantity received in 1894, but 3,000,000 cwts. in excess of the quantity imported in the first six months of 1893. There was a slight decline in the quantity of wheat meal and flour imported, and a slight increase in the imports of oats. The imports of maize, on the other hand, were nearly 33 per cent. below those of the first six months of 1894, and nearly 20 per cent. short of the quantity imported in the same period of 1893. There was also a decrease in the quantities of peas and beans imported in the past half-year, as compared with the same period of 1894. The large imports of maize and of barley in the first half of last year may be explained to some extent by the unusual demand for feeding stuffs in consequence of the season of drought experienced in the summer and autumn of 1893.

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Wheat -	32,173,191	39,019,905	9,005,306	10,674,148
Wheat meal and flour -	9,225,934	9,158,580	4,010,498	3,752,658
Barley -	14,261,355	9,212,817	3,344,699	2,131,104
Oats -	6,183,109	7,312,900	1,712,889	1,754,217
Peas -	1,005,186	923,481	286,454	275,611
Beans -	2,764,343	2,032,758	726,588	523,359
Maize -	20,809,683	13,822,410	4,635,014	3,409,995
Other kinds of corn and meal.	—	—	237,868	232,062
Total	—	—	23,959,316	22,813,154

The principal countries contributing to the wheat supply of the United Kingdom in the period under review are shown in the following statement:—

WHEAT AND WHEAT FLOUR.

Countries.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Wheat:—				
From United States -	13,317,044	14,634,420	3,837,969	4,145,821
" Russia -	7,526,194	10,499,535	2,058,668	2,673,974
" Argentine Republic.	5,539,954	6,684,860	1,462,379	1,852,505
" British East Indies.	2,482,771	2,887,900	695,692	761,508
" other countries	3,307,228	4,313,190	950,598	1,240,340
Wheat meal and flour:—				
From United States -	8,261,616	7,644,030	3,511,482	3,070,516
" Austrian Territory.	528,032	650,260	328,480	345,502
" other countries	436,285	864,290	170,536	336,640

It will be seen from the foregoing that Russia furnished nearly half of the increased import of 7,000,000 cwts. of wheat in grain, having sent 10,499,535, as compared with 7,526,194 cwts. in 1894 and 3,034,445 cwts. in 1893. The receipts of wheat from the Argentine Republic were over 1,000,000 cwts. in excess of the quantity of Argentine wheat received in 1894, and more than double those of 1893, when the importation amounted to 3,240,375 cwts.

VIII.—IMPORTS OF VEGETABLES, HOPS, AND FRUIT.

There was an increase of 900,000 cwts. in the imports of potatoes in the six months ended June last, as compared with the same period of 1894, the receipts from Germany in the first

six months of 1895 having amounted to 816,915 cwts., as compared with 25,920 cwts. in the same period of 1894, and 25,000 cwts. in 1893. France also increased her shipments of potatoes to this country in the six months ended June last, the imports of French potatoes being 779,254 cwts., while in the first half of 1894, 396,802 cwts. were received, and in 1893, 587,213 cwts. On the other hand, the imports of potatoes from the Channel Islands declined by 300,000 cwts., the entries having amounted to 700,229 in the first six months of 1895, as compared with 1,004,586 cwts. in the previous year, and 1,049,827 cwts. in 1893.

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
Vegetables:—	Bushels.	Bushels.	£	£
Onions - - -	2,394,950	2,407,323	376,021	319,658
Potatoes - - -	1,701,409	2,823,282	755,131	948,742
Unenumerated - - -	—	—	479,977	584,452
Total - - -	—	—	1,611,129	1,852,852
Hops - - -	Cwts.	Cwts.		
	62,409	105,703	351,617	328,104
Fruit:—	Bushels.	Bushels.		
Apples - - -	875,088	1,372,819	272,014	418,804
Oranges - - -	4,681,247	5,282,377	1,280,555	1,411,724
Lemons - - -	735,351	617,437	262,087	172,329
Cherries - - -	210,346	127,452	128,883	74,067
Plums - - -	4,715	5,073	4,736	5,185
Pears - - -	13,696	14,360	6,350	7,271
Grapes - - -	9,333	10,874	16,260	13,922
Unenumerated - - -	407,810	338,289	250,913	189,622
Total - - -	—	—	2,161,798	2,322,924

The increase of 43,000 cwts. in the supply of hops is due mainly to larger shipments from the United States, the quantity of American hops landed in the six months having amounted to 87,886 cwts., as compared with 51,821 cwts. in the first half of last year. German and Dutch hops were also received in larger quantities than in the corresponding period of 1894, the supplies from Germany having been 4,663 cwts., as against 1,358 cwts., while Holland contributed 5,551 cwts. this year and 1,700 cwts. in the first six months of last year. As regards fruit, it will be observed that there was an increase in the importation of apples of nearly 500,000 bushels, but the imports for the six months ending June 1895 were only 250,000 bushels in excess of those of the same period in 1893. The only other item calling for attention is the decline in the supply of cherries.

IX.—IMPORTS OF FLAX, HEMP, JUTE, AND SEEDS.

The half year's imports of flax, hemp, and jute, and of various seeds, are shown in the following table. The receipts of clover and grass seeds were about 40,000 cwts. in excess of those of the first six months of 1894, while the imports of flax seed also exceeded those of the corresponding period of 1894 by 15,000 cwts.

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Tons.	Tons.	£	£
Flax - - -	45,266	62,374	1,646,911	2,014,724
Hemp - - -	43,610	37,412	995,413	818,516
Jute - - -	180,742	210,400	2,752,689	2,273,017
Total - - -	269,618	310,186	5,395,013	5,106,257
	Cwts.	Cwts.		
Seeds:—				
Clover and grass - - -	196,945	235,933	498,336	540,292
	Qrs.	Qrs.		
Flax and linseed - - -	906,355	921,305	1,760,983	1,546,065
Rape - - -	148,014	146,067	162,714	140,748
Total - - -	—	—	2,422,033	2,227,105

X.—IMPORTS OF HIDES, WOOL, AND TIMBER.

The imports of hides, dry and wet, and of timber are shown in the following table:—

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Hides, raw, and pieces thereof:—				
Dry - - -	248,992	242,007	583,005	549,126
Wet - - -	269,818	409,024	543,228	810,468
Total - - -	518,810	651,031	1,126,233	1,359,594
	Loads.	Loads.		
Wood and Timber:—				
Hewn - - -	1,035,484	890,458	1,773,618	1,555,943
Sawn or split, planed or dressed - - -	1,647,619	1,080,553	3,709,935	2,419,580
Staves of all dimensions - - -	57,075	40,586	253,078	200,272
Total - - -	2,740,178	2,011,597	5,736,631	4,175,795

XI.—IMPORTS OF WOOL (SHEEP AND LAMBS')

There was an increase of nearly 27,000,000 lbs. in the gross imports of wool during the first six months of 1895, as compared with the same period in 1894, this being mainly accounted for by larger exports from Australasia and arrivals from European ports, which more than counterbalanced the decline of nearly 6,000,000 lbs. in the imports of South African wool.

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Lbs.	Lbs.	£	£
From Australasia -	396,488,930	418,571,693	14,274,018	13,929,917
„ Countries in Europe.	14,386,217	21,958,625	613,457	842,680
„ British Possessions in South Africa.	48,163,861	42,370,630	1,872,339	1,600,135
„ British East Indies	19,654,599	19,652,970	552,202	513,424
„ other countries -	19,738,181	22,722,282	529,623	580,727
Total -	498,431,788	525,276,200	17,841,639	17,466,883

The quantity of foreign and colonial wool re-exported in the first half of the current year was 216,328,973 lbs., as against 194,948,367 lbs. in the corresponding period of 1894. Of the 216 million lbs. re-exported, 52,817,200 lbs. were shipped to the United States, an increase of 40 million lbs. on the shipments to the same destination in the six months ended June 1894.

XII.—IMPORTS OF MANURES.

The quantities and values of the various kinds of fertilisers distinguished in the returns as having been imported in the first six months of 1895 and in the corresponding period of the preceding year are shown below :—

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Tons.	Tons.	£	£
Bones, whether burnt or not -	41,825	38,154	212,003	167,648
Guano -	19,410	27,183	93,318	220,783
Nitrate of Soda (Nitro, Cubic) -	83,558	82,752	790,574	684,830
Phosphate of Lime and Rock -	175,051	173,307	317,444	316,162
Total -	322,874	321,396	1,413,339	1,389,423

Exports of British and Irish Produce.

The exports of British and Irish dairy produce, and of hops, for the first six months of the current year and for the corresponding period of 1894 are shown below :—

Description.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Cwts.	Cwts.	£	£
Butter - - - -	7,771	8,747	45,308	47,999
Cheese - - - -	3,859	4,693	15,193	17,037
Hops - - - -	5,937	3,577	39,166	13,649

EXPORTS OF WOOL.

The exports of sheep and lambs' wool from this country in the first six months of 1895 more than doubled those of the corresponding period of 1894, but they were slightly inferior to the shipment of 1893, when a total of 9,849,600 lbs. was reached. From the following table it will be seen that the increase was largely due to the heavier consignments to the United States :—

Countries to which exported.	Quantities.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
	Lbs.	Lbs.	£	£
Wool, sheep and lambs' :—				
To Germany - - -	742,300	1,230,000	34,453	54,882
„ Holland - - -	515,200	593,400	21,880	24,046
„ Belgium - - -	253,600	133,800	11,758	6,572
„ France - - -	513,200	354,700	22,608	14,715
„ United States - -	1,567,100	5,908,100	38,239	184,907
„ British North America -	91,600	72,600	4,123	3,567
„ other countries - -	755,500	1,189,000	41,683	68,895
Total - - -	4,498,500	9,531,600	174,755	357,584

EXPORTS OF HORSES.

The exports of horses show a considerable augmentation in the half year, as will be seen from the following table. The number of geldings exported in the first six months of 1895

exceeded by 1,700 the exports of the corresponding period of 1894.

Description.	Numbers.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
Stallions - - -	No. 92	No. 185	£ 11,532	£ 26,502
Mares - - -	1,474	1,928	64,177	76,855
Geldings - - -	5,417	7,150	122,274	150,818
Total - - -	6,983	9,263	197,983	254,175

EXPORTS OF CATTLE, SHEEP, AND SWINE.

The numbers and values of cattle, sheep, and swine of British and Irish production exported from the United Kingdom in the half years under review were returned by H.M. Customs as under:—

Description.	Numbers.		Values.	
	First Six Months of 1894.	First Six Months of 1895.	First Six Months of 1894.	First Six Months of 1895.
Bulls, oxen, cows, and calves -	No. 1,281	No. 1,566	£ 25,880	£ 29,963
Sheep and lambs - - -	1,082	1,511	10,535	19,233
Swine - - -	336	1,580	1,604	6,605

PARLIAMENTARY PUBLICATIONS.

Board of Agriculture. Report on the Distribution of Grants for Agricultural Education in Great Britain in the Financial Year, 1894-5, with an Appendix. [C.-7777.] Price 9d.

This volume is the annual report of the Board of Agriculture on the administration of the parliamentary grant in aid of agricultural education in Great Britain, during the financial year ended 31st March, 1895. Out of the total vote of 8,000*l.* entrusted to the Board for educational purposes, the sum of 7,400*l.* was allocated in the form of specific grants to the 17 institutions enumerated in the table appended. The balance was applied to making the necessary provision for the cost of inspecting the work of the collegiate bodies or societies applying for assistance, as well as for the inspection of the educational arrangements of various county councils, undertaken at the request of those authorities.

The growth of the grants, and their gradual concentration on specific centres of agricultural instruction of a wider and more advanced type, than could, as a rule, be provided by county councils out of the moneys applicable to the local work of technical agricultural education, may be traced in the following rough analysis of the distribution of the vote, since it was first granted by Parliament in 1888-9:—

Year.	General Schemes of Agricultural Education in connection with Collegiate Centres.	Special and Provisional Grants.			Total.
		Instruction in Dairying.	Local Agricultural Schools and Classes.	Field Experiments and Research.	
1888-89 - - -	£ 200	£ 1,025	£ 1,315	£ 390	£ 2,930
1889-90 - - -	400	1,800	1,725	660	4,585
1890-91 - - -	550	1,805	1,650	835	4,840
1891-92 - - -	2,400	1,935	1,335	1,035	6,705
1892-93 - - -	3,600	1,500	1,300	1,025	7,425
1893-94 - - -	4,450	1,025	900	725	7,100
1894-95 - - -	5,550	950	250	650	7,400

Full summaries intended to illustrate the work of the existing centres are given in the Appendix to this Report, in which also are given reports on the work of special institutions, and on the experimental work for demonstration or research, aided by grants from the Board.

The Appendix also contains brief summaries of the reports on the agricultural educational work inspected by the Board at the request of certain County Councils.

The following is a list of grants awarded by the Board of Agriculture in 1894-5.

Institutions aided.	Work.	Grant 1894-5.
ENGLAND AND WALES.		
University College of North Wales, Bangor -	Collegiate centre -	£ 800
Yorkshire College, Leeds -	Collegiate centre -	800
Durham College of Science, Newcastle-on-Tyne.	Collegiate centre -	800
University College of Wales, Aberystwyth -	Collegiate centre -	800
University Extension College, Reading -	Collegiate centre -	500
Cambridge and Counties Agricultural Education Committee.	Collegiate centre -	400
University College, Nottingham -	Collegiate centre -	250
Eastern Counties Dairy Institute -	Dairy instruction -	350
British Dairy Farmers' Association -	Dairy instruction -	300
Bath and West and Southern Counties Society	Special cheese and cider research and agricultural experiments.	400
SCOTLAND.		
Glasgow and West of Scotland Technical College.	Collegiate centre -	650
University of Edinburgh -	Collegiate centre -	550
University of Aberdeen -	Agricultural instruction -	100
Scottish Dairy Institute, Kilmarnock -	Dairy instruction -	300
Highland and Agricultural Society -	Agricultural experiments -	150
Aberdeen Agricultural Research Association	Agricultural experiments -	100
SPECIAL CLASS.		
Class for the instruction of working Foresters and Gardeners in the Royal Botanic Gardens, Edinburgh.		150

Report on the County of Dorset, by Mr. R. H. Rew, Assistant Commissioner to the Royal Commission on Agriculture.
[C.—7764.] Price 8½d.

This report embodies the result of an inquiry by Mr. R. Henry Rew, on behalf of the Royal Commission on Agriculture, into the condition of agriculture in the county of Dorset. It seems that, although the variety of conditions existent in that county makes generalisation difficult, it may be fairly said that, with very few, if any, exceptions, tenant farmers have had their incomes considerably reduced and their capital seriously depleted. Landlords have, as a rule, met the times by substantial reductions of rent, which, however, must inevitably go still further. In fact, the ownership of agricultural land is, it is maintained, rapidly becoming a luxury, which only men possessing other

sources of income can enjoy. Mr. Rew thinks that Dorset is, to some extent, fortunate in having many landowners in that position, but he points out that it is essentially an unsound basis for agriculture to rest upon. Some of the best and most substantial—and, in times past, the most successful—farmers in the south of England were to be found in Dorset, but with the present outlook it appears that the race is likely to die out. Many still hang on, but others are leaving, either voluntarily or perforce, a business in which they cannot any longer obtain a fair return for their capital, which is said to be surely and steadily leaving the land. Although the occupiers of the smaller and better mixed farms may hold on, it is, in Mr. Rew's opinion, difficult to foretell what will be the future of the large hill farms in the chalk district unless better times come quickly.

The condition of the Dorset labourer, where his employment still continues, is stated to have greatly improved, though no one can say that his wages are at a satisfactory level, but while he has suffered proportionately less from the depression than either the owner or the occupier, his position is becoming more and more precarious.

The remedies for the depression suggested to Mr. Rew included the amendment of the Agricultural Holdings Act, bimetallism, relief of the burdens on land, reduction of railway rates, the reimposition of the malt duty, the marking of foreign meat, the provision of easier and cheaper methods of land transfer, and State loans for the execution of improvements.

Report on the County of Suffolk, by Mr. Wilson Fox, Assistant Commissioner to the Royal Commission on Agriculture.
[C.—7755.] Price 1s. 1d.

Mr. Wilson Fox states that agricultural depression appears to have been first felt in Suffolk in 1879. The cause is usually attributed to low prices, owing to foreign competition and cheap freights, but there is, it seems, a strong, widespread, and growing feeling among agriculturists of all classes, holding different political opinions, that the primary cause of the depression is the present system of currency. It is universally stated that the condition of the land has gone back since 1879 except in a few districts. On the clay and very light soils, the land is frequently very foul, being choked with weeds and thistles. The deterioration of the land is attributed to the employment of less labour, to deficient manuring, to want of marling and claying in some districts, to wet seasons which particularly affected the clay lands, and to less stock being kept. Generally speaking, there appears to be very little grumbling about rent in the county. The rents now paid per acre and the transfer of tithe from the tenants to the landlords have in very many cases left the owners an insufficient margin to keep up drainage and buildings. The selling value of property, par-

ticularly of corn-growing land, is reported to have depreciated to an enormous extent. Land is described by agents, auctioneers, and valuers as a drug in the market. In June 1894, farms comprising 1,388 acres were totally abandoned, and between Michaelmas 1894 and January 1895, 30 more farms, comprising 3,353 acres, became derelict. A very large number of witnesses examined by Mr. Fox, comprising landowners, agents, and farmers, maintained that if present prices continue, a considerable quantity of the very heavy and the very light land must go out of cultivation.

Mr. Fox goes on to say that in every part of Suffolk farmers have been, and are, suffering from the effects of the depression, and that he hardly knows how to lay the facts before the Commission with sufficient emphasis. While there may be a few of the larger farmers with capital, who have not had to injure their business by curtailing expenditure in actual necessities, and who may consequently be enabled to hold their own, yet the evidence of the effects of the depression is overwhelming. The opinion was generally expressed that small tenant farmers had suffered more than large ones.

As regards the position of the Scotch farmers in the county, Mr. Fox states that whatever success may have attended their efforts is to be attributed to their leaving expenditure on the arable land alone; to the management of their cows and dairy; to the curtailment of labour by letting the land lie in grass, and by working themselves with their families; and to the reduction of their personal expenditure to the lowest possible rate.

The supply of labour appeared to be quite equal to the demand; in fact, in 1893 and 1894, in a number of districts men were in irregular work even in the summer time. In 1894, the wages of labourers were 11s. in East and 10s. in West Suffolk up to the autumn, while in November a number of farmers in West and North-west Suffolk reduced their men to 9s. and, in exceptional cases, even to 8s. The wages of horsekeepers are as a rule about 2s. a week more than those of ordinary labourers, frequently with cottages free or at a reduced rent. Stockmen's wages varied in 1892 from 13s. to 15s., with cottages at a nominal rent or free; they now vary from 11s. to 13s. 6d.; 10s. being paid in some cases. Shepherds' wages vary considerably, and generally range from 14s. to 20s. a week. They get, in addition, cottages free, with lambing money. Most of the Suffolk farmers state that the labour of the present day is inferior to that of former times, and this is generally attributed to the fact that so many of the best young men leave the country districts to seek situations on railways and in the police force.

In speaking of remedies for the depression, Mr. Fox states that the great majority of landowners and farmers in Suffolk consider that, at the present juncture, the question of prices is of paramount importance, and all others purely subsidiary. It was, however, generally suggested that the agricultural interest

bore an unfair burden of rates and taxes, and that personal property should bear a greater share. Railway rates were frequently said to be too high, and the abolition of preference rates to foreigners over English lines was often demanded. Among other suggestions for the alleviation of depression were protection, marking of foreign meat, repeal of the malt tax, measures against the adulteration of beer and butter, cheap loans for improvements, co-operation in sale of produce, and light railways.

Welsh Land Commission. Minutes of Evidence taken before the Royal Commission on Land in Wales and Monmouthshire. (Sixty-fourth to Eightieth Days.) Volume IV. [C.—7757.] Price 7s. 7d.

This volume contains a list of witnesses examined, and the minutes of evidence taken, from the 28th of August to the 15th of September 1894. An appendix of documents on various subjects is also attached to this publication.

Agricultural Statistics of Ireland, with detailed Report on Agriculture for the Year 1894. [C.—7763.] Price 1s. 3d.

This publication is the annual report prepared by the Registrar-General in Dublin, and contains information relating to Ireland, for the year 1894, as regards division of land; acreage under crops; number and size of holdings; number of occupiers of land; woods and plantations; rates of produce; average prices of agricultural produce; noxious insects; number, ages, &c. of live stock; diseases of cattle; exports and imports of live stock; dairy industries; honey produced; number of scutching mills; number of corn mills; silos and ensilage; forestry operations; agricultural schools; wages of agricultural labourers; loans for labourers' dwellings; and observations on the produce of the crops.

In a table contained in the report, it is shown that the number of dairy factories from which statistics were obtained was 226, being an increase of 36 as compared with the number returned in 1893, and that the number of hands permanently employed amounted to 1,708, or 265 more than in the previous year.

Of the 226 factories, 115 were owned by individual proprietors, 50 were the property of joint stock companies, and 61 belonged to co-operative societies; 204 dealt with milk only, 8 with cream only, and 14 with both milk and cream.

In the 226 factories there were 505 milk separators, of which 423, or 83·8 per cent., were worked by steam-power. Almost

four-fifths of the total number were in Munster, the number for that province being 175; there were 41 in Leinster, 8 in Ulster, and 2 in Connaught.

The quantities of milk and cream supplied to the factories during the year ended 30th September 1894 is given as 72,158,902 gallons of the former, and 440,974 of the latter, 116,860 gallons of cream being again sold as such. The quantity of butter produced during the same period was 268,425 cwts. (against 160,845 cwts. in the preceding year); 180 cwts. of skim-milk cheese; and 13,238,641 lbs. of condensed milk.

The skim milk was returned to the farmers by 202 factories, and it was otherwise disposed of in the remaining establishments.

The inquiries made in the preceding eight years relative to the extent to which bee-keeping is followed in Ireland, and the degree of success attained in this special branch of rural economy, were repeated in 1893.

According to the returns received, the quantity of honey produced in 1893 amounted to 248,363 lbs., of which 76,824 lbs. were produced in the province of Leinster, 85,187 lbs. in Munster, 57,722 lbs. in Ulster, and 28,630 lbs. in Connaught.

Of the total quantity, 132,313 lbs. were produced "in hives having movable combs," and 116,050 lbs. "in other hives." It is stated that 122,585 lbs. was "run honey," and 125,778 lbs. "section honey."

The number of stocks brought during the winter of 1893-94 amounted to 15,291; of which 6,651 were in hives having movable combs, and 8,640 in other hives.

The following table shows the quantity of honey returned as produced in Ireland during each of the nine years 1885-93. It will be observed that the quantity produced in 1893 was less than that for any of the preceding eight years, except 1892, and very much below the average:—

Years.	Honey Produced.						
	In Hives having Movable Combs.			In other Hives.			General Total.
	Run Honey.	Section Honey.	Total.	Run Honey.	Section Honey.	Total.	
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1885 -	46,196	59,218	105,414	141,285	55,598	196,883	302,297
1886 -	52,609	74,332	126,941	145,132	59,094	204,226	331,167
1887 -	77,897	134,357	212,254	188,951	58,181	247,132	459,886
1888 -	55,788	92,653	148,441	137,301	42,350	179,651	328,092
1889 -	74,942	143,566	218,508	152,104	53,976	206,080	424,588
1890 -	47,952	86,136	134,088	115,599	42,429	158,028	292,116
1891 -	43,087	91,561	134,648	88,909	30,004	118,913	253,561
1892 -	34,707	69,629	104,336	66,783	21,388	88,121	192,457
1893 -	40,900	91,413	132,313	81,685	34,365	116,050	248,363

Report from the Select Committee on Weights and Measures with the Proceedings of the Committee. [H. C.—346.]
Price 1½d.

This publication contains the Report and the Proceedings of Select Committee appointed to inquire whether any and what changes in the present system of weights and measures should be adopted.

The Committee received evidence from witnesses representing official, commercial, manufacturing, trade, educational, and professional interests. They also received from numerous corporations, school boards, and other public bodies, resolutions, without exception, in favour of the adoption of the metrical system.

The Committee find that almost all the witnesses express a strong opinion as to the complicated and unsatisfactory condition of our present weights and measures, and of the distinct and serious drawback to our commerce, especially our foreign trade, which this system entails, differing as it does from the system (metrical) now adopted by every European nation except ourselves and Russia, as well as by far the majority of non-European countries with which this kingdom trades. The evidence, however, goes further to show that not only is our foreign trade in every branch seriously handicapped, but that the home trade would be benefited if more simple and uniform standards of weights and measures than those now existing were adopted.

Moreover, strong evidence was brought forward as to the serious loss of time incurred by English school children in having to learn the complicated system of tables of existing weights and measures, and the urgent need of the adoption of a simpler system. It was stated that no less than one year's school time would be saved if the metrical system were taught in place of that now in use.

Evidence from competent witnesses proved to the satisfaction of the Committee that a compulsory change from an old and complicated system to the metrical had taken place in Germany, Norway and Sweden, Switzerland, Italy, and many other European countries without serious opposition or inconvenience; that this change was carried out in a comparatively short period; and that as soon as the simple character of the new system was understood it was appreciated by all classes of the population, and no attempt to use the old units or to return to the old system was made.

In the United States, where a system founded on the English units exists, a Commission is at present engaged in an investigation of the same character as that with which the Committee is charged, and the Federal Government has this year passed an Act rendering the metrical system compulsory for pharmaceutical purposes.

The Committee believe that the adoption of the metrical system by England would greatly tend to render that system universal, and they recommend:—

- (a.) That the metrical system of weights and measures be at once legalised for all purposes.
- (b.) That after a lapse of two years the metrical system be rendered compulsory by Act of Parliament.
- (c.) That the metrical system of weights and measures be taught in all public elementary schools as a necessary, and integral part of arithmetic, and that decimals be introduced at an earlier period of the school curriculum than is the case at present.

Statement exhibiting the Moral and Material Progress and Condition of India during the Year 1893-94. [H. C.—299.] Price 1s. 9d.

In a preface to this publication it is mentioned that, in February 1889, there was presented to Parliament a memorandum on some of the results of Indian Administration during the 30 years that had elapsed since India came under the direct control of the Crown. That account brought matters down to the year 1888; and the present volume is intended to review briefly such further progress and such changes as may have been made during the six years ending March 1894.

As regards agriculture, it is stated that much attention has been given during the past six years to matters concerned with this industry, which is by far the most important one in India. Heretofore agricultural statistics for Bengal have not been available; but approximate figures are now given for the whole of British India, as follows:—

	Millions of Acres.
Net area cropped during the year 1893-94	197·4
Of which were cropped more than once	28·1
Making the total area of crops	225·5
Of which were irrigated	26·7
Area of current fallows	27·0

The following table shows the area under some of the staple crops for the year 1893-94:—

Description of Crop.	Millions of Acres.
Area cultivated with rice	68·4
" " wheat	22·2
" " millets of different kinds	38·5
" " other cereal food crops, including pulses	47·2
Total of cereals and pulses	176·3
Area cultivated with oilseed	14·8
" " sugar cane	3·0
" " cotton	10·5
" " fibres other than cotton	2·9
" " tobacco	1·2
" " fodder crops	1·9
Area covered by orchards and vegetable gardens	2·7
Miscellaneous food crops	3·1

If tea, coffee, and sugar be reckoned as food crops, then the total area under food crops in 1893-94 was 185½ million acres, or 82 per cent. of the total area of crops in British India.

In 1889-90, an expert agricultural chemist, Dr. J. A. Voelcker, was deputed to visit India to advise upon the best means of applying the teachings of agricultural chemistry to, and of improving, Indian agriculture. After spending thirteen months in examining the facts of Indian agriculture, and attending two agricultural conferences, Dr. Voelcker presented a report, making a series of recommendations either for organised inquiry on specific points, or for definite action in certain directions. He held that in many parts there was little that could be improved in Indian agriculture in present circumstances; and he advised that attention should be given to the diffusion of agricultural education; to the increase in the supply of water to dry tracts; to the encouragement of arboriculture, and the due utilisation of existing forests for the benefit of the people; to increasing the supply of manure; to furthering the growth of fodder crops; to improving the breed of cattle; and to scientific inquiries in chemico-agricultural matters. Dr. Voelcker's scheme of work has been accepted by the Government. The agricultural departments of the several provinces are gradually adopting the advice given, and already something has been accomplished in more than one of the directions indicated. A bacteriological laboratory has been established for investigating the causation and possible prevention of Indian epizootic diseases. Two agricultural chemists have been engaged to carry out some of the inquiries suggested by Dr. Voelcker, and to assist in training students who shall be hereafter able to impart sound agricultural education.

In every large province of India an Agricultural Department has been organised, which is charged with the duty of supervising the maintenance of the village records of land tenures, rent, produce, and land transfers, and with the work of organising and directing State undertakings for the furtherance of agriculture, and for the improvement of stock. The Agricultural Departments also keep the public and the Government informed concerning the condition and the out-turn of the crops, the range of prices, and the approach of dearth or famine in any particular tract.

Report from the Select Committee on Food Products Adulteration, with the Proceedings of the Committee. [H. C.—363.] Price 1½d.

This is the Report of the Select Committee appointed to inquire into the working of "The Margarine Act, 1887," and "The Sale of Food and Drugs Act, 1875," and any Acts amending the same, and report whether any, and, if so, what amendments of the law relating to adulteration are, in their opinion, desirable.

The Committee state that they have taken further evidence upon the matters referred to them, but have not had sufficient time to conclude their investigation. They have, therefore, agreed to report the evidence already taken to the House, and to recommend that a Committee on the same subject should be appointed in the newly elected Parliament.

Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions for the Year 1894. [C.—7759.] Price 3s. 10d.

This publication, which is compiled in the Custom House from documents collected by that Department, contains abstract tables of imports, customs duties, exports and transit trade for the five years from 1890 to 1894, as well as detailed figures relating to the general imports, exports, and general transit trade during the year 1894.

The quantities and value of the principal articles imported and exported from and to each foreign country and British possession are given, and also the bonded warehouses accounts for 1894.

Horse-Breeding. Fifth Report of the Royal Commission on Horse Breeding. [C.—7811.] Price 1½d.

The Commissioners appointed to dispose of the Royal Bounty, which was formerly given in Queen's Plates for racing, and also the money which Parliament has granted for the encouragement of horse-breeding in Great Britain, state in this publication that since presenting their last Report on the 9th of February 1893, three shows have been held in London during the years 1893, 1894, and 1895, at which the Queen's premiums have been awarded. The Show of 1893 was held in conjunction with the Hunters' Improvement Society and the Hackney Horse Society. The Shows of 1894 and 1895 were held in conjunction with the Hunters' Improvement Society only, as it was found impossible, owing to the large proportions which they had assumed, consequent upon the increase in the number of entries, for the three bodies to combine as heretofore.

In view of the reduction in the value of the premiums offered since the last Report was issued, from 200*l.* to 150*l.*, the number of stallions entered has been satisfactory, and suitable horses out of those exhibited have been located in the various districts in England, Wales, and Scotland.

The Commissioners are satisfied with the per-centage of foals left by the stallions, and call attention to the continued success which attends the exhibition of the stock of the premium stallions when competing with that of other horses at the summer meetings of the different agricultural societies.

They have given careful and sustained consideration to the important subject of Veterinary Examination of the stallions competing for the Queen's premiums. They report that the new regulations which have recently been enforced have resulted in greater consistency in the decisions, and that there is a steady decrease in the number of horses pronounced unsound by the veterinary experts.

Numerous applications are recorded from breeders of horses and agricultural societies throughout the country for the location of a Queen's premium stallion in their district, and it is regretted that the limited amount of money at the disposal of the Commission is insufficient to meet the increased demands.

Information referring to the work of the Commission since February 1893 is appended to the Report.

PRICES OF LIVE STOCK AS RETURNED UNDER THE
MARKETS AND FAIRS (WEIGHING OF CATTLE)
ACT, 1891.

In continuation of the statements which have appeared in each number of the Journal of the Board of Agriculture, the following tables supply information respecting the returns received under the Markets and Fairs (Weighing of Cattle) Act, 1891, from market authorities and auctioneers in Great Britain during the quarter ending 30th June 1895.

In this period, the number of animals returned as entering markets, the number weighed, and the number whereof, the prices were quoted with the necessary information to comply with the order of the Board, stood as follows, the figures for the corresponding quarter of 1894 being added for comparison:—

Animals.	1895.	1894.
CATTLE:	No.	No.
Entering markets - - -	298,040	294,821
Weighed - - - -	26,063	25,324
Prices returned - - -	23,505	23,332
Prices returned with breed and quality distinguished.	15,996	15,809
SHEEP:		
Entering markets - - -	1,131,996	1,332,162
Weighed - - - -	10,929	14,901
Prices returned with breed and quality distinguished.	5,583	9,503
SWINE:		
Entering markets - - -	58,943	28,110
Weighed - - - -	636	395
Prices returned - - -	301	37
Prices returned with breed and quality distinguished.	—	10

These figures show a falling off in the number of sheep in the markets, and a much smaller number weighed. As regards weightings, the information respecting swine continues very defective. It is only as regards cattle that the returns can be usefully examined in detail.

If an analysis of these returns be made as between England and Scotland, the much larger proportion of the weighed cattle in the last-named country again attracts attention, and shows that the practice of weighing continues to have

a much greater hold in the five markets there enumerated than in the fourteen scheduled places in England. Indeed, it would appear from the following figures that the latter country exhibits some falling off in the three months ending 30th June last, while in Scotland the reverse is the case, and the resort to the weigh-bridge becomes more frequent:—

Cattle at Scheduled Places.	England.		Scotland.	
	2nd Quarter, 1895.	2nd Quarter, 1894.	2nd Quarter, 1895.	2nd Quarter, 1894.
Number entering markets -	224,010	228,125	74,030	66,696
Number weighed - - -	6,176	6,555	19,887	18,769
Prices returned - - -	3,741	4,571	19,764	18,761
Prices returned with breed and quality distinguished.	3,741	4,571	12,255	11,238

Turning to the individual markets shown in the general table on page 235, it may be noticed that London alone supplies more than half the cattle weighed in England and nearly two-thirds of the sheep.

It is again a matter for regret that Bristol and Lincoln have no single instance of weighing to report, and that, although a certain number of animals have been weighed at Ashford, Leeds, and Wakefield, the market authorities at these towns profess themselves unable to obtain the information as regards prices which is rendered elsewhere. A few cattle have now been weighed and prices given at York, although only 12 in 13 weeks, while a very material improvement is reported from Glasgow, where under improved arrangements the Corporation are now making the required returns.

Selecting from the 19 scheduled places eight where the returns, in the second quarter of 1895, are sufficiently numerous to afford a basis for comparing the current prices of cattle, it would appear that in the inferior grade prices ranged between 20s. 8d. and 29s. 2d. per live cwt. at Shrewsbury, between 28s. 6d. and 29s. in London, between 25s. 4d. and 28s. 4d. in Aberdeen, between 26s. 8d. and 32s. 4d. in Dundee, and between 29s. 4d. and 34s. 2d. in Perth.

In the medium or second quality stock, Liverpool stands lowest, returning a price of 28s. only per live cwt. Shrewsbury quotes 28s. 10d. to 32s. 4d., while in other markets, the range is from 30s. 2d. to 38s. in this grade, the lowest limit being quoted from Edinburgh and the highest from London. It must, however, be remembered, as indicated on previous occasions, that considerable local diversity of practice obtains as to the class of stock included in each grade by those who furnish the returns.

In what are returned as prime or first quality cattle, the range of quotations during the quarter ended on the 30th June last may be thus shown:—

English Markets.		Scotch Markets.	
	Per Cwt.		Per Cwt.
Liverpool -	34s. 8d.	Aberdeen -	36s. 6d. to 37s. 8d.
London -	35s. to 40s. 4d.	Dundee -	33s. 8d. to 36s. 10d.
Newcastle -	30s. to 40s.	Edinburgh -	35s. 10d. to 40s.
Shrewsbury -	32s. 4d. to 36s. 10d.	Perth -	35s. 2d. to 37s. 4d.

Taking, however, the better test of actual average values obtained by dividing the total prices by the aggregate live weight in each grade (omitting all quotations of store cattle), a figure may be obtained which will present a possible comparison with the similarly ascertained averages in the same period of 1894. The results are as under, and they show a slightly higher level of price to have prevailed in 1895 in the case of inferior stock, a distinctly higher level in medium or second quality cattle in Scotland, and higher prices at all markets except that of the metropolis in the grade of prime or first class cattle:—

Places.	Inferior or Third Quality.		Good or Second Quality.		Prime or First Quality.	
	1895.	1894.	1895.	1894.	1895.	1894.
	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.
ENGLAND:						
Liverpool -	—	—	28 0	28 6	34 8	34 4
London -	28 6	26 6	36 0	36 2	38 4	39 6
Newcastle-on-Tyne -	—	—	34 4	34 10	36 2	35 8
Shrewsbury -	26 2	24 6	31 6	29 6	34 6	33 0
SCOTLAND:						
Aberdeen -	25 8	25 4	33 1	32 3	36 9	36 4
Dundee -	28 11	27 1	33 9	32 0	35 5	34 2
Edinburgh -	—	—	36 1	33 8	36 0	33 10
Perth -	33 9	30 6	34 7	32 2	36 2	34 7

The first of the tables appended enables attention to be drawn to the extent to which farmers make use of the facilities afforded to the sellers of live stock for the disposal of their produce by the legislature of 1887 and 1891, and it indicates also considerable local variation in the amount of information furnished as regards prices by the authorities and persons on whom the Legislature, in compliance with the suggestions of the Royal Commission on markets, imposed this statutory obligation.

TOTAL NUMBER of Cattle, Sheep, and Swine, entering the MARKETS and MARTS of the under-mentioned Places in ENGLAND and SCOTLAND, with the number WEIGHED, as received from the Market Authorities in the Second Quarter 1895, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
ENGLAND.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Ashford -	3,073	118	—	26,321	10	—	5,389	—	—
Birmingham -	9,275	11	11	27,026	—	—	—	—	—
Bristol -	16,772	—	—	35,415	—	—	55	—	—
Leicester -	17,993	142	111	18,412	164	134	1,879	—	—
Leeds -	8,619	281	—	36,030	1,160	—	3,310	335	—
Lincoln -	2,511	—	—	18,801	—	—	4,632	—	—
Liverpool -	9,202	456	456	103,783	847	847	—	—	—
London -	21,295	3,123	1,436	215,500	4,381	328	325	—	—
Newcastle-upon-Tyne -	25,118	653	653	78,747	—	—	10,095	186	†186
Norwich -	30,410	175	175	63,638	—	—	7,974	—	—
Salford -	20,022	106	106	187,860	82	82	382	—	—
Shrewsbury -	10,068	874	781	9,028	—	—	3,538	—	—
Wakefield -	21,532	225	—	61,545	—	—	9,383	—	—
York -	19,430	12	12	23,391	—	—	390	—	—
SCOTLAND.									
Aberdeen -	17,583	4,874	4,874	45,718	1,731	1,731	5,272	—	—
Dundee -	5,226	2,971	2,967	5,891	538	538	749	—	—
Edinburgh -	17,778	6,850	*3,352	61,963	20	10	2,282	—	—
Glasgow -	12,421	447	336	61,873	71	51	1,263	—	—
Perth -	21,022	4,745	*726	45,051	1,322	1,362	1,986	115	†115
TOTAL for ENGLAND	224,010	6,176	3,741	908,600	6,644	1,391	47,391	521	†186
TOTAL for SCOTLAND	74,030	19,847	*12,255	228,496	4,285	4,192	11,552	115	†115
Total -	298,040	26,023	*15,996	1,137,096	10,929	5,583	58,943	636	†301

* Prices for 3,490 cattle in addition to the above were quoted from Edinburgh, and for 4,019 cattle from Perth, but without distinguishing breed or quality.

† Prices given but details insufficiently furnished.

NUMBER and PRICES of Cattle WEIGHED in the under-mentioned Places in
Second Quarter of 1895, under the Markets and Fairs

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.	
			Per Stone.	Per Cwt.		Per Stone.	Per Cwt.		Per Stone.	Per Cwt.
London	Irish Cross Bred	No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
		—	—	—	195	3 6	28 0	261	4 4	34 8
	Cross Bred Scots	—	—	—	21	4 7½	37 2	21	4 10½	39 2
	Devons	1	3 7½	29 0	—	—	—	4	4 8½	37 6
	Herefords	—	—	—	9	4 9	38 0	20	4 10½	38 10
	Norfolks	—	—	—	169	4 5½	35 8	629	4 9	38 0
	Norfolks*	—	—	—	3	4 5½	35 8	113	4 6½	36 6
	Polled Scots	—	—	—	78	4 8	37 4	229	5 0½	40 4
	Polled Scots*	—	—	—	2	4 8½	37 6	35	5 0½	40 2
	Runts*	—	—	—	—	—	—	11	4 8½	37 8
	Scotch Shorthorns	—	—	—	14	4 8½	37 8	8	4 10	38 8
	Shorthorns	21	3 6½	28 6	35	4 3½	34 2	11	4 4½	35 0
Newcastle-upon-Tyne.	Shorthorns*	—	—	—	2	3 10	30 8	—	—	—
	Cross Bred	—	—	—	20	4 4	34 8	111	4 6½	36 4
	Cross Bred*	—	—	—	—	—	—	8	5 0	40 0
	Irish	—	—	—	29	4 3½	34 4	68	4 7	36 8
	Polled Angus*	—	—	—	—	—	—	6	5 0	40 0
	Polled Galloways	—	—	—	—	—	—	2	3 9	30 0
	Polled Irish	—	—	—	8	4 4½	35 2	—	—	—
	Shorthorns	—	—	—	26	4 2½	33 8	394	4 6	36 0
Shrewsbury	Cross Bred	—	—	—	3	3 8½	29 10	3	4 0½	32 4
	Herefords	—	—	—	13	4 0½	32 2	21	4 4½	35 0
	Polled Angus	—	—	—	9	3 11½	31 8	—	—	—
	Shorthorns	3	3 3½	26 2	20	3 10½	31 2	16	4 3½	34 4
	Cross Bred (Stores)	12	2 7	20 8	76	3 10½	30 10	34	4 7½	36 10
	Herefords (Stores)	8	3 1	24 8	42	3 10½	31 0	98	4 6½	36 4
	Polled Angus (Stores)	6	3 7½	29 2	16	4 0½	32 4	79	4 6	36 0
	Shorthorns (Stores)	22	3 4½	26 10	139	4 0	32 0	119	4 4½	34 10
	Welsh (Stores)	10	3 5½	27 8	32	3 7½	28 10	—	—	—

* Sold by Live Weight.

ENGLAND and SCOTLAND, as received from the Market Authorities in the
(Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.	
			Per Stone.	Per Cwt.		Per Stone.	Per Cwt.		Per Stone.	Per Cwt.
SCOTLAND: Aberdeen	Cross Bred	No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
		678	3 2	25 4	1,888	4 1½	32 10	1,631	4 6½	36 6
	Polled	86	3 5½	27 8	114	4 4½	34 10	164	4 8½	37 8
	Polled Angus	41	3 6½	28 4	112	4 5½	35 6	83	4 8½	37 8
	Cross Bred (Stores)	—	—	—	77	4 2½	33 6	—	—	—
Dundee	Cross Bred Polled	4	3 8½	29 10	161	4 2½	33 10	573	4 5½	35 8
	Cross Bred Polled*	4	3 8½	29 8	23	4 2½	33 10	26	4 4½	34 10
	Cross Bred Short-horns.	64	3 7½	28 10	197	4 2½	33 10	305	4 5½	35 8
	Cross Bred Short-horns.*	3	3 7½	29 2	7	4 2	33 4	12	4 2½	33 8
	Irish Cross Bred	16	3 4	26 8	647	4 2½	33 8	859	4 5	35 4
	Irish Cross Bred*	—	—	—	21	4 2½	33 8	124	4 4½	34 10
	Polled Angus	6	4 0½	32 4	—	—	—	46	4 7½	36 10
	Polled Angus*	1	4 0	32 0	—	—	—	33	4 6	36 0
	Cross Bred Short-horns (Stores).	—	—	—	—	—	—	6	4 3½	34 4
	Irish (Stores)	—	—	—	19	3 11½	31 10	—	—	—
Edinburgh	Polled Angus (Stores)	—	—	—	—	—	—	10	4 6½	36 4
	Ayrshire	—	—	—	5	3 11	31 4	—	—	—
	Cross Bred	—	—	—	2,882	4 6½	36 2	—	—	—
	Polled	—	—	—	—	—	—	4	4 10½	39 2
	Polled*	—	—	—	—	—	—	4	5 0	40 0
	Polled Angus	—	—	—	—	—	—	12	4 7½	37 2
	Shorthorns	—	—	—	1	3 0½	30 2	396	4 5½	35 10
	Shorthorns*	—	—	—	—	—	—	35	4 7½	36 10
	Irish (Stores)*	—	—	—	13	4 1½	33 0	—	—	—
		—	—	—	—	—	—	—	—	—
Perth	Cross Bred	—	—	—	60	4 3½	34 4	64	4 7½	37 2
	Cross Bred Polled	34	4 3½	34 2	167	4 4½	34 10	282	4 5½	35 8
	Cross Bred Short-horns.	4	3 8	29 4	3	4 2½	33 8	17	4 6½	36 6
	Polled Angus	—	—	—	—	—	—	62	4 8	37 4
	Shorthorns	—	—	—	12	3 11½	31 8	21	4 4½	35 2

* Sold by Live Weight.

The number and prices of Sheep reported as weighed under the Markets and Fairs (Weighing of Cattle) Act, 1891, in the under-mentioned places in the Second Quarter of 1895 are shown in the following table:—

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals		Average Price.	Animals		Average Price.	Animals		Average Price.
		Weighed.	Per Stone.		Weighed.	Per Stone.		Weighed.	Per Stone.	
		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
ENGLAND:										
Liverpool	Irish Cross Bred	—	—	—	817	5 7½	45 0	—	—	—
London	Downs*	—	—	—	12	5 5	43 4	16	5 6	44 0
	Half Bred	—	—	—	53	5 1	40 8	69	5 1½	43 2
	Half Bred*	—	—	—	94	5 1½	41 2	84	5 5½	43 6
SCOTLAND:										
Aberdeen	Black Face	—	—	—	—	—	—	19	4 11½	39 10
	Cross Bred	—	—	—	771	4 3½	34 2	840	4 10½	39 2
	Half Bred	—	—	—	—	—	—	101	4 11	39 4
Dundee	Cross Bred Hoggs	—	—	—	—	—	—	332	5 2½	41 8
	Cross Bred Hoggs*	—	—	—	—	—	—	164	5 0	40 0
	Highland Ewes	—	—	—	—	—	—	30	4 1	32 8
	Highland Wethers	—	—	—	—	—	—	12	5 3½	42 4
Edinburgh	Half Bred Ewes	—	—	—	10	4 1½	33 0	—	—	—
Perth	Black Face Wethers	—	—	—	57	4 10½	39 2	88	5 3½	42 2
	Black Face Wether Hoggs.	35	4 1	32 8	35	4 6½	36 6	—	—	—
	Cross Bred	—	—	—	223	4 11½	39 8	201	5 3½	42 6
	Cross Bred Hoggs	—	—	—	126	4 7½	37 0	1,050	5 0	40 0
	Leicester Tupps	—	—	—	7	4 0½	32 2	—	—	—
	Shropshire Cross Bred Hoggs.	—	—	—	—	—	—	40	5 0½	40 6

* Sold by Live Weight.

PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

I.—PRICES OF MEAT.

AVERAGE PRICES of DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the First and Second Quarters of 1895.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	1ST QUARTER. 1895.		2ND QUARTER. 1895.	
BEEF:—	s. d.	s. d.	s. d.	s. d.
Scotch, short sides	4 0	to 4 3	4 4	to 4 8
„ long sides	3 9	„ 3 11	4 0	„ 4 2
English, Prime	3 9	„ 3 11	3 11	„ 4 1
Cows and Bulls	2 7	„ 3 1	2 4	„ 3 3
American, Birkenhead killed	3 6	„ 3 8	3 7	„ 3 10
„ Deptford killed	3 6	„ 3 8	3 8	„ 3 10
„ Refrig. hind-qrs.	3 6	„ 3 10	3 11	„ 4 3
„ „ fore-qrs.	2 8	„ 2 11	2 3	„ 2 7
Argentine	—	—	3 0	„ 3 5
MUTTON:—				
Scotch, Prime	4 10	„ 5 1	4 9	„ 5 2
English, Prime	4 8	„ 5 0	4 7	„ 5 0
Ewes	3 9	„ 4 1	3 6	„ 3 10
Dutch	} 4 1 „ 4 5		4 3 „ 4 7	
German	}		}	
New Zealand	2 1	„ 2 7	1 8	„ 2 3
Australian	1 10	„ 2 0	1 7	„ 1 9
River Plate, Frozen	1 10	„ 2 0	1 7	„ 1 10
„ „ Town killed	3 8	„ 4 0	3 0	„ 3 6
LAMB:—				
English	6 1	„ 7 3	5 10	„ 6 10
New Zealand	2 11	„ 3 9	2 7	„ 3 3
VEAL:—				
English	4 3	„ 4 9	4 1	„ 4 9
Foreign	4 0	„ 4 7	3 11	„ 4 7
PORK:—				
English, small	3 6	„ 3 10	3 4	„ 3 8
„ medium and large	} 2 11 „ 3 6		2 7 „ 3 2	
Foreign	}		}	

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE and SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during the under-mentioned Quarters of 1894 and 1895.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
2nd Quarter 1894	s. d. 2 5	s. d. 3 11	s. d. 4 6	s. d. 3 6	s. d. 4 11	s. d. 5 8
3rd Quarter „	2 5	4 0	4 7	3 9	5 3	5 11
4th Quarter „	2 6	3 10	4 5	3 8	5 6	6 1
1st Quarter 1895	2 8	3 11	4 5	4 4	5 9	6 4
2nd Quarter „	2 9	4 2	4 6	4 1	5 2	5 9

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during the under-mentioned Quarters of 1894 and 1895.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
2nd Quarter 1894	s. d. 1 10	s. d. to 3 4	s. d. 3 4	s. d. to 5 0	s. d. 2 6	s. d. to 4 0	s. d. 4 0	s. d. to 5 2
3rd Quarter „	2 0 „	3 6	2 8 „	4 8	2 4 „	3 8	3 0 „	4 8
4th Quarter „	1 10 „	3 4	2 8 „	4 8	2 0 „	3 6	3 4 „	4 10
1st Quarter 1895	2 10 „	3 8	3 4 „	5 0	2 8 „	4 2	4 0 „	5 4
2nd Quarter „	2 8 „	3 10	3 8 „	5 2	3 0 „	4 4	3 8 „	5 6

* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the Liverpool Abattoir, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.

I.—PRICES OF MEAT—*continued.*

BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) per Cwt. (Dead Weight) in the BERLIN CATTLE MARKET in the four under-mentioned months of 1895.

MONTHS.	CATTLE.		SHEEP.	
	Per cwt.		Per cwt.	
April - 1895.	s. d. 57 8½	to 60 4½	s. d. 44 1½	to 48 2½
May -	58 3½	„ 60 6½	46 6½	„ 48 10½
June -	57 6	„ 59 6½	49 4½	„ 51 11
July -	61 1	„ 62 7½	51 11	„ 53 11½

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirtschaftliche Presse*.

PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium Quality) in the PARIS CATTLE MARKET in the four under-mentioned months of 1895.

MONTHS.	OXEN.	CALVES.	SHEEP.	PIGS.
	Per cwt.	Per cwt.	Per cwt.	Per cwt.
LIVE WEIGHT.				
April - 1895.	s. d. 35 0	s. d. 38 9½	s. d. 41 5½	s. d. 42 1½
May -	33 6½	41 10½	41 8½	40 7½
June -	34 4½	43 2	43 3½	42 0½
July -	35 1½	40 9½	43 5½	43 0½
DEAD WEIGHT.				
April - 1895.	s. d. 58 5½	s. d.* 78 1	s. d. 75 4½	s. d. 56 10½
May -	55 9½	83 2½	75 1	56 2½
June -	57 9½	82 1½	77 10½	54 9
July -	58 7½	77 2	78 9½	56 2½

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.

I.—PRICES OF MEAT—*continued.*

CHICAGO.

AVERAGE PRICES of CATTLE at CHICAGO per Cwt. (Live Weight)
in the four under-mentioned months of 1895.

Months.	Good Dressed Beef and Shipping Steers.		Export Cattle.		Extra Prime Cattle.	
1895.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
April - -	22 2	to 26 7 $\frac{1}{2}$	26 2 $\frac{1}{2}$	to 27 1 $\frac{1}{2}$	27 9 $\frac{1}{2}$	to 28 9 $\frac{1}{2}$
May - -	19 6 $\frac{1}{2}$	„ 22 8	22 8	„ 23 10	24 3 $\frac{1}{2}$	„ 25 5
June - -	18 10 $\frac{1}{4}$	„ 21 7 $\frac{1}{4}$	21 10 $\frac{1}{4}$	„ 22 10 $\frac{1}{4}$	23 11 $\frac{1}{2}$	„ 25 0
July - -	19 2	„ 23 0	21 9 $\frac{3}{4}$	„ 23 5 $\frac{3}{4}$	23 11 $\frac{1}{2}$	„ 24 10 $\frac{3}{4}$

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson, & Co.,
of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per Cwt., of various Kinds of DEAD MEAT
Imported into the United Kingdom from FOREIGN COUNTRIES
and BRITISH POSSESSIONS in the under-mentioned Quarters
of 1894 and 1895.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.		PORK.		BACON.	HAMS.
	Fresh.	Salted.	Fresh.	Fresh.	Salted.			
2nd Quarter 1894 -	s. d. 40 9	s. d. 29 4	s. d. 40 1	s. d. 47 6	s. d. 30 6	s. d. 42 9	s. d. 47 9	
3rd Quarter „	39 1	26 5	36 9	47 11	26 6	44 8	52 11	
4th Quarter „	38 1	26 0	35 5	48 1	27 4	46 10	47 3	
1st Quarter 1895 -	40 6	26 7	35 4	43 5	29 0	37 2	43 0	
2nd Quarter „	38 11	25 9	35 9	48 2	25 3	38 2	44 5	

II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1895, 1894, and 1893.

QUARTER ENDED	PRICES.			QUANTITIES.		
	1895.	1894.	1893.	1895.	1894.	1893.
Wheat.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day - -	20 1	25 1	25 7	652,874	613,313	708,986
Midsummer - -	23 1	24 4	26 2	496,615	429,450	674,704
Michaelmas - -	—	22 11	26 4	—	313,288	577,112
Christmas - -	—	19 2	27 2	—	600,773	659,258
Barley.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day - -	21 6	28 1	25 2	1,035,588	671,620	1,062,457
Midsummer - -	20 3	25 2	24 0	79,936	40,863	104,155
Michaelmas - -	—	22 1	24 1	—	95,121	218,829
Christmas - -	—	22 7	29 1	—	1,921,744	1,920,615
Oats.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day - -	13 9	18 1	17 7	250,838	133,922	201,572
Midsummer - -	15 2	18 7	19 5	111,424	61,862	75,457
Michaelmas - -	—	17 11	19 9	—	79,824	99,899
Christmas - -	—	13 10	18 1	—	239,139	198,594

* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

II.—CORN PRICES: WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1895, and in the Corresponding Weeks in 1894 and 1893.

Weeks ended (in 1895).	Wheat.			Barley.			Oats.		
	1895.	1894.	1893.	1895.	1894.	1893.	1895.	1894.	1893.
Jan. 5	s. d. 29 4	s. d. 26 4	s. d. 25 10	s. d. 21 5	s. d. 28 10	s. d. 24 9	s. d. 14 2	s. d. 17 8	s. d. 16 8
" 12	29 8	26 4	26 4	21 3	28 10	25 6	13 9	18 0	16 11
" 19	26 8	26 3	26 6	21 8	29 2	25 7	14 0	18 0	17 0
" 26	20 9	26 1	26 4	21 11	29 1	25 6	13 10	18 0	17 3
Feb. 2	20 6	25 7	26 8	21 5	28 11	25 4	13 10	18 1	17 5
" 9	19 11	25 3	25 11	21 8	28 8	25 0	13 6	17 10	17 11
" 16	19 10	24 10	25 7	21 10	28 3	24 11	13 8	18 0	17 10
" 23	19 10	24 5	25 5	22 2	28 0	25 1	13 9	18 4	18 0
Mar. 2	19 10	24 3	25 1	21 9	27 5	25 2	14 0	18 5	17 11
" 9	19 9	24 3	25 0	21 6	27 0	25 2	13 9	18 4	18 1
" 16	19 9	24 3	24 9	21 7	27 5	25 0	13 8	18 4	18 7
" 23	20 0	24 4	24 8	20 10	26 11	25 5	13 10	18 1	18 3
" 30	20 3	24 6	24 9	20 10	27 1	25 11	14 0	18 0	18 4
Apr. 6	20 4	24 6	24 9	20 11	26 7	25 6	14 5	18 3	17 11
" 13	20 1	24 7	24 10	21 3	27 10	24 8	13 11	18 2	18 7
" 20	20 6	24 8	25 5	21 2	28 6	24 5	14 5	18 4	18 8
" 27	20 9	24 10	25 10	20 8	26 3	24 0	14 2	18 3	19 3
May 4	21 4	24 10	25 10	20 5	26 1	23 11	14 8	18 7	19 5
" 11	22 4	24 9	26 4	20 8	24 11	22 7	15 3	18 9	19 4
" 18	22 10	24 5	27 0	20 6	25 0	23 2	15 3	18 9	19 8
" 25	23 5	24 4	27 6	20 1	24 0	25 0	15 9	18 10	19 6
June 1	24 5	23 11	27 5	19 4	23 11	24 2	15 10	18 9	20 4
" 8	25 9	23 9	27 4	19 9	26 11	22 10	15 10	18 6	20 0
" 15	26 2	23 10	26 11	19 4	24 11	23 5	15 11	18 9	21 1
" 22	26 5	23 11	26 9	19 5	22 5	23 3	16 1	18 10	21 3
" 29	26 1	24 1	26 9	20 8	20 5	20 9	16 7	19 2	21 5
July 6	25 7	24 6	26 8	19 9	23 7	20 6	16 4	19 6	21 0
" 13	25 0	24 5	26 8	20 8	21 0	22 3	15 7	19 7	22 3
" 20	24 4	24 6	26 5	18 6	19 6	20 3	16 6	19 7	21 9
" 27	24 1	24 8	26 5	19 10	22 5	23 1	15 11	20 5	21 7
Aug. 3	24 2	24 4	26 2	18 2	21 4	21 8	15 9	19 8	21 5
" 10	24 3	24 1	26 3	20 0	21 4	21 11	16 5	19 9	20 6
" 17	24 6	24 5	26 5	19 3	16 5	22 5	16 1	18 9	19 6
" 24	24 5	24 1	25 11	20 8	22 3	26 9	15 7	17 8	18 6

II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the First and Second Quarters of 1895.

COUNTRIES from which Exported.	Average Value per Imperial Quarter.	
	First Quarter, 1895.	Second Quarter, 1895.
	s. d.	s. d.
ARGENTINE REPUBLIC	22 4	24 1
CHILE	23 3	26 6
ROMANIA	23 11	23 7
RUSSIA	21 3	22 5
TURKEY	21 0	25 5
UNITED STATES OF AMERICA { Atlantic	23 1	24 9
{ Pacific	24 1	25 8
AUSTRALASIA	24 4	24 3
INDIA, BRITISH	21 5	24 4
NORTH AMERICA, BRITISH	24 4	26 4

II.—CORN PRICES:—BELGIUM, FRANCE, ENGLAND AND WALES.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND AND WALES in the four under-mentioned months of 1895.

Month.	Belgium.	France.	England and Wales.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April -	23 0½	30 7	20 5
May -	25 3	30 11½	22 5
June -	—	31 5½	25 9
July -	—	30 10½	24 9
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April -	20 0	19 4	21 0
May -	20 0	19 7½	20 5
June -	—	19 6½	19 7
July -	—	19 6½	19 8
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April -	13 10	18 4	14 2
May -	14 10	18 5½	15 2
June -	—	18 6½	16 0
July -	—	18 4½	16 1

Note.—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished under the Corn Returns Act, 1882.

II.—CORN PRICES:—LONDON, PARIS, BERLIN.

AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER at the under-mentioned Markets in the four under-mentioned months of 1895.

Month.	London.	Paris.	Berlin.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April - - -	21 3	30 7	31 1
May - - -	22 11	31 0 $\frac{3}{4}$	33 6 $\frac{3}{4}$
June - - -	24 4	31 6	34 4
July - - -	25 1	31 1	31 7 $\frac{1}{2}$
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April - - -	No sales.	18 3	18 4 to 30 0
May - - -	19 2	18 10 $\frac{3}{4}$	19 3 $\frac{3}{4}$ „ 30 0
June - - -	19 5	18 10 $\frac{3}{4}$	19 6 $\frac{3}{4}$ „ 29 5 $\frac{1}{2}$
July - - -	19 6	18 10 $\frac{3}{4}$	19 7 $\frac{1}{2}$ „ 28 11 $\frac{3}{4}$
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April - - -	14 10	17 6	16 9
May - - -	16 5	18 1 $\frac{3}{4}$	18 4 $\frac{3}{4}$
June - - -	16 3	18 4 $\frac{1}{4}$	18 1
July - - -	No sales.	17 10 $\frac{1}{4}$	18 4

Note.—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.

III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE, in the months of May, June, and July 1895.

(Compiled from the *Grocer*.)

DESCRIPTION.	Month of May 1895.	Month of June 1895.	Month of July 1895.
	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.
BUTTER:			
Clonmel - -	— —	— —	— —
Cork, 1sts -	72 0 to —	74 7 to —	81 3 to —
„ 2nds -	65 3 „ —	72 4 „ —	79 0 „ —
„ 3rds -	57 0 „ —	68 7 „ —	76 3 „ —
„ 4th -	46 9 „ —	60 7 „ —	69 9 „ —
Friesland -	67 6 „ 72 6	72 4 „ 77 7	84 6 „ 89 6
Dutch Factories -	74 0 „ 80 6	76 9 „ 82 9	89 6 „ 94 6
French Baskets -	89 6 „ 102 0	90 9 „ 98 0	100 0 „ 102 6
„ Crocks and Firkirs.	75 0 „ 85 6	77 7 „ 87 7	88 6 „ 96 0
„ 2nds and 3rds	67 6 „ 72 0	67 7 „ 71 7	79 6 „ 85 0
Danish and Swedish	88 0 „ 92 0	82 0 „ 86 9	96 6 „ 100 6
Finnish - -	71 6 „ 84 6	70 4 „ 78 4	79 6 „ 89 0
Russian - -	57 6 „ 83 0	62 9 „ 75 7	75 0 „ 83 6
Australian -	38 0 „ 79 6	42 0 „ 83 7	54 6 „ 95 0
New Zealand -	38 0 „ 79 6	42 0 „ 83 7	54 6 „ 95 0
Fresh Rolls (Foreign) per doz.	9 1 $\frac{1}{2}$ „ 13 6	9 0 „ 13 0	9 9 „ 13 6
MARGARINE:			
Margarine - -	33 0 „ 50 0	34 0 „ 50 0	36 0 „ 52 0
Mixtures - -	55 0 „ 76 0	56 0 „ 76 0	56 0 „ 78 0
CHEESE:			
Cheddar - -	40 0 „ 70 0	40 0 „ 70 0	40 0 „ 70 0
Somerset - -	43 6 „ 61 0	42 0 „ 60 9	42 0 „ 62 0
Cheshire - -	50 0 „ 82 0	70 0 „ 78 0	Nominal.
Wiltshire - -	36 0 „ 59 6	32 4 „ 60 6	26 3 „ 56 6
Double Gloucester -	36 6 „ 59 0	28 9 „ 58 9	26 0 „ 56 0
Derby - -	33 0 „ 48 6	30 9 „ 43 7	34 0 „ 42 0

PRICES OF VEGETABLES AND FRUIT.

I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	JUNE.				JULY.			
	COVENT GARDEN.		FARRINGDON.		COVENT GARDEN.		FARRINGDON.	
Asparagus, per 100 heads -	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
" per bundle -	1 0 to 1 9	—	—	—	—	—	—	—
Beans, per lb. -	0 1½, 0 6	—	—	—	—	—	—	—
" broad, per bushel -	—	—	—	—	—	—	—	—
" " per sieve -	4 0, 5 0	—	—	—	1 0 to 1 6	—	—	—
" French, per flat -	—	—	3 0, —	—	—	—	—	—
" " per half bushel -	—	—	—	—	—	—	6 6, —	—
" " per lb. -	0 4, —	—	—	—	0 4, —	—	—	—
" scarlet runners, per half bushel -	—	—	—	—	—	—	2 6, 6 6	—
Cabbages, per dozen bunches -	—	—	—	—	2 6, 3 6	—	—	—
" per tally -	—	—	1 3, 1 6	—	—	—	1 3, —	—
Carrots, per dozen bunches -	—	—	5 0, —	—	—	—	3 0, 4 0	—
Cauliflowers, per dozen -	—	—	4 0, 7 0	—	—	—	2 1½, 4 6	—
Cucumbers, per dozen -	2 6, 3 3	3 0, —	2 6, 3 0	—	1 10½, 2 9	—	3 2½, 4 3	—
Horseradish, per bundle -	2 0, 3 0	—	—	—	—	—	—	—
Leeks, per dozen bunches -	—	—	0 9, —	—	—	—	—	—
Lettuce, per score -	—	—	1 6, —	—	—	—	0 9, —	—
Marrows, per dozen -	—	—	5 0, 6 0	—	1 4½, 2 3	—	2 6, 3 0	—
Mint, per dozen bunches -	2 0, 3 0	—	—	—	—	—	—	—
Mushrooms, per lb. -	0 5½, 0 7½	—	—	—	0 6, 0 9	—	—	—
Onions, Spring, per doz. bunches -	—	—	3 0, —	—	—	—	3 0, —	—
" per bag -	—	—	6 0, —	—	—	—	—	—
Parsley, per bunch -	—	—	—	—	—	—	0 6, —	—
Peas, per bushel -	6 0, 7 6	—	4 0, 4 6	—	—	—	—	—
" blue, per bushel -	3 6, 4 2	—	—	—	2 6, 3 3	—	—	—
" " per bag -	—	—	—	—	4 0, 6 0	—	—	—
" white, per bushel -	2 6, 3 2	—	—	—	2 0, 2 9	—	—	—
Potatoes:—								
Old—Bruces, per ton -	70 0, 100 0	76 8, 85 0	—	—	—	—	—	—
Imperators " -	80 0, 90 0	72 6, 80 0	—	—	—	—	—	—
Magnums " -	—	70 0, 89 0	—	—	—	—	—	—
Main Crop " -	—	90 0, 100 0	—	—	—	—	—	—
New—Canaries, best, per cwt. -	16 0, 18 0	—	—	—	—	—	—	—
" small " -	9 0, 12 0	—	—	—	—	—	—	—
Flukes, " -	—	9 0, 10 0	—	—	—	—	—	—
Hebrons, Red " -	—	—	—	—	4 9, 5 3	—	—	—
" White " -	—	—	—	—	5 3, 5 9	—	—	—
Jersey kidneys " -	18 0, 20 0	9 0, 11 4	—	—	4 0, 5 0	—	—	—
Lisbons " -	10 0, —	—	—	—	—	—	—	—
Malta kidneys " -	18 0, 18 0	—	—	—	—	—	—	—
" rounds " -	14 0, —	—	—	—	—	—	—	—
Early Monarchs " -	—	—	—	—	5 0, 6 0	—	—	—
Puritans " -	—	—	—	—	5 3, 6 0	—	—	—
Radishes, per dozen bunches -	—	—	1 0, 1 3	—	—	—	—	—
Rhubarb, per dozen bunches -	—	—	2 0, —	—	—	—	—	—
Turnips, per dozen bunches -	—	—	4 0, 5 0	—	—	—	2 8, 4 0	—

PRICES OF VEGETABLES AND FRUIT—continued.

I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—continued.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	JUNE.				JULY.			
	BOROUGH AND SPITAL FIELDS.		STRATFORD.		BOROUGH AND SPITAL FIELDS.		STRATFORD.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beans, per bag -	—	—	—	—	—	—	—	—
" broad, per bag -	—	—	—	—	2 6 to 3 0	—	1 6, 2 0	—
" " per bushel -	—	—	—	—	1 6, 1 11	—	—	—
" scarlet runners, per bushel -	—	—	—	—	5 2, 6 2	—	7 6, 8 0	—
" " per sieve -	—	—	—	—	—	—	3 6, 4 0	—
Cabbages, per tally -	—	—	2 10 to 5 4	—	3 10½, 5 3½	—	1 9, 4 3	—
Cauliflowers, per dozen -	—	—	1 6, 2 0	—	—	—	1 0, 1 9	—
" per tally -	—	—	6 0, 10 0	—	—	—	4 0, 8 6	—
Carrots, household, per ton -	—	—	30 0, 40 0	—	—	—	—	—
" cattle-feeding, per ton -	—	—	8 0, 15 0	—	—	—	—	—
" per dozen bunches -	—	—	—	—	2 3½, 2 9½	—	1 0, 1 8	—
Cucumbers, per dozen -	—	—	1 10, 3 6	—	2 0, 3 0	—	1 8, 2 8	—
Greens, per bag -	—	—	1 9, 2 9	—	—	—	4 0, 4 6	—
" per sieve -	—	—	1 6, 2 0	—	—	—	—	—
Horseradish, per bundle -	1 0 to 1 3	—	0 9, 1 0	—	1 0, 1 3	—	—	—
Mangels, per ton -	—	—	11 6, 16 0	—	—	—	15 6, 21 4½	—
Marrows, per tally -	—	—	—	—	4 6, 6 6	—	6 0, 7 6	—
Onions, per bag -	5 0, —	—	—	—	2 6, 3 0	—	—	—
" Egyptian, per ton -	—	—	120 0, —	—	—	—	106 8, 120 0	—
" foreign, per bag -	2 0, 4 0	—	—	—	3 0, —	—	—	—
" Ports, per case -	—	—	—	—	—	—	5 3, 5 9	—
" spring, per dozen bunches -	1 0, —	—	—	—	1 6, 2 0	—	—	—
Peas, per bag -	—	—	—	—	4 9, 5 6	—	4 3½, 5 7½	—
" per bushel -	4 3, 4 9	—	—	—	2 4½, 3 1	—	1 9, 2 3	—
" per half sieve -	—	—	—	—	—	—	—	—
" best blues, per bushel -	—	—	—	—	2 3, 2 9	—	—	—
" white, per bushel -	—	—	—	—	3 6, 4 0	—	—	—
Potatoes:—								
Old—Bruces, per ton -	—	—	55 0, 80 0	—	—	—	—	—
" Lincoln, per ton -	—	—	—	—	50 0, 60 0	—	—	—
" Scotch " -	—	—	—	—	55 0, 70 0	—	—	—
" Yorkshire " -	—	—	90 0, 102 6	—	—	—	—	—
Magnums, Darkland, per ton -	—	—	45 0, 70 0	—	—	—	—	—
" Upland, per ton -	—	—	65 0, 80 0	—	—	—	—	—
Main Crop, per ton -	—	—	90 0, 110 0	—	—	—	—	—
New—Bordeaux, per ton -	—	—	140 0, 150 0	—	—	—	—	—
Jersey, kidneys, per ton -	—	—	200 0, 246 8	—	—	—	130 0, 150 0	—
" rounds " -	—	—	110 0, 160 0	—	—	—	—	—
Lisbons, per ton -	—	—	180 0, 200 0	—	—	—	—	—
English—								
Hebrons, per ton -	—	—	—	—	86 8, 103 4	—	90 0, 103 4	—
Kidneys " -	—	—	—	—	115 0, 130 0	—	95 0, 110 0	—
Puritans " -	—	—	—	—	102 6, 115 0	—	—	—
Snowdrops " -	—	—	—	—	80 0, 100 0	—	95 0, 110 0	—
Sutton's Regents, per ton -	—	—	—	—	85 0, 107 6	—	—	—
Spinach, per bushel -	—	—	1 0, 1 6	—	—	—	—	—
Turnips, per dozen bunches -	—	—	—	—	2 0, 2 9½	—	1 9, 2 3	—

PRICES OF VEGETABLES AND FRUIT—*continued.*

II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	May.		June.		July.	
COVENT GARDEN:	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Apples, per sieve	—	—	—	—	3 0	to 4 6
Cobs, per 100 lbs.	18	0 to 20 0	—	—	—	—
Cherries, black, per half sieve	—	—	—	—	3 6	„ 5 7½
„ white, per half sieve	—	—	—	—	3 0	„ 5 6
Figs, per doz.	6 0	„ 8 0	2 6	to 5 0	1 6	„ 3 0
Grapes, 1st quality, black, English, per lb.	2 19½	„ 3 7	2 3	„ 2 9	1 6½	„ 2 0
„ 2nd quality, black, English, per lb.	—	—	0 10	„ 1 2	0 9	„ 1 0
Guernsey, per lb.	1 0	„ 2 0	1 0	„ 2 0	1 0	„ 1 6
Melons, each	2 0	„ 3 0	1 9	„ 2 4½	1 6	„ 2 0
Peaches, 1st size, per doz.	10 9½	„ 20 4½	10 0	„ 12 0	6 0	„ 10 0
„ 2nd size, per doz.	—	—	2 8	„ 5 0	2 0	„ 4 0
„ 3rd size, per doz.	—	—	—	—	1 0	„ 1 6
Raspberries, per lb.	—	—	—	—	0 3	„ 0 3½
Red currants, per half sieve	—	—	—	—	2 3	„ 2 9
Black currants, per half sieve	—	—	—	—	4 1½	„ 4 9
Strawberries, morning gathered, per lb.	2 7	„ 4 0	0 8½	„ 1 3½	0 5½	„ 0 9½
„ morning gathered, per lb., 2nds.	1 6	„ 2 0	0 6	„ 1 0	—	—
„ morning gathered, per peck.	—	—	2 8	„ 4 2	2 0	„ 2 6
Tomatoes, home grown, per lb.	0 10	„ 1 0½	0 5½	„ 0 7	0 4½	„ 0 5
„ Guernsey, per lb.	0 6	„ 0 7	0 4½	„ 0 5½	0 3	„ 0 4
„ smooth, per lb.	—	—	—	—	0 4	„ —
„ ordinary, per lb.	—	—	—	—	0 3	„ 0 3½
FARRINGTON:						
Apples, Tasmanian, per case	8 1½	„ 10 0	10 0	„ 11 6	7 3	„ 9 6
„ Canadian, per barrel	11 4	„ 15 0	—	—	—	—
Apricots, per box	—	—	1 0	„ —	—	—
Cherries, per bushel	4 0	„ —	—	—	—	—
„ per basket	—	—	4 6	„ 5 0	—	—
„ per half sieve	—	—	—	—	6 6	„ 7 0
„ black, per half sieve	—	—	—	—	2 6	„ 3 6
„ white, per half sieve	—	—	—	—	4 0	„ —
Currants, black, per half bushel	—	—	—	—	5 6	„ 6 0
„ red, per half bushel	—	—	—	—	2 9	„ 3 6
Gooseberries, per bushel	—	—	4 3	„ 5 0	6 0	„ 7 0
„ per sieve	7 0	„ —	4 0	„ —	5 0	„ 6 0
Grapes, per lb.	1 3	„ —	0 10	„ 1 3	—	—
Greenhouses, per 12 lbs.	—	—	—	—	3 0	„ 5 6
Melons, per 2½	—	—	—	—	12 0	„ —
Peaches, per box	—	—	1 0	„ —	—	—
Plums, per 10 lbs.	—	—	—	—	2 0	„ —
Raspberries, per lb.	—	—	—	—	0 3	„ 0 4
„ per half sieve	—	—	—	—	2 6	„ —
Strawberries, per peck	—	—	—	—	2 6	„ —
„ per half sieve	—	—	3 0	„ 3 6	—	—
Tomatoes, English, per lb.	—	—	0 7½	„ 0 10	0 6	„ —
„ foreign, per lb.	—	—	—	—	0 1½	„ —

PRICES OF VEGETABLES AND FRUIT—*continued.*

II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	May.		June.		July.	
BOROUGH AND SPITALFIELDS:	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Apples, per bushel	3 0	to 9 0	—	—	—	—
„ Canadian, per barrel	12 0	„ 18 0	—	—	—	—
„ Tasmanian, per case	4 3	„ 9 0	6 0	to 8 8	5 6	to 8 0
Cherries, per half sieve	—	—	—	—	2 6½	„ 4 0½
Currants, per half sieve	—	—	—	—	1 10	„ 4 0
„ black, per half sieve	—	—	—	—	2 9	„ 5 0
Gooseberries, per half sieve	—	—	2 0	„ 2 6	1 0½	„ 2 1½
Strawberries, per peck	—	—	—	—	1 6	„ 2 3
STRATFORD:						
Apples, per bushel	2 6	„ 7 0	—	—	3 0	„ 4 0
„ per sieve	—	—	—	—	4 6	„ 5 6
Cherries, per half sieve	—	—	—	—	4 2½	„ 5 0
Currants, black, per half sieve	—	—	—	—	4 1½	„ 4 9
„ red, per half sieve	—	—	—	—	2 10½	„ 4 0½
Gooseberries, per bushel	5 0	„ 6 0	—	—	—	—
„ per flat	—	—	—	—	3 9	„ 3 9
„ per half sieve	3 0	„ 5 6	2 1½	„ 2 4½	1 10½	„ 2 4½
Raspberries, per dozen punnets	—	—	—	—	3 0	„ 4 0
Strawberries, per peck	—	—	2 0	„ 3 0	0 6	„ 2 6
Tomatoes, English, per dozen lbs.	—	—	—	—	4 0	„ 7 0

PRICES OF WOOL.

AVERAGE PRICES OF ENGLISH WOOL, per Pack of 240 lbs., in the months of June and July 1895.

(Compiled from the *Economist*.)

DESCRIPTION.	JUNE.		JULY.	
Fleeces, South Down hogs	£ s.	£ s.	£ s.	£ s.
Half-bred hogs	9 10	to 10 12	9 10	to 11 0
Half-bred wethers	9 10	„ 10 8	9 10	„ 11 0
Kent fleeces	9 0	„ 9 18	9 0	„ 10 10
South Down ewes and wethers	9 10	„ 10 2	9 10	„ 10 6
Leicester	9 10	„ 10 4	9 10	„ 11 0
„ „	9 0	„ 9 14	9 0	„ 10 10

DISEASES OF ANIMALS.

I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER OF CATTLE returned as SLAUGHTERED, by order of the Board of Agriculture, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having DIED from **Swine-Fever**, or as having been SLAUGHTERED by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro-Pneumonia.	SWINE that Died of Swine-Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine-Fever.
	No.	No.	No.	No.	No.	No.
June 1894 -	8	303	16	2,186	22,306	374
September 1894	7	88	7	1,971	12,311	435
December 1894	—	—	5	1,212	7,622	290
March 1895 -	—	43	2	1,914	9,584	190
June 1895 -	—	—	8	2,812	15,096	570

NUMBER OF PLACES upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies. DISEASED ANIMALS KILLED OR DIED.
	OUT-BREAKS.	ANIMALS ATTACKED.	OUT-BREAKS.	ANIMALS ATTACKED.	
	No.	No.	No.	No.	No.
June 1894 -	113	254	230	351	60
September 1894	91	220	230	372	49
December 1894	106	162	212	332	111
March 1895 -	128	284	238	427	212
June 1895 -	110	266	251	360	228

II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of CATTLE returned as SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having Died from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro-Pneumonia.	SWINE that Died of Swine-Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine-Fever.
	No.	No.	No.	No.	No.	No.
June 1894 -	—	—	5	932	12,060	71
September 1894	—	—	1	902	9,446	651
December 1894	—	—	—	562	6,146	947
March 1895 -	—	—	—	504	3,402	675
June 1895 -	—	—	—	556	1,491	220

NUMBER of Places upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies. DISEASED ANIMALS KILLED OR DIED.
	OUT-BREAKS.	ANIMALS ATTACKED.	OUT-BREAKS.	ANIMALS ATTACKED.	
	No.	No.	No.	No.	No.
June 1894 -	—	—	4	9	213
September 1894	1	1	6	19	242
December 1894	1	2	2	3	244
March 1895 -	1	1	5	5	171
June 1895 -	2	2	—	—	235

POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

ADVANTAGES TO DEPOSITORS.

SECURITY. The Post Office Savings Banks are established by Act of Parliament, and every depositor has the *direct security* of the State for the repayment of his deposits.

DEPOSITS. Any sum from a shilling upwards, excluding pence, may be deposited at one time, and any number of deposits may be made in the course of a year (ending 31st December) up to a limit of 50*l.* A person may have 200*l.* in all on his Deposit Account, including interest.

WITHDRAWALS can be made with the utmost promptitude by sending notice by post to the London Chief Office on the form provided for the purpose, which is obtainable at any Post Office Savings Bank, and payment can be received at any Post Office Savings Bank in the United Kingdom convenient to the Depositor without regard to the Office of deposit. During any year ending 31st December, a depositor may replace the amount of any one withdrawal previously made in the same year.

INTEREST at the rate of 2*l.* 10*s.* per cent. per annum is allowed on every complete pound deposited so long as the sum to a depositor's credit does not exceed 200*l.* Whenever the balance exceeds that sum interest will be allowed on 200*l.*, and the excess will be invested for the Depositor in Government Stock unless the Depositor should otherwise direct.

TRANSFER FROM A TRUSTEE SAVINGS BANK. If a Depositor in a Trustee Savings Bank wishes to place his money in a Post Office Savings Bank, he should apply to the Trustees of the Savings Bank for a Certificate of Transfer (in the form prescribed by the 10th Section of the Act 24 Vict. c. 14), and should pay the certificate into any Post Office Savings Bank as if it were a cheque. By adopting this course, the Depositor will avoid trouble and the risk of carrying cash from one bank to the other.

DEPOSITOR'S BOOK CAN BE USED AT ANY POST OFFICE SAVINGS BANK. A Depositor may add to his deposits, or withdraw the whole or any part of them, at any Post Office Savings Bank in the United Kingdom, without change of deposit book.

NOMINATIONS. A Depositor of the age of 16 years, or upwards, may, subject to certain limits, nominate any person to receive his Savings Bank deposits at death. A form for the purpose may be obtained, free of cost, from the Controller of the Savings Bank Department.

SECRECY. The strictest secrecy is observed with respect to the names and addresses of Depositors in Post Office Savings Banks, and the amounts deposited or withdrawn by them.

POSTAGE FREE. No charge for postage is made to a Depositor, if in the United Kingdom, for any letter passing between him and the Chief Office on Post Office Savings Bank business.

ADVANTAGES OFFERED FOR OLD AGE PENSIONS.

Provision for old age can be made by buying Savings Bank Deferred Annuities from 1*l.* to 100*l.* to begin at any age selected.

RETURN OF PURCHASE MONEY. The Premiums for Deferred Annuities can be returned on application, or on death before the Annuity begins, if the Contract is taken out on these conditions.

IMMEDIATE PENSIONS. Annuities to begin at once, of any amount from 1*l.* to 100*l.* a year, can be bought through the Post Office Savings Bank. The Purchase Money is payable in a lump sum which is not returnable, and the pensions are payable half-yearly.

Savings Banks Annuities are payable by half-yearly instalments on the 5th January and the 5th July, or the 5th April and 10th October, according to the date of purchase.

PROCEDURE. A simple form of Proposal, and a form for statement of age, can be obtained at any Post Office Savings Bank. When filled up the forms will be forwarded by the local Postmaster to the Chief Office, London, and a Contract will be issued when the first premium has been paid. Annuity Premiums are payable in the same way as Insurance Premiums, namely, by transfers from Savings Bank accounts.

**LIST OF LEAFLETS ISSUED BY THE BOARD OF
AGRICULTURE.**

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A 4.— „ I.	Insects on Fruit Trees.
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A 10.— „ I.	Wireworms.
A 1.—1895 I.	Anthrax.
A 2.— „ I.	Pea and Bean Weevil.
A 3.— „ I.	The Turnip Fly or Flea.

Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.

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[No. 3]

EVAPORATION OF FRUIT.

The acreage of fruit land in Great Britain increases somewhat slowly. Since 1885 only 23,705 acres have been added, or about 2,370 acres per annum, which must be held to be an inconsiderable addition, seeing that corn growing is in such a depressed condition, and that in spite of all the hindrances and drawbacks peculiar to the fruit-growing industry, it has been upon the whole fairly profitable. The outlay necessary for finding trees and for planting them, and the time, longer or shorter according to the kinds of fruit, which must elapse before any profit can be made, prevent a good many landowners from planting. The bugbear of foreign competition also has great influence in checking outlay upon fruit planting, and this is only natural, for the returns of the trade of the United Kingdom show that the importations of fruit of all kinds increase enormously year by year, and that almost every country under the sun is growing fruit for the British markets. The total amount of raw fruit, including apples, pears, plums, and cherries, but excluding grapes, nuts, and oranges, imported into this country during 1894 was 8,667,887 cwt., valued at 2,833,580*l.*, so that it is not surprising that fruit growers hesitate before they add to their orchards and plantations, and that landowners and tenants are inclined to think the risks are too great to warrant much expenditure of capital in planting fruit trees.

The fact that, when fruit is very plentiful, in favourable seasons, there is a glut in the chief markets, and that it is practically unsaleable, or saleable only at prices leaving no profit to the producers, also tends materially to check fruit planting. This happened in 1892, when plums and damsons were abundant beyond precedent, and did not pay the expenses of picking, carriage, and commission when sent to London or to the midland and northern markets, so that many thousand bushels of fruit were sold at a loss, or left on the trees. Again, in 1895, damsons were almost unsaleable, or saleable only at a miserable price. Many growers received only 2*d.* to 4*d.* a bushel clear from the salesman after all expenses were paid, and in some cases the damsons were thrown away or left unpicked. In many districts where cider is not made, common apples were shaken from the trees, as it

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would not pay to pick them at the prices current, and sent away in bags and old brimstone barrels for some purposes not divulged. Really good apples did not make three farthings a pound until the end of October, and although prices subsequently improved, they remained very low and unsatisfactory to producers. Damsons were in some places either left on the trees or sold in the wholesale central markets at absurdly low rates, ranging from 3d. to 4d. per gallon, which did not much more than pay the expenses of picking, packing, carriage, and commission, and yet retailers were asking from 8d. to 1s. per gallon in many towns. Numerous housekeepers in all classes of life would have been pleased to be able to purchase such useful fruit at anything like 8d. per gallon, which would have given a good profit to growers after carriage had been paid, even over long distances. These remarks apply equally to apples, to those shaken from the trees, as cited above, and to the many thousand bushels of cooking apples—Keswicks, Lord Suffields, and others equally valuable—sold at a loss, or at an infinitesimal profit. To a great extent this is due to inadequate distribution, which more or less affects all farm produce, but fruit farmers especially, as fruit is only grown extensively in certain counties, from which distribution to all parts of the country is difficult and costly. Besides, there is not much endeavour on the part of the fruit-grower to make use of other means for the disposal of surplus fruit. As a rule, he has no other mode than packing it just as it comes from the tree in bushel and half-bushel baskets, and consigning it to some large market, or he sells his fruit on the trees by auction or private contract to get rid of the trouble and risks. In the case of apples, in a year of profusion, surplus fruit is not made into cider in these days. Fifty or sixty years ago, in many of the fruit-producing districts, there was a cider press on most fruit farms of any size, and a pleasant drink was made for the labourers from the common and surplus apples. No attempt is now made to make it, except in the cider-making counties, though the science and practice of making cider and its after treatment have greatly improved, and its sale as a beverage has been widely extended. It would assuredly pay to make cider of the surplus apples in years of superabundance, and, in ordinary seasons, to sort the fruit—"grade" it, as the Americans say—and make the "thirds" into cider, or pulp it, or evaporate it.

In foreign countries, large quantities of fruit are dried and preserved either by solar or artificial heat. Plums and prunes are dried on the continent by the sun and by artificial heat. In the United States, vast quantities are dried, or dessicated, by means of stoves, and in sunny California by the sun, and by evaporating machines, not only in seasons of abundant crops, but as a regular part of the fruit-growers' business. Apples, also, are dried in various forms upon stoves and evaporators in many other parts of America. Hitherto, nothing has been done in this direction in Great Britain. Enormous

quantities of jam are made, but not by the producers of fruit. A few growers make surplus fruit into "pulp" for sale to the jam manufacturers, and this appears to be the only effort that has been made to "manufacture" fruit at home, although there appears to be nothing in the shape of practical difficulties to prevent home producers from successfully competing with foreign fruit dryers, or, at all events with those who employ stoves and artificial heat. On account of the cheapness of sugar, British fruit-growers have a great advantage in respect of jam-making, and they might, if they pleased, contribute to the supply of fruits artificially dried.

It will be interesting to give some idea of the nature and quantity of the dried fruit importation into this country, and of its increase since 1885.

It will be seen from the table below that in 1894 the imports of "Fruit, Unenumerated, preserved without Sugar," were nearly double the importation of 1885, though their value had not increased in nearly the same proportion. This is due to the fact that the industry in the United States was practically developed after 1885, and would very largely increase the volume of imports, but, the articles being lowly priced, would not proportionally enhance the value.

IMPORTS OF FRUIT; UNENUMERATED; PRESERVED WITHOUT SUGAR.

COUNTRY.	Quantities.		Values.	
	1885.	1894.	1885.	1894.
	Lbs.	Lbs.	£	£
Russia - - -	411,422	*	3,106	*
Sweden - - -	383,378	*	1,869	*
Germany - - -	88,012	*	1,183	*
France - - -	1,979,687	3,360,412	29,056	38,169
Portugal - - -	225,388	265,516	3,000	3,652
Madeira - - -	147,154	*	1,432	*
Spain - - -	1,587,673	2,164,415	15,163	22,897
Canary Islands - -	173,492	*	1,628	*
Italy - - -	15,169,856	26,509,873	91,708	79,035
Austrian Territories -	*	390,597	*	1,820
Greece - - -	104,590	391,325	1,304	2,764
Morocco - - -	200,616	*	1,738	*
United States of America -	1,880,968	6,255,046	31,693	75,843
Other Foreign Countries -	201,349	609,731	2,509	4,895
British East Indies - -	780,419	2,300,418	10,618	20,423
Australasia - - -	13,404	169,184	836	2,593
British North America -	12,913	438,881	231	4,714
British West Indies - -	1,025,484	†	7,539	†
Other British Possessions -	10,132	24,496	67	206
Total - - -	24,375,937	42,874,894	304,180	252,011

* Included with "Other Foreign Countries."

† Included with "Other British Possessions."

It is curious to note that the importation from the United States has increased from 1,860,968 lbs. to 6,255,046 lbs., and that from Italy from 15,169,856 lbs. to 26,509,873 lbs. The great increase in the case of the United States is due to the extension, particularly in California, of the practice of evaporating or desiccating apples, plums, peaches, nectarines and apricots by means of solar or artificial heat.

Besides the fruits preserved with and without sugar imported into Great Britain, as shown in the tables given above, there are importations of dried, or preserved, fruits from France, Germany, Austria, and the United States of America, chiefly consisting of prunes and plums dried and preserved, sent in bottles, boxes, and fancy packages, on which a duty of 7s. per cwt. is charged. These as entered for home consumption amounted to 44,491 cwt. in 1885, and had increased in 1894 to 73,134 cwts. The greater part of this increase was due to larger imports from France.

The total quantity of preserved and dried fruit of all kinds imported into Great Britain in 1894, was 852,720 cwts., valued at 647,768*l.*, as against 492,423 cwts., valued at 506,986*l.*, in 1885.

This does not include figs, currants, and raisins, but does include the fruit that would compete with that grown in Great Britain, such as apples, plums, and damsons, and it is considered that these constituted a large proportion of the 852,410 cwts.

As noticed above, the importation of "rings," "chips," and "quarters" of apple, with which may be included other forms of dried or desiccated apples, comparatively modern inventions, is increasing considerably, and those in touch with the United States know that every effort is being made there to extend this business as well as that in dried plums, peaches, and apricots. In the Australian Colonies, much attention is being paid to fruit preservation of this character, and in France, Germany, Spain, Portugal, and Italy, improved processes have been adopted in recent years to prepare and preserve fruit without sugar for the English markets.

An effort should be made by British fruit-growers to obtain part of this trade for themselves. Attention has been called to its advantages, first by Mr. D. Pidgeon in the *Journal of the Royal Agricultural Society of England*, published in October 1888, in which it is said:—"A bushel of green apples weighing about 50 lbs. can be dried at a cost of from 6*d.* to 7*d.* The total cost of the dried product is from 3*d.* to 5*d.* per lb., and the average selling price from 3½*d.* to 6*d.* per lb. One bushel of green apples produces about 6 lbs. of dried apples. One lb. of coal is consumed in evaporating enough green fruit to yield 1 lb. of dried fruit." Mr. Pidgeon gives descriptions of drying or evaporating machines.

Mr. Badger, F.R.H.S., brought the subject of American fruit evaporators before the Royal Horticultural Society in 1890, and again in 1892, and stated, in a paper read before the Society, that

he was firmly of opinion that the evaporator offered the best solution of the problem how to prevent the loss which invariably occurred in this country whenever an unusually good crop of fruit was produced.

There are several kinds of evaporating machines constructed upon the same general principles, and differing merely in details. These have been exhibited at the Shows of the Royal Agricultural Society of England, and at other shows. Some are German, others are American inventions. Some of the machines are upright with long vertical cases; others have long horizontal cases or trunks, but they all contain a series of wire trays arranged one above the other, upon which the fruit is placed.

These machines have three parts, the stove or furnace, the hot air chamber, and the fruit drying chamber. In the upright or vertical machines, the stove or furnace is at the bottom, and has doors arranged so as to regulate the draught. The heated air passing into the chamber is raised to a uniform temperature by means of dampers, and is carried into the drying chamber in which the trays with the fruit upon them are ranged one above another.

In the horizontal machines the heated air passes from the hot chamber in which the heat is generated into inclined or horizontal distributing flues. There are two flues, one ascending, the other descending.

The trays upon which the fruit is laid for desiccation are made of wood and wire-netting, and of various sizes and patterns. Two, three, or four trays are put in at once, according to the description of fruit to be dried. The machines may be worked out of doors or in a building, though it is better that they should be under cover. The smaller machines can be easily moved from place to place, but care must be taken to place them in sheltered spots and where the draughts for the distribution of the heat may be properly regulated. Large machines must be in buildings. It is convenient that the furnace should be set below the basement, as this entails the lowering of the trunk or case, thereby lightening and lessening the work connected with moving the trays. There should be plank tables fixed near the machine for putting the trays upon and for preparing the fruit. It is most important that the ventilation of the building should be good so as to carry off quickly the steam and reek. Oast-houses might probably be utilised before and after hop picking for this purpose in hop-growing counties. In fruit drying, as in hop drying, everything depends upon the temperature and its equable and proper maintenance and regular distribution. It varies between 180° to 220° Fahr. according to the kind of fruit and the kind of machine, as will be shown later. If the heat is sufficient and is equally maintained, certain chemical changes occur. The albumen should be coagulated just as the white of an egg is when boiled, and glucose or fruit-sugar is formed by the combination of the starch with the water from the fruit, and a slight skin is raised over the fruit which preserves it. The fruit jelly, known as

pectine, is left in the cells or on the surface. It is claimed for this process that the "truly evaporated products are rendered more wholesome, more digestible, more indestructible, and are thereby made more valuable not only as articles of food, but because they are not subject to deterioration and loss." Besides this, it is urged that there is not nearly so great a loss of valuable properties in the evaporation of fruit by these machines as in drying by sun heat, or in other ways.

Evaporating machines are of many sizes and prices to suit small and large fruit-growers. The cheapest costs about 3*l.* 3*s.*; it has no stove, but is made so as to go upon an ordinary kitchen range in the same way as a stock pot. It has a hot chamber and nine wire trays, and has been found to be well calculated to evaporate the fruit of a good sized garden. It is easily worked by the cook or housekeeper, and all kinds of fruit and herbs may be evaporated with this little machine. From 20 to 30 lbs. of fruit can be evaporated by it in 12 hours. Other sizes of the upright machine can be obtained at prices ranging from 5*l.* 15*s.* to 30*l.*, the evaporating capacity ranging from 48 lbs. to 420 lbs. of fruit in 12 hours, with a coal consumption of from 15 to 80 lbs. Little space is taken up by even the largest of these machines, which weighs only 16 cwts., and is 8 feet high. Their management is simple and easy. A person of ordinary intelligence can work them after proper instruction.

Of the horizontal machines there are many sizes also. The smallest costs 6*l.* 10*s.*, being suited for household use. For small fruit growers, a machine is recommended which costs from 19*l.* to 26*l.* 10*s.*, according to the number of trays. With this, from 400 to 500 bushels of apples can be dried in 24 hours, with about 80 lbs. of coals. Another machine suited for larger growers will dry 1,100 lbs. of apples in 24 hours, with about 200 lbs. of coal. This costs from 44*l.* to 60*l.* There are other machines, costing from 52*l.* to 150*l.*, capable of drying from 1,600 to 3,000 lbs. of fruit in 24 hours. These are suited for very large farms. There are some complaints as to the expense of these machines, but it seems that a machine, costing from 19*l.* to 26*l.* 10*s.*, which can dry 400 bushels of apples in 24 hours is not very dear. But it is thought that fixed machines could be put up on fruit farms upon the lines of the best evaporators, at a very reasonable cost.

In some of the southern States of America a serviceable fruit dryer is used by small growers, consisting of a tin hot water vessel from 4 to 5 feet long, 2½ feet in width, and 3 or 4 inches deep, and having a tin funnel soldered on to the top. One end of this is placed on an ordinary large kitchen range, the other is kept up by a leg or trestle, water is poured in to partly fill the tin, and steam is generated by the heat of the stove. The fruit is spread evenly over the surface of the tin, and it is said that it is evaporated in two or three hours even with a moderate fire.

Most ingenious and handy machines, worked by manual or steam power, for paring, coring, and slicing apples are also to be obtained at very cheap rates, suitable for small and large holdings. By the turn of a wheel an apple is pared, cored, and sliced, ready for evaporation. There are machines also for cutting apples into quarters and extracting the core, as well as for slicing them into "ringlets." It is said that a woman with one of the paring and coring machines can pare and core more than 2½ bushels of apples in an hour. There are also ingenious little machines for stoning cherries and plums.

Upon many fruit farms in America, fruit is evaporated by the grower. Sometimes he evaporates that which is not of first grade, sometimes that of the best quality. This depends upon circumstances of price and the extent of the crop. There are also many factories supplied by producers with fruit for evaporating. In some cases, the fruit is bought upon the trees by the factory agents, in order that the important processes of picking and grading may be supervised.

Whether for table or for evaporating purposes, apples are always picked most carefully and graded. And for the best quality of evaporated fruit, known as white fruit, it is necessary to select the best apples. The flavour and general quality are not altered by evaporation, and it would be manifestly wrong to evaporate good and indifferent fruit together.

Apples are evaporated whole, with the cores taken out, in halves, in quarters, and in "chips," or "ringlets." Whole apples, halves, and quarters are put on the drying trays as closely together as possible, but in single layers. Slices, chips, and ringlets are laid flat, or packed closely together in rows. In the latter form, longer time is taken to arrange and dry the fruit, but nearly three times the amount can be put into a tray.

When apples are cut, there is, as is well known, a rapid oxidation from the air causing blackness. The cut fruit is therefore put as quickly as possible into the evaporator on the packed trays. But the general practice is to put the packed trays first into a blanching chamber and expose the fruit to the action of fumes of sulphurous acid gas, which blanches it. In large establishments, the trays are put on a four-wheeled truck holding about 20 trays, upon which they are run to the sulphur chamber. This is a large square iron case made so that the trays can be easily pushed into the grooves on both sides of it, and there tightly, almost hermetically, fastened. Sulphur is burned in a stove at the bottom of the chamber, the fumes being distributed through the trays by the draughts beneath. The fruit is exposed to the sulphurous fumes from 12 to 25 minutes, after which the trays, which fit into the sulphur chamber as well as into the evaporator, are taken out and put as quickly as possible into the evaporator. The sulphur prevents the discolouration of the fruit, improves its appearance, and does not affect its flavour.

Sometimes after the apples are cored, halved, quartered, or sliced, they are dipped into a salt and water solution composed of 1 pound of salt to 20 gallons of water. They are then put into the sulphur case. Another method is to put the prepared fruit into salt and water immediately before it is evaporated, without exposing it to sulphur fumes. But this does not bleach, or blanch, it, like sulphur.

When the case or trunk of the evaporator is heated to about 100° Fahr. the trays are put into it. In some machines, the trays are raised and lowered by mechanical contrivances, in others, they are pushed in and pulled out by hand. Trays of fresh fruit go in first at the bottom in the upright machines and are gradually worked up to the top. In the horizontal machines the tray is first placed at the lower end and moved slowly to the upper end, it is then finally passed to the lower end and taken out.

With reference to the temperature and time necessary to evaporate fruit, much depends upon the sort of apples. Some require three hours, some four hours, and others longer. It is therefore essential not to mix different varieties of apples. Whole apples take more time than quarters or chips and rings. The best apples for evaporating are those with a sharp flavour, particularly cooking apples.

When the trays are all in position the temperature has to be regularly distributed and maintained at the point which experience has shown to be requisite according to the variety of apples, and the product wanted. This point in the case of apples ranges between 180° and 212° Fahr. It would be about the same for pears, but considerably more for plums and damsons.

It is the practice with some persons after the fruit has been drying for two hours or so, to turn the contents of two trays into one, which can be easily done as the fruit shrinks so much. The empty tray is filled again, and with care the capacity of the evaporator is in this way largely extended without injury to the fruit.

When the fruit is fully evaporated it is put into small lumps in a dry room, in order that it may "sweat." It is kept in this state from one to three days, and turned over from time to time to prevent it from becoming overheated and discoloured.

In some parts of America, the evaporated fruit is put into a dark room to keep moths from laying eggs upon it. It is placed in bins 4 ft. wide, 6 ft. long, and 18 inches deep, which are filled to about two-thirds of their capacity. The fruit is turned over occasionally with a wooden spoon. The greatest care is taken to keep the fruit in a dry atmosphere, otherwise it would be attacked by mould and be spoiled. In some districts all the openings of the sweating chambers are covered with fine gauze to keep out moths and beetles.

After this process of drying is complete, the best fruit, or "white fruit," is packed in wooden boxes containing 50 lbs. The lid is tacked down first, the bottom of the box being fastened on when it is full. The box is placed with the lid downwards, and is lined with paper. Over this a sheet of thick white paper is laid, and a layer of selected fruit is put upon it. The box is filled tightly and evenly, considerable pressure being employed to effect this. Good white paper is placed over the last layer, and a lining of soft paper. The bottom is nailed on, and the box is then turned over and branded on the top.

Inferior fruit, including small apples, which have not been pared or cored, but merely cut into quarters and evaporated, are put into barrels containing about 250 pounds of fruit, without any special attention. They are styled "chips." A great quantity of this is consigned to France, where it is used for making cider, alcohol, and vinegar. This fruit is termed "*Pommes amirales*." For cutting these common and small apples into quarters a machine is used with which a woman can quarter from 19 to 28 bushels per hour.

In the manufacture of "white fruit," that is the best bleached, whole, half, quarter apples, chips, and rings, there is a refuse of core and paring amounting to 20-25 per cent. This is utilized in America for boiling down for jams or jellies, and the pulp is sold for pig food, being steamed with grain.

Marmalade is occasionally made from the parings and cores in America. In France, much marmalade is made from these by boiling them in copper vessels with from four to six ounces of sugar per lb., and adding various flavourings. This sells in France at about 5d. per lb. The cost of making is 2½d. per lb., and it is said that 85 lbs. of parings and cores will make from 22 to 27 lbs. of marmalade. This manufacture would pay much better in England. Sugar is far cheaper than in France, and a sweeter or more saleable marmalade could be made; the same applies to jams and jellies made from the parings and cores.

Concerning the profit to be made from fruit evaporation, it would seem that English producers should be able to compete successfully with those in America, as labour is cheaper. Everything depends upon the price of the fresh or raw fruit; if a grower cannot get from 1s. 6d. to 2s. a bushel, clear of all expenses of carriage and commission, he had better evaporate it. In abundant seasons like those of 1893 and 1895, when many apples were almost unsaleable, evaporation would change a dead loss into a profit. The "sub-acid Goffs" and other common varieties of apples are well suited for evaporation. Many of them were knocked off the trees this year, and sold for next to nothing.

A bushel of fresh apples gives from 6 to 7 lbs. of best "white" fruit and 5 lbs. of refuse. The price of the former would range between 3½d. and 5d. per lb., and the latter from 1½d. to 2½d. per lb., if properly managed. This does not, it is admitted, represent a great profit, but it is far better than the loss entailed by

consigning fruit to glutted markets, or by selling the apples at home at miserably low rates.

Pears are evaporated in America, chiefly those not fine enough or large enough for sale as fresh fruit. They are pared, but not cored, and put into the trays in quarters, or, if small, in halves, having been first exposed to sulphurous fumes for a few minutes. The temperature at which they are evaporated varies between 176° and 212° Fahr. They take rather less time than the apples, but they are packed in the same manner.

Plums and damsons are evaporated in enormous quantities in America, especially in California, where this industry has increased lately with rapid strides. Many are still dried in the open air, but drying with evaporators is becoming general, even in the fine warm climate of California, as time is saved, and all risks of weather avoided.

When plums and damsons are selling in England at the ridiculously low prices obtained in the seasons of 1893 and 1895, it would pay well to evaporate them. The same machine will dry this fruit, as well as apples, pears, peaches, apricots, cherries, and all kinds of vegetables. The stones are not taken out of the plums in America. The process is the same as that described above for drying apples, except that the plums are placed in wire baskets and dipped in a solution of 8 oz. of carbonate of potash to 30 gallons of water. The light-coloured plums are sulphured, and put into the evaporator. Dark-coloured fruit is not sulphured. The temperature should be rather higher than for apples, and the time required for drying is longer. When they are evaporated they are put into bins in a dry place, and stirred to prevent heating, precautions being taken to keep moths away. They are then packed carefully into boxes. It takes 2½ lbs. of fresh plums or damsons to make 1 lb. of evaporated fruit, of the value of at least 4d. per lb. Assessing the fresh fruit at 1d. per lb., and adding 1d. per lb. for the expenses of evaporation, there would be a profit. One penny per lb. for the fresh fruit represents 4s. per sieve or bushel. Thousands of sieves did not fetch this in the seasons referred to, and the charges for carriage and commission were deducted from the price made.

Cherries are easily evaporated; 100 lbs. of fresh cherries will give about 18 lbs. of evaporated fruit. Sometimes the stones are left; sometimes they are taken out by a little machine. The best eating cherries are not good for evaporation. Those are best which have a sub-acid flavour, as the Morello, the Kentish cherry, and the Flemish. The cost of evaporation is about 1d. per lb., and the dried fruit is worth from 4d. to 6d. per lb. Fresh cherries of the best kind for evaporating generally make from 1½d. to 2½d. per lb. clear of expenses, and it rarely happens that there is a glut of this fruit.

Until recently, stoves were always used for fruit drying in France. Now there is a tendency to use evaporators upon the

American lines, and to dry apples in wholes, halves, quarters, chips, and rings. The French fruit growers say that they may as well supply their own country with these things as to go to America for them.

Fruit growers in the Colonies have also made a move in this direction, and are using evaporators somewhat extensively. In the "Agricultural Gazette" of New South Wales for December 1894, published by the Department of Agriculture, there is an interesting paper on "Canning, Drying, and Preserving Fruit," in which the use of evaporating machines is advocated, and the following remarks are made:—"Fruit drying, instead of, as at present, being practically unknown, should be a great and paying industry, and instead of our having to import dried fruits to the extent of over 100,000% a year, we should be able to supply all our own wants and have a good surplus for export."

Fruit evaporation is extending rapidly in Germany, where there is a desire to obtain the trade in dried fruits which is at present largely in the hands of American exporters. There has been a scare in Germany as to the poisonous character of fruits dried on wires made of zinc, and one municipal authority has issued an order prohibiting the sale and purchase of American apple slices dried on zinc wires.

As has been shown, fruit evaporation does not require much capital, knowledge, or labour. The profit, it is admitted, may not be large, but a decided profit can be obtained, and as fruit consumers come to appreciate the usefulness and value of this evaporated fruit, which retains all the flavour and quality of fresh fruit, and may be kept for a long period and purchased so cheaply, its sale will largely increase. Housekeepers generally do not realise that they can have an admirable and inexpensive apple tart by putting some of the rings into crust, without any paring and slicing. Jam manufacturers like evaporated fruit better than pulp as a base for jams and jellies. Producers could evaporate fruit for this purpose in seasons of abundance, and keep it, as pulp is kept, until it is wanted. It may be used for cider and for marmalade, as in France, and the evaporated refuse can also be employed for cider as the base of other beverages, or for vinegar.

If it pays fruit producers in America to treat fruit in this manner for export, it may be assumed that it would equally, or better, pay fruit growers in Great Britain if they brought the same energy, industry, and intelligence to bear upon the various processes connected with the evaporation of fruit.

It is the decided opinion of numbers of the leading firms of grocers in this country that fruit evaporation would pay British fruit-growers, and should be systematically adopted by them. These firms, who are merely distributors of produce, have no special interest in advocating this beyond the wish to benefit their own countrymen. One of these firms has pointed out that in 1893, when many apples were wasted because there was no

sale for them, the price of evaporated apples imported from America was from 45s. to 50s. per cwt. in consequence of a short apple crop in America, and they see no reason why apples evaporated in England should not take the place of those imported from America. The matter is now being mooted by Technical Education Committees in fruit-growing districts, but there appears to be a difficulty in getting skilled demonstrators to give lessons in evaporation.

RECENT AFFORESTATION WORK IN FRANCE.

The administration of the forests of France, which cover 17·8 per cent., or rather more than one-sixth of the total area of the country, has always formed an integral part of the Department of Agriculture. Monsieur E. Tisserand, the present Director-General of Agriculture and *Conseiller d'Etat*, traces, from the times of the *Missi Diminici* of Charlemagne, who were the prototypes of the travelling inspectors of to-day, to the time when he assumed charge of the Department, the progress of the statistical reports which the Survey (*Cadastre Parcellaire*) of 1808-1847, has made so instructive, and shows how important a part the charge of the forests plays in the agricultural history of the country.

At present, forest administration constitutes a sort of *imperium in imperio*, the *Directeur des Forêts* being permitted a free hand in carrying out the work of his Department, but its general policy being shaped, and its reports issued, under the approval, and with the sanction, of the Minister of Agriculture.

It must not, however, be argued from the above statement, that the Government has the entire, or even the principal charge of the forests of the country. As a matter of fact, the State actually owns only one-tenth of these forests, and exercises supervision, more or less strict, over less than one-third. In theory, indeed, the French Government can, and in former days did, interfere to prevent private proprietors from so working their forests as to lay bare the sources of streams, or the slopes of mountains, or to do anything else likely to injure adjoining property; but with a more general and clearer perception of the value of forests to agriculture, the necessity for this interference on the part of the State has passed away, and the divisions of the forests of France, at the present time, are as under:—

65 per cent. the property of private proprietors, who work them as they please.

25 per cent. the property of the communes, or public bodies, in part only subject to forest *régime*; leaving a balance of 10 per cent. to represent forests, which form the exclusive property of the State.

This division means, in brief, that it is only in the Government forests, and in a very small portion of those belonging to the communes, that the two operations which constitute forestry, viz., conservancy, or the rearing of trees to full maturity, and reproduction, or the maintenance of a rotation of forest crops, are systematically taken in hand. In the other forests the trees are cut as required, or whenever they have reached their most marketable stage in the particular district. And the effect of this is, that while the supply of small wood for pit-props, vine-

poles, and agricultural purposes, is commensurate with the demand, there remains a necessity for the importation of larger timber. In France, therefore, the consumption of timber largely exceeds the production. This is perfectly patent to, and recognised by, the authorities, who foresee, in such a state of matters, a time when the future sources of the supply of timber will be a burning question for themselves as well as for other nations. For while the demand for timber by the world at large—a demand which is not lessened by the employment of iron and of steel—is greater than the yield, the application of the term “inexhaustible” to the present sources of supply is obviously inadmissible.

The State forests comprise, as has already been stated, one-tenth of the forests of the country. This is equal to 1,089,096 hectares; 892,827 being forests properly so-called, and 196,269 being lands as yet unproductive. But this proportion is not a stationary one. For the Department, in addition to the careful working of its own forests, is further charged with a two-fold and onerous duty, of extreme practical utility, in the interest of the public good. And to the discharge of this duty its present energies are largely devoted. It comprises new and large measures of afforestation:—

- (a.) To arrest the continual encroachment of the dunes or sandhills.
- (b.) To provide remedies against the floods and torrents periodically caused by the former excessive fellings of trees on the mountain slopes.

It thus acquires every year new lands, but these lands not only bring in no revenue whatsoever during the first years of their acquisition, but are further the cause of large expenditure for superintendence, and the necessary outlay for planting. If, however, they yield no revenues, they save many millions of francs every year, by protecting the roads, villages, cultivated fields, and vineyards from destruction by shifting sands, avalanches, land-slips, and mountain torrents. The Forest Department acts thus as the unpaid representative of the common interests, and it is not possible to measure the value of its work to the nation by the figures which a purely financial statement of revenue and expenditure would disclose.

The Decennial Reports for the 10 years ending 1882, showed that in these and the 10 years immediately preceding, the area of the uncultivated lands in France had been reduced by 698,272 hectares, of which 327,653 hectares (818,632 acres), were reclaimed from the sandy wastes of the adjoining departments of the Landes and Gironde. It is unnecessary to repeat what has been said elsewhere,* as to the enormous capital value which has thence accrued. But it is needful to observe here, that these important reclamations were only rendered possible by the action of the Forest Department, which has, in the last few

* Transactions of the Surveyors' Institution. Paper, 210; No. 346.

years, created in the former district 58,100 acres, and in the latter 47,877 acres of plantations, chiefly of the Maritime Pine (*Pinus pinaster*), a tree which, exacting little in the way of soil, yields a wood largely used for pit-props, telegraph poles, and, in its more mature state, for more lasting purposes, and also a resin of high market value. This resin is extracted in two ways. Towards the age of 20 years, only from 600 to 700 trees are kept per hectare, and the resin is extracted “à mort”* from the 200 trees or so, which will disappear in the next clearing, five years later. At 25 years this operation is repeated, after which the resin is extracted “à vie”** from the trees which are intended to stand to the age of 60 and 80 years. As yet, of course, these plantations are not at their full productive height, as will be seen when the question of finance is dealt with, but they form a reserve of valuable and yearly augmenting capital, which is inherent not only in themselves, but in the cultivated land to which they form the protecting barrier against destruction.

Their initial cost is doubtless very considerable, and, depending upon the difficulties to be overcome and the area of the plantation—both factors of no small moment—may even amount to 500 francs per hectare, or say 8*l.* per acre. For, in addition to the ordinary costs of planting, trenches must be cut at a distance of from 25 to 30 metres, which adds, say 40 francs to the hectare, and the seeds of the pine, which are sown with an admixture of gorse and broom, necessary to fix the sand, must be covered with branches planted in the ground, which require to be renewed every four years. When oaks, which, contrary to possible expectations, succeed very well in this soil, are planted, the heath has in addition to be removed, and holes made for the reception of the acorns. With the creation of woods, however, it is, as with other enterprises—“the first step which costs”—and in answer to questions put by the Forest Society of Franche-Comté and Belfort in 1892, as to the rapid creation of forests over large surfaces, it was proved that successful results had been obtained, by the use of the plough, by a cross-cut raking of the harrow, and even by broad-cast sowing. The afforesting of arable lands left abandoned by agriculture is naturally much more easy, the soil having been in effect prepared for the reception of the seed, and the results being more rapid and certain. Of the rapid conversion of a poor piece of agricultural land placed by the survey in the fourth class, into a paying forest, the following instance may be given, although it was the work not of the Government, but of a private proprietor.

A small piece of 2.12 hectares, or a little over 5 acres, of cold marly *lias*, and cultivated under bad conditions, was planted in 1845. The trees used were oak, mixed with ash, beech, and birch: a few poplars and wild cherry trees sprang up spontaneously. A first clearing in 1864 yielded 33 stères,† which brought in 167

* “À mort,” or, exhaustively; “à vie,” or, proportionately, having regard to the future growth of the tree.

† A stère or cubic mètre = 35½ cubic feet.

francs per hectare, clear of all working expenses. In 1879, a further and more extensive clearing was made, the product of which, 142 stères, sold for 687 francs per hectare. After that there remained standing about 100 stères per hectare, represented principally by clean grown oak stems of 12 mètres in height. The result then was a mean product of eight stères of wood per hectare annually, derived from land which was before practically worthless.

If on the south-western coast of France the efforts of the Forest Department are thus vigorously called into action to resist the encroachment of the dunes, they are no less imperatively demanded, and no less heartily responded to, in the extreme south and south-west of her borders, to resist the ravages caused by floods pouring down on the fertile valleys and plains which underlie the denuded slopes of the Pyrenees and of the Alps. In some sort, indeed, these two undertakings, both of admitted and pressing necessity, but costly in their inception, and in the early stages of a necessarily unremunerative character, clashed with each other. Thus, the law of 1860, enjoining the afforestation of the mountains, which was called into operation by the disastrous inundations of 1856, had the misfortune to appear at the same time as the law ordaining the reclamation of the soil in the Landes and Gironde, and consequently remained for some time a dead letter. But the incessantly recurring floods, and the growing depopulation of the parts of the country affected by them, made the resumption of the question not a matter of choice, but of urgent necessity. It was estimated that one flood of the Herault and its affluents—a river whose declivity is said to be a 100 times more steep than that of the Rhône—caused damage to the quality of the wine yielded by the submerged vineyards to the extent of no less than 15,000,000 of francs (600,000*l.*). Statistics at the same time proved that the population had decreased in the Basses Alpes and Hautes Alpes alone by 47,335 persons in 45 years, so that the number of inhabitants in the latter per square kilomètre was only 18, while the average of the whole of France was 73 per square kilomètre. It was, as M. Surell described it, “une œuvre de salut, une question d’être ou de n’être pas.”

The law of 4th April 1882 was then passed, which gave powers for the immediate taking up first, of preventive measures, and, second, of curative measures, with powers of coercion. For the mountaineers—here, as elsewhere, the great offenders—did not hesitate, by the unrestrained grazing of their goats, to destroy wood worth 100 francs for the sake of 50 centimes worth of cheese. And the carrying out of this law was confided solely to the Forest Department, and not, as might have been expected, to the Department of Public Works. The work is being carried out in 31 départements, embracing nearly two-fifths of the soil of France, on which already no less than 138,762 hectares have been, or are being, reafforested since the passing of the law. The regulation

of the currents of the rivers not only releases the rich valleys of the low country from the fear of inundation, but permits the extension of cultivation by an easily controlled system of irrigation in parts of the country which have been hitherto unproductive, and by the retention of all sorts of materials brought down by the Garonne, to take one out of many examples, prevents the silting up of the port of Bordeaux by the accumulation of sand-banks, a danger which formerly menaced it.

The trees found most useful in reafforesting the slopes of mountains are beech, the saplings of two to three years old being brought in balls, which succeed well up to 1,000 or even 1,800 mètres in height, with oak at the lower altitudes. Above the region of the beech the *Pinus sylvestris* (which has proved itself more capable of resistance in high latitudes than the black or Austrian pine at first extensively used), the *P. umbra*, *P. uncinata*, the larch,* and the spruce fir have given satisfactory results. In relatively warm lands the Maritime Pine for the silicious soils, and the pine of Aleppo for the calcareous, conjointly with the oak and the ilex, have been successfully tried.

Imported trees, such as the Atlas cedar, the Ailanthus, the Robinia (or False Acacia), from which great things were expected, have not proved themselves so hardy as could be desired. Another example this of the fact which an exceptional winter like the last brought home to ourselves, viz., that, however desirable and instructive it may be to have a variety of foreign species in a pinetum or botanical garden, financial considerations do not admit of the employment of any but indigenous trees when severe conditions of climate and of temperature have to be faced.

The cost of the extinction of torrents by plantations is, like that of the reclamation of the dunes, by no means a small one, and is not to be taken as an operation of a purely financial character *per se*. “Barrages,” which are often costly embankments of solid masonry, are found necessary to prevent the erosion of the river-banks, and there are various auxiliary works which swell the cost.

The mean price of re-afforesting 94,730 hectares has been found to be—

282	francs per hectare in the Alps,
176	” ” ” Cevennes, and
237	” ” ” Pyrenees.

But the mean price of re-afforesting the same number of hectares, including all sorts of supplementary works, barrages, dams, channels, &c., has been found to be—

576	francs per hectare in the Alps,
263	” ” ” Cevennes, and
445	” ” ” Pyrenees,

* In making inquiries as to the limit of the forest zone, it was proved that in 1892 the 28th Battalion of the Alpine Chasseurs, then employed on a strategical road, blew up, in a trench they had opened at a height of 2,780 mètres, several trunks of larch, the relics of an ancient forest.

giving a mean of 476 francs per hectare as the cost of restoring the slopes of the mountains to their former condition.*

It may be remarked in passing that there is no reason why under ordinary conditions a hectare of land should not be planted for 100 francs, so that these two important works have imposed a pecuniary burden of nearly five times the ordinary amount upon the Budget of the Forest Department.

Putting the financial results in brief, the total production of the State forests in the year 1892 amounted in value to 26,153,600 francs. The average production per hectare, taking into account only the forests properly so called, was in material 3·046 cubic mètres, equal in money value to 29·29 francs per hectare, say 12 francs per acre per annum, or a little under 10s. This, however, is a mean value which is yearly altering for the better. The State forests, which have been for a long time under a course of systematic management, such as those in the Départements of the Nord, Vosges, Maine et Loire, &c., yield rather more than 5 cubic mètres per annum per hectare, or a money value of more than 50 francs per hectare, say 16s. 8d. per acre. And there are exceptionally fine forests, chiefly of sapin (*Abies pectinata*), for each forest has its own history and financial results, which yield far more than this. But the comparatively recent plantations of the Gironde and Landes, and the still more recent forest operations in the Basses and Hautes Alpes, entered upon, as we have seen, for reasons of policy, yield but little, and thus lower the average. It happens, moreover, that in the year 1892 the forest revenues were not fortuitously swelled, either by the cuttings which take place every three or four years, or by what are called "extraordinary cuttings," which are made when ordered. This will be recurred to later on, for it is very important, in estimating the value of the work of any Government Department, to regard the maintenance of capital value, as well as the showing of annual returns.

The forests belonging to the communes and public bodies occupy, as has been said, about 25 per cent. of the forest area of the country. This is equal to 1,917,630 hectares, which do not include such a large proportion of waste and unproductive lands as we have seen to exist in the State forests. They yielded in 1892 a revenue of 33,055,100 francs and, again, taking into account for the purpose of comparison only forests properly so called, we find that the yield per hectare was in material 2·594 cubic mètres, and in money value 17 fr. 89 c., a little over 7 francs per acre, or something under 6s. The superiority then of the returns of the State forests is well marked. The products, which they furnish, are at the same time more considerable and

* It is interesting to note that as soon as the young woods are planted nature resumes its sway, and covers all the intervening soil with a thick herbaceous growth.

† The communal forests.

of better quality. And this superiority is still more marked when we come to examine their composition.

By far the greater proportion of the State forests is made up of well-grown trees, or trees being carefully tended to maturity, simple coppice occupying only 2·5 per cent. of the whole area. In the communal forests, the exact opposite is the case. Coppice woods, treated in view of their eventual conversion into timber forests, occupy only 1 per cent. of their surface. This difference of composition is more clearly brought out in a series of maps attached to the Statistical Report on the forests for the year 1892, and published in 1894. The communes and public establishments aim at realising the whole of their available forest revenues; their financial position and their daily requirements make this a necessity. They cannot afford, or they cannot arrange, to forego the interest on outlay, which, like the creation or conversion of a forest, must necessarily be for some years unremunerative. And the consequence is that their only reserves of forests, which consist principally of pines, are on the mountain slopes of the Jura, the Alps, and the Pyrenees, in comparatively inaccessible situations. They possess scarcely any oak forests, this wood being used almost entirely in the earlier stages of its growth. Indeed, the insufficiency of the production of oak throughout France has been the not uncalled-for subject of a little pamphlet written by one of the inspectors of forests, who urges upon the Government, the communes, and the private proprietors, the great desirability of tending their oaks to maturity, in view of the future.

Nothing more forcibly strikes the inquirer into either the agricultural or forestal position in France, than the number of small proprietors. The greater proportion of the actual cultivators of the soil, to be strictly accurate 61·01 per cent., are proprietors, cultivating exclusively their lands, with the aid of their family, their household, and outdoor servants. Most of these have in addition their own forests, or rather coppice woods, and those who have not such woods already attached to their properties, are, under the exigency of the times, creating them. It is not surprising therefore to find that nearly two-thirds, or as has been said above, 65 per cent. of the forests of France are in the hands of private proprietors.

It is a noteworthy fact that while the prices of all agricultural crops have fallen in France within the last 20 years, although in a degree considerably less than in our own country, the price of firewood (oak) has not only maintained, but has even increased, its standard value, in these years.* Here, then, is a stable commodity, which is in France, moreover, a necessity of existence to help the struggling proprietor. And there are other uses outside his own household, and agricultural needs, to which the trees

* The average price in 1874 was 10 francs 58 cents. per stère, and in 1893, it was 10 francs 63 cents. per stère.

can be put. Of those, the most general are for pit-props and vine-poles, for both of which there is a steady demand. He has even been accustomed to plant trees in the ordinary rotation of crops, knowing how richly his arable lands are benefited thereby, and setting off his expenditure in planting, against what he would otherwise be compelled to spend in manure. And while it must be confessed that in his case, as in the case of the communal forests above mentioned, the trees are cut not when mature, but when they are most readily marketable, he yet maintains in the interest of his own future requirements, as well as in those of his successors, a fair proportion of woodland, which he manages on a regular rotation system—that is, portions are filled and renewed periodically. He is shrewd enough to know, and he has the experience of years to teach him, what kind of trees to plant, and where to plant them, and he can estimate the value of his plantations, at various stages of their growth, with as great, perhaps in these days with greater, certainty as any of his agricultural crops. He knows, moreover, that nature has herself established a balance between woodland, and cultivated land, which, neither in his own country nor in any other, can be disturbed with impunity.

Speaking generally, recent afforestation works by private owners have been carried out in the wake, and as it were under the lee, of the planting operations of the State. The afforestation works of the State, for example, interposed a barrier between the sea-boarded dunes and the inland country. Behind this barrier have arisen the plantations and woods of the private proprietors. In some instances, however, they have been forced into action on their own account. The price of wool has been lowered, as a result of importation from Australia and elsewhere, and lands which no longer pay as grazing grounds for sheep have been covered with woods. But this is by no means a rash or haphazard enterprise. The owner has seen by way of warning, for example, much of the district of the Sologne planted with the maritime pine, a tree which, however useful and valuable it is further south, was thus taken out of its habitat, and proved wholly unsuitable. And he has at his command geological and other maps which give him not only the soils, but the zones of the various trees, which he accordingly selects. His choice between agriculture and forestry is therefore an easy, or at any rate a clear, one.

The initial action and the initial success of the Government in afforestation matters have, as we have seen, interweaved the interests of the State, the communes, the private proprietors, and consequently the welfare of the rural population. There remains to consider, very briefly, joint action. It was not possible for the French Government to take in hand the works, imperatively called for, necessary to mitigate all the damage threatened by unrestrained rivers, whose sources had been laid bare by reckless felling. And the combined efforts of the Govern-

ment and the communes, and of the Government and private owners respectively, were thus called into vigorous action. Space forbids more than one example of each.

Up to 31st December 1892, 36,340 hectares were re-afforested in the Alps, Cevennes, and Pyrenees in the following proportions:—

Subventions furnished—			
By the Communes (proprieters)	-	1,068,244	francs.
By the Départements	-	1,180,561	"
By the State	-	3,193,159	"
			5,441,964

This was equal to a mean price per hectare of 150 francs—

Of which the Communes gave	-	29	francs
" Départements gave	-	33	"
" and the State gave	-	88	"
			150

At the same time and in the same districts, 27,176 hectares were re-afforested by the private proprietors and the State jointly at a cost of 3,089,948 francs, which was equal to an average cost per hectare of 113 francs, contributed in the following proportions, viz.:—The proprietors gave 72 francs, the départements gave 5 francs, and the State 36 francs.

GEORGE CADELL,
Late H.M. Indian Forest Department.

AGRICULTURE IN SPAIN.

According to a despatch received through the Foreign Office from Madrid, a collection of reports, contained in five bulky volumes, issued towards the end of 1891, constitutes the latest information with regard to agriculture in Spain. These reports show the state of agriculture from 1886 to 1890, giving the area of cultivated land in each province, the various systems of farming practised, and the amount and value of the produce of each crop.

The varying conditions of soil, climate, and accessibility in the different provinces of Spain render a satisfactory comparison between them difficult; but the characteristic features of each are given as follows:—

In Andalusia, farms comprise from 2,500 to 5,000 acres, and a triennial rotation of crops prevails; but although only a third part is sown annually, the farms are found to be expensive to work and the results are unsatisfactory.

In Badajoz and Caceres the three-course system with its fallows also prevails, besides which, portions of the large tracts of natural pasture in these provinces are occasionally ploughed up and sown with cereals at intervals of four, five, or sometimes ten years, according to the fertility of the soil.

In La Mancha and the two Castilles the triennial system is, owing to conditions of soil, to a great extent superseded by that known as "*año y vez*" (alternate years); the fallows are more limited, the farms less extensive, and the system of cultivation more thorough.

In Navarre, Aragon, and the eastern provinces, fallows almost entirely disappear. Irrigation is general, and farming is carried on with greater energy.

Finally, the arable land in the Basque provinces, Galicia, and Santander, comprises a great variety of soils, notwithstanding which, the subdivision of land and the damp climate, generally speaking, admit of a much more elaborate system of farming, so that in various districts two or three crops can be obtained from the same land in two years.

If to the variations of soil are added those of climate which prevail in different parts of the Peninsula and, consequently, the different degrees of productivity of the soil, the difficulty of determining what is the average production or the average quantity of seed sown per acre becomes apparent; and to the same factors must be attributed the different results obtained by apparently similar agricultural conditions in adjoining districts.

The most productive region, considering the crops as a whole, comprises Valencia, Alicante, and Barcelona, with some of the Cantabrian provinces where high farming is more or less extensively carried on. The poorest results are obtained in the central and some other provinces.

The following table gives the statistics of production of each crop:

Crops.						Annual Production. Average 1886-1890.
						Bushels.
Wheat	-	-	-	-	-	92,355,177
Barley	-	-	-	-	-	48,853,790
Rye	-	-	-	-	-	21,700,470
Maize	-	-	-	-	-	21,155,426
Oats	-	-	-	-	-	10,036,546
Rice	-	-	-	-	-	5,278,152
"Garbanzos"	-	-	-	-	-	3,275,868
Beans	-	-	-	-	-	8,758,656
Kidney Beans	-	-	-	-	-	4,580,824

The "garbanzo" is a bean closely resembling a lentil, and forms the principal food of the poorer classes. Horses and mules are largely fed on ordinary beans.

The acreage under cultivation is 33,726,568 acres. This includes the whole area of land under cereals and vegetables, comprising also fruit trees and vines, which in southern countries are not uncommonly grown with other crops.

The returns of wheat production vary from 21 bushels per acre in Alicante and Pontevedra, to as little as 4½, in Guadalajara and Toledo. The greatest quantities of wheat are produced in Burgos, Granada, Saragossa, and Zamora. The yield is greatly affected by irrigation, which art the Spaniards have inherited from the Moors, by whom it was extensively practised in the South. Its advantages are most clearly demonstrated in the case of wheat, as will be seen from the table below.

As regards other crops, barley is produced in large quantities in Murcia, Saragossa, and Huesca; rye, in Leon, Orense, Salamanca; maize, in Coruña, Pontevedra, Orense, Guipuzcoa; and oats chiefly in Caceres. Rice is grown only in the four Mediterranean provinces of Alicante, Valencia, Castellon, and Tarragona. In all cases the yield of cereals from irrigated areas is shown separately from the others, and the following table indicates the difference in yield due to sufficient water:—

Crop.						Yield (Bushels per Acre). Average 1886-1890.	
						From Unirrigated Lands.	From Irrigated Lands.
Wheat	-	-	-	-	-	6.38	20.52
Barley	-	-	-	-	-	15.89	21.01
Rye	-	-	-	-	-	16.70	22.12
Oats	-	-	-	-	-	15.85	24.16
Rice	-	-	-	-	-	—	60.35
Garbanzos	-	-	-	-	-	7.60	8.72
Beans	-	-	-	-	-	14.68	23.67
Kidney beans	-	-	-	-	-	13.51	21.96

The three-course (*tres hojas*) system of cultivation is adopted on a large scale in Castille, Andalusia, and Estremadura, and, in fact, wherever the area cultivated is too large for the population, the means of communication difficult, and fertilisers (manures, &c.) not easily obtainable. It consists in dividing the cultivated area into three portions, the first being cultivated whilst the other two are resting, one as "*barbecho*" (*i.e.*, being prepared for the following year's crop), and the third as "*posio*" (*i.e.*, employed only as pasture for cattle). Under this system each portion consequently only produces a crop every third year.

"*Año y vez*," or "crop and fallow," is adopted only on richer soils or in districts where implements and fertilisers can be easily procured.

An annual crop is only obtained on soils which can be irrigated and on small areas of land called "*huertas*." In some parts of Spain, where irrigation works (mostly constructed by the Arabs) allow of large extents of land being watered, cultivation is carried on by means of a system of rotation; but each landowner possesses and farms only a small portion. Such are the "*huertas*" or "*vegas*" of Saragossa, Granada, Valencia, and Murcia.

Peasant proprietors exist only in the above-mentioned "*vegas*," and in the neighbourhood of large towns (Galicia is to some extent an exception: many agricultural labourers emigrate from this province to South America, and on their return purchase a plot of land which they cultivate). The ordinary peasant in Spain either works for wages, which are very low, or rents a piece of land, which is usually larger than that cultivated by a similar class in France, but which produces much less. For instance, a man possessing a "*junta*" (pair of bullocks or mules) will rent from 7 to 17 acres.

Rents of course vary very much in different parts of the country. In the southern portion of the province of Ciudad Real, the northern part of Cordova, and in Caceres, it is paid either in grain or in money. If paid in grain, the land is let "*al tercio*," "*al quinto*," or "*en aparceria*." Under the first of these systems the peasant cultivating the land pays one-third of the produce; under the second, a fifth; while the "*aparceria*" is a mutual agreement, of which the conditions vary somewhat, between landlord and tenant. According to one form of the "*aparceria*," the landlord contributes the land and manure while the tenant provides the labour and seed. Rent is paid as a rule, not for cultivated land alone, but for arable and pasture land combined.

Rents in one district of Saragossa, to take an example, are about 8s. to 20s. per fanegada (1·637 acres) per annum. In the same district, the price of a sheep is from 2s. to 3s. 4d.; that of a goat from 1s. 8d. to 2s. 6d.

The accompanying table exhibits the number of domestic animals in Spain in the year 1891. The figures are, however, admitted to be incomplete.

NUMBER OF LIVE STOCK IN 1891.

Horses	-	-	-	-	397,172
Mules	-	-	-	-	767,928
Asses	-	-	-	-	753,914
Cattle	-	-	-	-	2,217,659
Sheep	-	-	-	-	13,359,473
Goats	-	-	-	-	2,534,219
Swine	-	-	-	-	1,927,864

The breeding of horses and cattle has recently deteriorated in Spain, which, instead of being able, as formerly, to improve foreign stock, is now largely indebted to England for the better class of horses, and to France for draught horses, while the country also imports sheep and cattle from Africa and the Canaries, and pork from America. It is said that horse breeding does not now yield a sufficient profit, owners of large breeding establishments realising at best but 1 or 2 per cent. on their outlay.

Elaborate statistics are given in the returns of the cattle sold in the markets of the country, and of the number slaughtered for consumption, but no details are supplied of exports and imports. Minute profit and loss accounts are given concerning the rearing of various domestic animals. The most favourable represent the profit on a cow, which has, say, a calf every second year. The value of these calves, sold when six months old, and of the cow's carcass when slaughtered at 10 years old, is put at about 8*l.* 15*s.*; the wages of a cow-man to look after two cows being about 1*s.* a day. Eight quarts daily is considered a fair average yield of milk, although it is considerably higher when a Swiss or Dutch cross is introduced. The attention of Spanish breeders is rather directed to bone and sinew; the production of animals strong to labour and of good fighting bulls, rather than milking qualities, being the object in view. A yoke of oxen usually sells for 22*l.* to 24*l.*, and up to 32*l.*; a three-year old bull is worth 16*l.* to 20*l.*, and a cow 10*l.* to 12*l.* The province of Madrid makes the rearing of fighting bulls a special industry; the dryness of the climate being particularly suitable, while the pasturage on the "*Sierras*" is good. Large numbers of Swiss and Dutch cows are imported to supply Madrid with milk, but the climate is not favourable to them, and it is not found to be a profitable undertaking. Large flocks of goats, fed on the rough pastures round Madrid, also supply milk to the town. These appear to be the most profitable animals to keep, paying in many cases cent. per cent.

WAGES OF AGRICULTURAL LABOURERS.

A Report,* recently issued by the Board of Trade, on the Wages of the Manual Labour Classes in the United Kingdom, contains some interesting information relating to the wages of the agricultural labourer.

In dealing with this subject, Sir Robert Giffen remarks that the same difficulty in obtaining wages in a statistical form that was found to exist in the case of domestic servants also applies to agricultural wages, the employment being scattered, and the employers numerous. The general effect, however, of the information obtained is that the extreme rates are between an average minimum of about 9s. 6d. in Ireland, and an average maximum of 18s., or thereabouts in Scotland—the general average being about 13s. This is for men only, and with great variations in different parts of the country.

In England, Dorset, Wilts and Berks stand lowest, with an average of 10s., followed by a large group of agricultural counties, including Sussex, Hants, Devon, Somerset, Essex, Suffolk, Norfolk, Hertford, Cambridge, Bedford, Buckingham, Oxford, Warwick, Worcester, and Hereford, at from 11s. to 12s. per week. The absence of any considerable industries in these counties no doubt tends to keep wages on a low level, the opposite effect being especially noticeable in the West and North Ridings of Yorkshire, Lancashire, Durham, Cumberland, and Westmorland, where there is a demand for labour in the mines and other large works carried on in or near these counties. The influence of a large labour market is also shown in the group of counties round London, though not in such a marked degree as in those districts where unskilled labour is much in request. Cornwall is an interesting example of the influence of one industry on another. The rate for farm labourers in that county is higher than in the neighbouring counties on account of the mining industry which is carried on there, while at the same time the wages of the miners are lower than in other districts where the mining industry is relatively of a more dominating character. The rates given in the following table for Scotland and Ireland are 18s. and 9s. 6d. per week, respectively, a very remarkable difference, which, however, corresponds with what has been already ascertained for similar classes of labour in these two countries. The difference, of course, is largely accounted for by the fact of Ireland being mainly an agricultural country, whereas Scotland in many parts is industrial. The returns do not show the occupations for which the rates are given, and probably some part of the difference might be explained by the class of work done as well as by the relative efficiency of the labour. But these points are not given in the following table, and their consideration is postponed until fuller information is obtained.

* General Report on the Wages of the Manual Labour Classes in the United Kingdom, &c. [C.—6889.] Price 4s. 3d.

AVERAGE RATES of WAGES of Agricultural Labourers in each County of England in 1880-1 and 1892-3, and approximate Number of Labourers in each County in 1891, with similar particulars for the whole of Wales, Scotland, and Ireland.

Counties.	Average Rate of Wages in 1880-1. <i>See Note.</i>	Average Rate of Wages in 1892-3. <i>See Note.</i>	Number of Agricultural Labourers of and above 10 years of age, according to the Census of 1891.
(1.)	(2.)	(3.)	(4.)
SOUTH-EASTERN:	<i>s. d.</i>	<i>s. d.</i>	No.
Surrey (extra Metropolitan) -	15 0	15 0	11,698
Kent (do.) -	16 6	15 0	35,049
Sussex -	13 6	12 0	23,926
Hants -	12 0	11 6	19,137
Berks -	12 0	10 0	14,880
SOUTH MIDLAND:			
Middlesex (extra-Metropolitan) -	15 6	—	5,302
Hertford -	13 6	11 6	15,580
Buckingham -	14 0	12 0	12,064
Oxford -	13 3	12 0	14,151
Northampton -	13 6	14 0	16,377
Huntingdon -	12 0	13 0	6,530
Bedford -	12 6	12 0	13,268
Cambridge -	12 6	12 0	21,021
EASTERN:			
Essex -	12 6	12 0	34,382
Suffolk -	12 6	12 0	33,643
Norfolk -	12 6	12 0	39,090
SOUTH-WESTERN:			
Wilts -	12 0	10 0	17,615
Dorset -	11 0	10 0	11,282
Devon -	13 0	12 0	25,126
Cornwall -	14 6	14 0	12,945
Somerset -	13 0	11 0	21,286
WEST MIDLAND:			
Gloucester -	13 6	10 6	14,585
Hereford -	13 0	11 0	8,726
Salop -	13 0	14 0	15,712
Stafford -	13 6	16 0	13,244
Worcester -	13 6	12 0	11,653
Warwick -	14 0	11 6	13,819
NORTH MIDLAND:			
Leicester -	*13 0	15 0	10,301
Rutland -	—	—	1,887
Lincoln -	14 3	14 8	39,223
Nottingham -	*16 6	15 0	12,028
Derby -	16 6	17 0	6,602
NORTH-WESTERN:			
Chester -	—	15 0	15,597
Lancaster -	17 6	18 6	23,489
YORKS:			
West Riding -	16 6	16 0	24,302
East Riding -	15 0	15 6	13,525
North Riding -	16 6	15 6	12,815

Counties.	Average Rate of Wages in 1880-1. <i>See Note.</i>	Average Rate of Wages in 1892-3. <i>See Note.</i>	Number of Agricultural Labourers of and above 10 years of age, according to the Census of 1891.
(1.)	(2.)	(3.)	(4.)
	<i>s. d.</i>	<i>s. d.</i>	No.
NORTHERN:			
Durham - - -	17 9	--	6,238
Northumberland - - -	16 6	17 0	7,087
Cumberland - - -	18 0	18 0	7,749
Westmorland - - -	18 0	--	2,626
MONMOUTH - - -	12 0	12 6	4,052
WALES - - -	14 0	15 0	38,632
ENGLAND AND WALES:			
Total of 10 years and above -	--	--	708,244
Deduct number of 10 years of age and under 20.	--	--	201,307
Total of 20 years of age and above.	13 11	13 4	\$506,937
SCOTLAND - - -	17 0	17 11	†55,889
IRELAND:			
Agricultural labourers and cot- tagers.	--	--	†120,631
Add three-fourths of general labourers.	--	--	†71,802
Estimated total number of agri- cultural labourers.	10 0	9 6	†192,433
UNITED KINGDOM -	13 2	12 8	†755,259

Note.—The rates of wages given in Column (2) of the above Table are, for the English Counties, deduced from a statement laid before the Royal Commission appointed to inquire into the Depression of Trade and Industry, 1885; for Wales and Scotland from Reports made by the Assistant Commissioners to the Royal Commission on Agriculture, 1879; and for Ireland from evidence given before the Select Committee on Agricultural Labourers (Ireland), 1884. The rates in Column (3) are taken from Reports made by the Assistant Agricultural Commissioners to the Royal Commission on Labour, 1891. The number of labourers in 1891 is taken from the Census of that year.

The number of agricultural labourers given in the Table for the several Counties of England is in excess of the number paid the rates stated, because the rates are for men, and the numbers in the Table include lads and boys as well as men. The numbers have been given to show approximately the proportion receiving the several rates,—it being assumed that the lads and boys will be the same per centage of the total number of labourers in all counties.

* Mean between the minimum rate in ordinary districts and the maximum rate in mining districts.

§ Exclusive of 744 estimated for the metropolis.

† Of 20 years of age and above.

‡ The Census states that there were 113,981 general labourers, “the majority of whom may be assumed to be agricultural labourers, although not having returned ‘themselves as such.’” Of this number three-fourths of those 20 years of age and upwards have been taken.

INTERNATIONAL STATISTICAL INSTITUTE.

CONFERENCE AT BERNE.

The fifth session of this Institute, was held at Berne, on the invitation of the Government of Switzerland, in the month of August last. Her Majesty's Government was represented by Mr. A. E. Bateman, C.M.G., of the Board of Trade, and Major P. G. Craigie, of the Board of Agriculture. The following passages are summarised from Major Craigie's report on the business of the meeting:—

The Institute continues to study what data might with advantage be collected by Governments, and the best methods of collecting them, endeavouring to secure some degree of uniformity in the presentation of the official statistics of the Governments of different countries, so as to render possible a legitimate comparison of the economic conditions of different States.

At Berne there were present 46 members of the Institute from the following countries:—Austria, Belgium, Denmark, France, Germany, Great Britain, Holland, Italy, Norway, Roumania, Russia, Switzerland, and the United States; and the increasing interest of the various Governments concerned, was attested on this occasion by the presence, in response to the invitations of the Government of Switzerland, of 21 official delegates chosen mainly from the ranks of the active members of the Institute, and representing 10 European States: Austria-Hungary, Belgium, France, Germany, Great Britain, Holland, Italy, Norway, Roumania, and Russia. The Republics of Argentine and Venezuela were also represented by members of the consular staff in Switzerland. Invitations were also as usual issued to representative officials of the federal and cantonal administrations:

The Institute was welcomed to Switzerland by an address from the Federal Minister of Justice and Police, whose remarks were responded to by Sir Rawson Rawson, K.C.M.G., the President of the International Institute, in a speech dealing with the questions coming under the purview of the successive conferences of previous sessions.

A general interchange of opinions and propositions was made in the successive sittings of the General Assembly, and the details of various suggestions formed the subject of further deliberation in the four sections under which the inquiries of the Institute were on this occasion arranged. The subjects allotted to each section were as follows:—I. Population, &c.; II. Commerce and finance; III. Property and agriculture; IV. Social and other questions.

From the agricultural point of view, the most important contribution was a report from the “Committee on Agricultural

Statistics and Landed Property," prepared in accordance with the instructions received in 1891 at the session at Vienna, by Dr. T. Pilat, of Lemberg.

Dr. Pilat based his claim for attention to the methods of agricultural statistics on the need for the closest investigation into the relative production and distribution of the soil, which was being felt in Western Europe, where an agricultural crisis had arisen, due to the vast development of means of communication, whereby every part of the world was now contributing its quota to the food supply of the great centres of population.

Many of the points necessary to understand the agricultural condition of each country were to be sought in information more of an economic than of a purely agricultural character, but in the domain of agricultural statistics proper it was urged there should be included statistics on the following nine points:—

- (1.) Of cultivation (arable land, gardens, vineyards, meadows, pasture, forests, water, uncultivated land, roads, railroads, canals, &c.).
- (2.) Of agricultural undertakings (number, size, and kind).
- (3.) Of agricultural labour.
- (4.) Of capital invested in agriculture (buildings, machines, domestic animals, &c.).
- (5.) Of land under different kinds of produce, and of the crops obtained.
- (6.) Of the produce of cattle.
- (7.) Of the cost of production, and agricultural revenues.

Confining attention to the fifth point, as the most important and urgent at the present time, Dr. Pilat noted the considerable extension of the available information collected annually in some states, and at longer intervals in others.

The main difficulty in securing accuracy in such returns is, roughly speaking, the varying degree of enlightenment of the rural population in different countries. The size of the farms (and consequently their number), upon which depend very much the system and machinery employed, is also a serious consideration.

It was agreed that the ideal system was that of England, under which schedules are annually issued to all agriculturists throughout the country; but in many countries the number of farmers capable of filling up the most elementary return would, it was feared, represent a very small minority of the population, and if this course were thus impossible, three alternative methods suggested themselves to Dr. Pilat, all three being actually in operation in various parts of Austria.

The first was, supposing the country to be split up into districts (the smaller the better), to ascertain the usual system of rotation throughout each district, and, further, to inquire what proportion of the rotation is usually devoted to each particular crop. These proportions having been ascertained for all the districts, a fairly accurate picture of the whole country would be obtained.

The second method consists in inquiring, from persons acquainted with the agriculture of their district, what proportion of the land is under each crop. The area of all the arable lands in the district, is then distributed amongst the crops, according to these proportions, and by adding together the areas under each particular crop in all the districts, the distribution of the arable land in the whole country is obtained. The districts should be as small as possible, and the difference in the systems adopted on small, medium, and large farms should be taken into account.

The third method consists in selecting farms, which could serve as types of the district in which they are situated, making an exact investigation into the acreage under each crop on these farms—distributing the remainder of the arable land in the district proportionally to these results. The smaller the districts, and the larger the number of types, the better would be the results; and there should be "type" farms for small, medium, and large holdings, the remaining farms being apportioned according to their proper class.

Dr. Pilat expressed himself strongly in favour of the third method, and the resolutions finally adopted were as follows:—

- (1.) The most effectual method of obtaining as exact a knowledge as possible of the areas under different crops would be an individual census from every agricultural holding.
- (2.) In countries where the farmers can be trusted to fill in the returns themselves, the collection of the data should be *annual*, while in countries where it would be necessary to employ special agents, it would be better to take a detailed census every tenth year, and restrict the annual inquiry to any changes in the areas under the principal crops only.
- (3.) Where it is impossible to obtain accurate information for the whole territory, as much as possible should be obtained concerning farms for which it could be got, or concerning local districts, and estimates resorted to only to supplement the data thus ascertained. These estimates should be made for small areas which present fairly uniform agricultural conditions throughout, and should be made separately for small, medium, and large farms.
- (4.) These estimates should be made by ascertaining exactly the areas under the various crops on a certain number of farms, and the distribution of the whole surface should be determined by generalising from these data.
- (5.) Inquiries into the acreage under the different crops should be made separately from those into the yield.

Major Craigie had intended to suggest an international agricultural return, limited to a few leading characteristic statistics, worked out per 1,000 of the population, but the absence of recent data in certain countries such as Belgium decided him to defer

the preparation of this table, which would have embraced a summary under the following twelve heads:—(1) Population of the country according to the latest estimate; (2) Total area of the country; (3) Total arable area; (4) Total area under all kinds of cereals; (5) Area under rye; (6) Area under wheat; (7) Total production of rye; (8) Total production of wheat; (9) Number of cattle; (10) Number of milch cows; (11) Number of sheep; (12) Number of pigs. These particulars to be shown for comparison per 1,000 of the population.

Dr. Inama Sternegg submitted the results of an inquiry into the wages and economic condition of the agricultural labourers in Austria, some account of which is given elsewhere in this journal, p. 329.

The attention of the section dealing with agriculture was, on the proposition of M. Levasseur, directed to the collection of statistics bearing on forestry.

The preparation of comparable trade statistics was again the subject of a report by Mr. Bateman, from the Committee charged with the consideration of this question; while that of internal trade and railway transport was dealt with by M. Cheysson and the Russian delegates.

Various questions relating to vital statistics and census administration came before the Institute for discussion, as well as communications on primary instruction, the organisation of labour bureaux, savings banks, and other matters of social and general interest.

LIVE STOCK TRADE OF QUEENSLAND.

According to the report of the Registrar-General of Queensland on the Returns of Agriculture and Live Stock for the Year 1894, the number of live stock in the colony at the end of last year was as follows:—Horses, 444,109; horned cattle, 7,012,997; sheep, 19,587,691; and pigs, 89,677. Compared with 1893, these figures show an increase in cattle and sheep of 320,000 and 890,000 head respectively, while the number of pigs is 21,591 greater than in the previous year, notwithstanding the fact that a large quantity of bacon was made during the year. To arrive at the true measure of live stock production in the colony for the year, there must be added to the increase in the number of both cattle and sheep above mentioned the excess of exports over imports, together with the numbers slaughtered for export purposes, viz., 330,000 cattle and 1,130,000 sheep, which were either exported alive or killed. This is exclusive of the stock of both kinds required by the butcher for daily consumption, of which there is no return available, but which has been estimated at half a bullock and two sheep per head of the population. If this be correct, it would mean the addition of another 219,364 to cattle and 877,456 to the sheep. The aggregate number of horned cattle and sheep accounted for in Queensland would therefore stand thus:—

	Cattle.	Sheep.
	No.	No.
In the colony at close of 1894 - -	7,012,997	19,587,691
Excess of exports over imports by land and by sea - - - -	133,572	274,050
Killed mostly for export - - - -	194,085	869,520
Killed for home consumption, estimated as above - - - -	219,364	877,456
Total accounted for - -	7,560,018	21,608,717

It seems that horses and cattle are at present more numerous than ever before in the history of the colony, but the numbers of sheep and pigs have not risen to what they were previously. There is said to be at present but little inducement for stock-breeders to raise horses in greatly increasing numbers, as the supply is now considerably in excess of the local requirements, and horses, except the very best, are reported to be almost unsaleable. As regards the export trade, a few horses are still occasionally shipped to India, chiefly for army remounts; but it is doubtful how far this business is remunerative, as the conditions as to colour and other points are apparently very stringent, and frequently result in the rejection of many animals,

which have then to be sold at a much lower price. From such causes, this source of output, limited in any case, is still further restricted. The English market is now being tried to a small extent, but whether colonial-bred horses will turn out a success there, seems at present problematical.

With respect to the trade in cattle and sheep, it is reported to have been satisfactorily demonstrated that shipping cattle and sheep alive to Europe is perfectly practicable, and at some periods of the year remunerative. The proportions the movement has already assumed are held to afford hope of a speedy solution of all the difficulties attendant on the foundation of a new industry, and to bid fair to lay the basis for a regular supply of live cattle and sheep for the markets of the northern hemisphere. This being once established, the difficulty of disposing of the surplus stock of the colony will to a great extent disappear.

Great progress appears to have been made in the preservation of meat, both by freezing, canning, and other methods. Nearly 60,000,000 lbs. weight of beef and mutton were so treated in 1894, chiefly for export, although the actual amount exported, namely, about 53,000,000 lbs., would point to a considerable local consumption. Great improvements are being made from time to time both in the machinery and in the system adopted for meat preserving.

In 1894, there were 31 establishments engaged in the slaughter of live stock for preservation for food, or for boiling down for tallow or lard. At these establishments, 869,520 sheep and 194,085 cattle were killed during the year. Sheep to the number of 452,192, and cattle to the number of 126,474 were slaughtered for preserving and freezing, producing 8,611,415 lbs. of mutton and 50,945,480 lbs. of beef. Of this, 5,862,373 lbs. of mutton and 33,305,023 lbs. of beef were frozen. The remaining 417,328 sheep and 67,611 cattle were boiled down, and yielded 15,683 tons of tallow. There was also produced 123,401 lbs. of extract of meat, and 45,404 lbs. of essence of meat.

A great change is stated to have taken place in the value of one of the most important by-products connected with cattle, namely, hides, which are stated to have risen in value fully 100 per cent. during 1894. This must of necessity result in a considerably improved price being obtained for the live animal, as at the low price hitherto ruling for beasts, the hide has borne a large relative value to the whole animal. This sudden increase in the price of hides is alleged to have resulted from a combination of circumstances, of which the most important were the breaking up of a "Tanners' Trust" in the United States, formed to restrict the output of leather, and the additional demand for boot leather arising from the war between China and Japan. The severe loss of cattle in America from drought and blizzard is also said to have caused a diminution in the supply of hides, and thus to have helped to bring about the rise in price.

Of the seven million cattle in the colony, owned by 20,859 persons, 6,610,470, or 94 per cent., were the property of 2,820 proprietors only, or an average of 2,344 to each owner; on the other hand, the remaining 402,527 were divided amongst 18,039 persons, giving an average of 22 head to each.

Queensland being essentially the chief cattle-producing colony in Australasia, the disposal of the surplus beyond requirements for local consumption is necessarily of primary importance. The southern colonies for many years afforded no inconsiderable outlet for the sale of live cattle, but this means of disposal has lately become very restricted. Increased production of beef and mutton, especially the latter, and a change in fiscal policy in some of the southern colonies, were amongst the causes which helped to render the neighbouring markets less open to the admission of Queensland cattle. How much the causes mentioned affected the disposal of cattle and sheep in the localities referred to may be gathered from the fact that there were 50,000 less cattle and 6,000 less sheep exported alive across the border in 1894 than in the previous year.

With regard to sheep, the comparative loss of the southern markets is not perhaps such an important matter, as their clip is a readily available income won within the colony, and their numbers, as yet, are believed to be in no way approximate to the carrying capacity of the pasture available in fair seasons; but with respect to horned cattle the matter is different: increasing numbers involve additional expense without a corresponding increment from their sale. Thus additional importance is lent to the question of means for their disposal.

BEET-SUGAR INDUSTRY ON THE CONTINENT.

The cultivation of sugar-beet in Europe has found its largest development in Russia, France, Germany, and Austria-Hungary. The changes in the area under sugar-beet in each of these countries during the past decade are shown in the following table compiled from the official returns.

Year.	Russia.	France.	Austria-Hungary.	Germany.
	Acres.	Acres.	Acres.	Acres.
1883 - -	745,553	643,349	560,623*	810,612†
1884 - -	787,671	577,679	693,361	—
1885 - -	808,849	478,306	435,857	—
1886 - -	731,335	526,945	589,651	—
1887 - -	623,872	480,230	465,817	—
1888 - -	663,584	497,411	584,496	—
1889 - -	668,630	559,062	691,941	—
1890 - -	753,840	590,120	766,819	—
1891 - -	759,078	642,585	792,166	—
1892 - -	689,607	626,565	813,608	—
1893 - -	—	639,829	870,942	975,870

* Austria only. † The acreage in Germany in 1878 was 434,226 acres.

Sugar-beet is also cultivated largely in Holland and Belgium, whilst in Denmark the crop is grown to an extent almost sufficient to meet the home demand for sugar. Although the figures shown in the above table would appear to indicate no very great changes in the position of the beet-sugar industry in the several countries named, it may be observed that according to a communication recently made to the French National Agricultural Society, the fall in the price of sugar last winter brought about a considerable diminution of the area sown to sugar-beet in Europe in the season of 1894-95. Comparing 1894-95 with the previous year, the area under the crop is stated to have declined 16 per cent. in Germany, 23 per cent. in Austria-Hungary, 15 per cent. in Belgium, and 3 per cent. in Holland, while in Russia, on the contrary, there was an estimated increase of 3 per cent. in the area sown.

This contraction of the acreage last season is not, however, to be attributed solely to the recent fall in the price of sugar, for, notwithstanding the expansion of area up to 1894, the producers of sugar-beet in the four countries included in the foregoing table have been in an embarrassed condition for several years past, in spite of the extraordinary efforts of the several governments concerned to foster the cultivation of the crop. It may be of interest, therefore, to review briefly the history of the beet-sugar industry in these countries, beginning with Russia.

Beet culture for the manufacture of sugar was introduced into Russia at the beginning of the century. The crop is chiefly grown in the south-western regions of European Russia and particularly in the governments of Kiev, Podolsk, Kharkhov, Kursk, and Warsaw.

The first sugar-beet factory was erected in 1802 in the province of Toula, and in the course of the next 18 years, 38 refineries were opened in different parts of the empire. All these establishments were of an agricultural character, being owned for the most part by estate owners. The Government advanced loans free of interest to promote the erection of refineries, and at the same time afforded certain other privileges to the owners. Further protection was given to the industry in 1841 by the imposition of a heavy duty on foreign sugar. Under these favourable conditions, the production of beet sugar rapidly developed as a rural industry, so that by 1848 there were 340 factories in Russia, producing an estimated out-turn of 86,785 cwts. of sugar. In that year, the home-grown sugar was subjected for the first time to an excise tax of 2s. 10d. per cwt., which was increased six years later to 5s. 8d. per cwt. In 1863, the tax was reduced to 1s. 10d. per cwt., and was subsequently raised several times, until it reached a maximum of 6s. 10d. per cwt. in 1875. But although the excise was nominally at the rates mentioned, the official estimate of the yield of sugar to be obtained from a given quantity of beet-root was so much below the results obtained by manufacturers, that the real tax was not much more than half the nominal excise; while in the case of refineries with improved machinery it was even less than half the nominal tax. In 1876, the importation of cane sugar into Russia ceased, and beet-sugar was exported from the country for the first time. To encourage the export trade the Government refunded to exporters the nominal excise of 6s. 10d. per cwt., which, for the reasons already stated, represented a considerable bounty on every cwt. of sugar exported. The effect of this measure was seen in a sudden expansion of the exports of beet sugar from 160,553 cwts. in 1876-77 to 1,252,575 cwts. in 1877-78. Under these circumstances the Government found it necessary to effect a reform in the system of calculating the excise, and, in 1881, it was legally provided that the amount of tax payable should be determined by the weight of raw sugar actually produced, while in the case of establishments which refined as well as manufactured the raw sugar, the tax payable was to be estimated on the amount of refined sugar produced. The tax was then fixed at 3s. 1d. per cwt. for the three years ending August 1883, but it was afterwards increased to 4s. 8d. in the period 1886-89, while a law issued on 12th January 1893, made the excise on raw sugar 10s. 10d. per cwt. after 31st August 1894.

The reform (instituted in 1881) in the method of assessing the excise had apparently no deterrent effect on the progress of

the industry. The area under sugar beet continued to expand until, in 1885, it amounted to 808,650 acres, producing 109,569,121 cwts. of beet. The development of the five years 1881-85 may be seen from the following statement:—

Year.	Acreage of Sugar-Beet.	Quantity of Sugar-Beet produced.	Quantity of Sugar assessed to Duty.
	Acres.	Cwts.	Cwts.
1881 - -	602,456	70,917,000	5,122,515
1882 - -	632,958	74,959,000	5,637,000
1883 - -	745,553	71,306,000	6,062,000
1884 - -	787,671	80,344,000	6,737,000
1885 - -	808,849	109,569,121	9,334,000

It 1884, it became manifest that the producers of beet-sugar were experiencing difficulties. In the summer of that year, a memorial was presented to the Minister of Finance, showing that the cultivators of beet-root, being necessarily producers of cereals, had suffered from the general agricultural depression, and from a fall of from 20 per cent. to 25 per cent. in the price of sugar. A year later the situation became more serious owing to the great augmentation in the production of beet. The estimated home consumption of sugar at that time was 6,040,000 cwts., whereas the out-turn of 1884 and 1885 had been considerably in excess of that quantity. In order to relieve the market of the surplus, the Government offered a premium of 6s. 2d. per cwt. on all sugar exported, independently of the remission of the tax. This premium, however, was only to be paid on a total export up to 640,000 cwts. In spite of this action, the price of sugar in the home markets continued to fall, and at the close of the year the Council of Ministers decided to grant exporters a fresh bounty, payable until May 1st, 1886, subsequently extended to July 1st, of 4s. 6d. per cwt. on raw and refined sugar exported, with no conditions as to quantities. The amount so expended in bounties was to be recovered by a surtax imposed on all producers during the four succeeding years. It must be remembered that the primary object of these temporary measures was not to promote exportation, but to relieve the home market from the surplus supplies. The efforts of the Government were, however, rendered to a large extent nugatory by the increased production of 1885, and a movement was begun in favour of restricting the output of beet-sugar by legislation. In default of ministerial action, a large number of manufacturers formed a syndicate with the object of limiting the production of their respective factories in order to maintain the price of sugar at a remunerative level in the home markets.

The continued unsettled condition of the industry has, however, recently received the attention of the Government. A special commission held early in the present year under the

direction of the President of the Council of Ministers, reported that the condition of the sugar-beet industry rendered it desirable, in the interest of consumers as well as of producers, that measures should be adopted to prevent, on the one hand, an excessive rise in the price of sugar in the native markets, and to check, on the other hand, any increase of production beyond the actual quantity needed for consumption. On the 2nd July last, an Ukase was issued giving effect to these recommendations, and making it obligatory on the manufacturers to keep a reserve of sugar which could only be disposed of for consumption when the market price reached a limit to be determined by the Minister of Finance. In addition to these measures the Minister of Finance has issued a note in which he states that, in view of the excessive production of sugar, applications for authority to erect new sugar factories or to extend the operations of existing establishments will not be favourably entertained.

The exports of raw and refined sugar from Russia during the five years ending with 1893, were as under:—

Year.	Cwts.	Year.	Cwts.
1889 - -	1,437,172	1892 - -	919,186
1890 - -	1,051,954	1893 - -	681,375
1891 - -	2,432,856		

The customs duty on sugar imported into Russia was fixed in 1891 at 29s. 7d. per cwt. for raw sugar, and 39s. 5d. per cwt. for refined sugar.

The manufacture of beet-sugar in France was practically established in 1812 by the Emperor Napoleon I. The cultivation of beet for the produce of sugar was fostered by successive legislative enactments, and the annual output of sugar gradually increased. In 1868, the French production of sugar amounted to nearly 3,000,000 cwts., in 1883-84 it was nearly treble that quantity, and in 1893 it was estimated at over 12,000,000 cwts. The number of factories operating in 1893-94 was 370, and the quantity of beet consumed in these establishments in the twelve months was 103,129,000 cwts., from which 9,564,000 cwts. of refined sugar were extracted.

The present system of taxing sugar in France may be said to have originated with the law of 29 July 1884, which imposed an excise of 20s. per cwt. on sugar of all kinds delivered for consumption. This law which was designed with a view to increase the bounties on sugar, provided for levying the excise on the presumed yield of home-grown sugar, instead of on the sugar itself. In assessing the tax on the native beet-sugar it was provided that 100 lbs. of beet should be reckoned to produce 6½ lbs. of refined sugar when extracted by diffusion, and 5 lbs. when obtained by hydraulic pressure, with an allowance of 8

per cent. for waste. The excise was remitted as drawback on all sugar exported.

The effect of the measure of 1884 was thus stated by the Chairman of the French Budget Commission, in November 1886 :—

“He said that for the past year about 72,000,000 fr. had been lost to the Exchequer by means of the bounties. The duty being 50 fr. per sack of 100 kilog., while only two sacks was the legal or presumed yield of a certain quantity of beet, in reality three sacks were produced, and the third sack thus paid no duty at all. If this third sack was exported the duty of 50 fr., which it ought to have paid, but had not, was returned as drawback, and thus on the three sacks there was a bounty of 50 fr., or 16·65 fr. on each sack of 100 kilog. (about 6s. 6d. per cwt.).”

The bounty on exported sugar was, however, reduced in 1887 by a modification of the system of assessment, whereby the excise was charged on the presumption that 100 lbs. of beet produced 7 lbs. of refined sugar, and this presumed yield of sugar was to be increased annually by a quarter of a pound for the next three years. At the same time a surcharge of 4s. per cwt. was levied on all sugar produced, including the presumed yield. The whole duty now became 24s. per cwt., instead of 20s., which it had been previously, and this became also the drawback.

A further change was made in 1888, when the assumed yield was taxed at the rate of 24s. per cwt., while any excess production beyond the officially assumed yield was subjected to an excise duty of 8s. per cwt. Thus, supposing a manufacturer had produced 100 lbs. of sugar from 1,000 lbs. of beet, he would have paid tax at the rate of 24s. per cwt. on the assumed yield of 70 lbs. of sugar, and at the rate of 8s. per cwt. on the excess yield of 30 lbs. of sugar, so that the total amount of tax duty paid on the 100 lbs. of sugar would have amounted to 17s. 2d. The drawback was, however, still maintained at the rate of 24s. per cwt., hence for 100 lbs. of sugar exported the manufacturer received 21s. 5d. as drawback, this being equivalent to a bounty of, roughly, 4s. 10d. per cwt.

Since 1888, the aim of the Legislature has been to increase the excise on the excess yield, and this has had the effect of reducing the bounty. At the present time, the officially assumed yield of sugar from 100 lbs. of beet is 7½ lbs. and this continues to pay tax at the rate of 24s. per cwt. When the amount of sugar extracted from this quantity of beet does not exceed 10½ lbs. of sugar, the excess of 2¾ lbs. is taxed at the rate of 12s. per cwt., but when the quantity of sugar extracted exceeds 10½ lbs. (i.e., 10½ lbs.), half the excess over 10½ lbs. is charged at the rate of 12s. per cwt., and half at the rate of 24s. per cwt. The drawback on all sugar exported continues, however, to be paid at the full rate of 24s. per cwt. The molasses regulations, the allowance for waste, and the drawback granted to French colonial sugar make it difficult to state accurately the present rate of

bounty; it would appear, however, to amount, at the present rate of extraction of refined sugar, to about, 2s. per cwt.

The French imports and exports of raw and refined sugar in the 10 years ending with 1893 are shown below :—

Years.	Imports.	Exports.
	Cwts.	Cwts.
1884	4,220,000	1,500,000
1885	5,540,000	2,640,000
1886	3,180,000	2,760,000
1887	3,140,000	3,180,000
1888	4,180,000	3,220,000
1889	3,200,000	5,380,000
1890	2,680,000	7,060,000
1891	3,080,000	5,540,000
1892	3,240,000	4,520,000
1893	2,840,000	5,400,000

The position of the beet-sugar industry in France was reviewed by Sir J. Crowe in February last in the following words :—

“In 1871 France consumed 288,000 tons; 20 years later the consumption rose to 467,000 tons, and sugar was quoted 1s. 1d. dearer in Paris per cwt. than in London. But as production had risen to more than 700,000 tons a year, a stock remained which required an outlet abroad to the extent of 300,000 tons. French refiners, therefore, competed in neutral markets, and chiefly in England, with the exporters of other continental States, and here it is that depression comes in. Over-production and other causes brought on a decline of price. The decline became more marked every year. Quotations for sugar, which had been 24s. 10d. for raw, and 52s. 1d. for refined, per cwt. in 1862, fell to 21s. 4d.—24s. 10d. and 41s. 11d. in 1882. In 1890 the same goods were to be had for 11s. 6d. to 14s. 5d. and 42s. 8d. A further fall to 10s. 9d. to 11s. 4d. and 40s. 8d. occurred in 1894, and the effect on growers, refiners, and exporters has not been favourable. Exports, which had risen 190,000 tons in 1871 to 353,000 tons in 1890, were reduced to 288,000 tons in 1894. All round her France saw rivals progressing as exporters, whilst her own position was growing worse. . . . The agriculturists cried out that they were being ruined; growers and producers of raw sugar protested that something must be done to protect them further. The latest panacea is to be a surtax of 4s. 5d. and 4s. 10d. per cwt. on foreign and colonial sugar. But here the refiners refuse their approval. It is a long way from the Departments of the Nord, the Aisne, the Somme, and the Pas-de-Calais, where beet is specially cultivated, to Marseilles, and at Marseilles, refiners receive foreign cane sugar, and work it up for export. They, too, cry out that they are about to be ruined, and hundreds of suggestions are made to show how the interests of all classes, growers, manufacturers, and refiners, can be reconciled. It is melancholy to think that the State has spent 20,000,000l. in premiums in 10 years for the protection of the sugar trade, and that growers and manufacturers alike still find that they are on the verge of penury.”

The total area under sugar-beet in Austria-Hungary is 871,000 acres, of which 664,000 acres are accounted for by

Austria alone. The crop is chiefly cultivated in Bohemia and Moravia, the aggregate acreage under the crop in these two provinces being about 600,000 acres. In 1893, the total production of sugar-beet in the empire amounted to over 127,000,000 cwts.

The development of the sugar-beet industry in Austria-Hungary during the past 20 years may be seen in the following table, showing the number of factories operating, and the quantity of beet handled in them, at intervals of five years since 1872:—

Years.		Number of Factories in Operation.	Quantity of Beet handled.
			Cwts.
1872	- -	251	32,000,000
1877	- -	227	34,200,000
1882	- -	230	92,500,000
1887	- -	217	92,000,000
1892	- -	213	133,000,000

Of the 213 factories operating in 1892, 130 were situated in Bohemia, 65 in other parts of Austria, and 18 in Hungary and Bosnia.

In accordance with a law of 1888, beet-sugar entering into consumption in Austria-Hungary pays an excise of 9s. 2d. per cwt. A direct bounty is granted on exportation, varying from 1s. 6d. to 2s. 4d. per cwt. according to the degree of polarisation. The total amount of bounty payable in one year is, however, limited to 416,600*l.*, and all manufacturers producing sugar are liable for the repayment of the excess.

The Customs duty on sugar imported into Austria-Hungary is fixed at 20s. 4d. per cwt. on refined sugar, and 15s. 3d. per cwt. on unrefined sugar, including the excise in each case.

The net exports of raw and refined sugar from Austria-Hungary at certain periods since 1868 are shown as follows:—

Years.	Cwts.	Years.	Cwts.
1868 -	200,840	1886 -	4,833,9
1878 -	3,045,280	1887 -	4,456,0
1882 -	4,560,200	1894 -	8,796,6

Notwithstanding the assistance afforded by the State, manufacturers, and others interested in the manufacture of sugar from beet in Austria-Hungary complain that the industry is unremunerative at the present prices ruling for the consequence of representations made to the Conference of experts was held in April last, under the presidency of the Austrian Ministry of Agriculture.

what measures should be taken to meet the crisis. It seems to be generally admitted that the fall in price is due, to a large extent, to over-production, which is encouraged by the bounty system. In the opinion of some Austrian experts the only remedy for the existing depression is the abolition of the bounties by international agreement; others advocate State control of the annual output of sugar. The former view appears to be shared by some members of the Government, for, in closing the conference, Count Falkenhahn said that he was not without hope that it might be possible to discover some solution of the serious difficulties which now oppressed the beet-sugar industry in Austro-Hungary.

In Germany the cultivation of sugar-beet for the manufacture of sugar is centred for the most part in the kingdom of Prussia, and chiefly in the provinces of Saxony, Silesia, Hanover, Posen, and West Prussia. Considerable quantities of beet are also produced in Brunswick, Anhalt, and Mecklenburg-Schwerin. Nearly 50 per cent. of the crop used for the production of sugar is grown on land belonging to the sugar factories or by persons holding shares in these establishments. The purchased roots are generally grown by contract, under special instructions furnished by the sugar manufacturers.

The manufacture of beet-sugar in Germany began in 1801, when a factory was opened in Lower Silesia. For some years the industry made but slow progress. In 1836, there were 122 factories in operation, while 25 years later there were more than double that number. Coming to a more recent period, the development of the industry may be seen from the table below. It will be observed that, although the number of factories has remained more or less stationary for several years past, there has been a great increase in the output of sugar, due partly to the rapid extension of the business done by the existing establishments, and partly to improvements in the processes of manufacture having rendered it possible to extract a greater proportion of saccharine matter from a given quantity of beet.

Year.	Number of Factories in operation.	Quantity of Beet consumed.	Quantity of Raw Sugar produced.	Quantity of Raw Sugar produced per 100 lbs. of Beet.	Quantity of Beet required for the Production of 100 lbs. of Raw Sugar.
		Cwts.	Cwts.	lbs.	lbs.
1879-80 -	328	94,380,000	8,040,000	8.52	1,174
1884-85 -	408	201,340,000	22,080,000	10.79	926
1889-90 -	401	192,940,000	23,340,000	12.36	809
1893-94 -	405	209,080,000	25,900,000	12.36	809

A tax of about 2*l.* per cwt. on raw beets destined for the manufacture of sugar was imposed in 1844. This tax was

steadily increased until, in 1888, it amounted to 10*d.* per cwt. Prior to 1861 no rebate was allowed. In 1869, the tax and rebate were readjusted; a weight duty of 9*d.* per cwt. was imposed on the roots, accompanied by a rebate on exported sugar, of 9*s.* per cwt. on raw sugar, and of 10*s.* to 11*s.* on candy and hard sugar. These measures, which remained in force until 1883, are regarded as having had a most important bearing on the development of the cultivation of sugar beet in Germany. As the tax was imposed on the roots, farmers were interested in increasing the saccharine qualities of the beet, while manufacturers, on the other hand, devoted their energies to improving the methods of extraction. The law of 1869 remained unchanged until 1883, when a slight modification of the rebate scale was made. In 1888, however, fresh legislation was introduced, whereby the tax on beets was fixed at 5*d.* per cwt., and the rebates allowed on sugar exported were reduced to 4*s.* 3*d.* per cwt. on raw sugar, and to, roughly, 5*s.* per cwt. on candies and white sugar. At the same time, an additional tax was imposed on all sugars entering into home consumption. A radical change in the system of taxation was, however, introduced by a new law which came into force in August 1892. By this measure, which is still in operation, the tax on beet was abolished, and replaced by a consumption tax of 9*s.* per cwt. on refined sugar, to be accompanied by bounties on the exports of sugar for a period of five years, expiring in 1897, the consumption tax being also remitted on exported sugar. The bounties were fixed for the first three years at 7½*d.* per cwt. on raw sugar, and at 1*s.* and 10*d.* for refined sugars; for the last two years (1896 and 1897) at 6*d.*, 9½*d.*, and 8½*d.* respectively.

In spite of the encouragement afforded to exporters by the Government, producers in Germany complain that their industry has ceased to be profitable, owing to the fall in the price of sugar. It seems that one effect of the bounty system has been to stimulate production beyond the requirements of the trade. That the present state of affairs is regarded with apprehension may be gathered from the following passage, which occurs in a report on the agricultural position of Germany, transmitted to the Foreign Office in April last:—

“In view of the present alarming depression in the sugar industry, the Prussian Government intend, either in this or the next session of the Reichstag, to introduce a measure amending the existing system of taxation of sugar. The changes proposed are an increase of the tax on consumption (*Verbrauchssteuer*) and the imposition of a graduated industrial tax on sugar factories, which shall have the effect of checking over-production, and at the same time of favouring small local establishments in which the landowners are interested, as against the large factories, which are purely industrial undertakings. With the means obtained by these measures the bounties on exportation will be raised to the point necessary to enable the German sugar industry to compete successfully in foreign markets. It is asserted, however, that the production of beet-root sugar in Germany is so highly developed, that if

other countries did not grant bounties the German producers could easily do without them.”

The exports of sugar of all kinds from Germany during the past 10 years have been as under:—

Year.	Exports of Sugar.	Year.	Exports of Sugar.
	Cwts.		Cwts.
1884-5	12,998,000	1889-90	14,125,000
1885-6	9,638,000	1890-91	14,222,000
1886-7	12,649,000	1891-92	13,107,000
1887-8	9,776,000	1892-93	13,673,000
1888-9	11,633,000	1893-94	13,735,000

The imports of sugar into Germany are insignificant; the customs duty is 18*s.* 4*d.* per cwt. The annual consumption of sugar in the empire is estimated at 20 lbs. per head of the population.

The total imports of raw and refined sugar into the United Kingdom, distinguishing the importation from countries producing beet-sugar during the past 10 years are shown in the following table:—

Year.	Quantity Imported—						
	From all Countries.	From France.	From Germany.	From Belgium.	From Holland.	From Austrian Territories.	From Russia.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1885	24,745,605	625,067	8,305,662	617,233	1,555,062		231,565
1886	22,505,711	1,044,953	7,502,100	860,256	1,461,323		821,060
1887	25,006,678	1,616,904	10,401,296	1,279,731	1,908,205		118,048
1888	24,729,150	1,601,206	8,509,428	899,914	1,707,416		465,887
1889	26,528,407	3,156,387	9,939,478	1,526,593	1,773,413	132,539	558,435
1890	25,694,141	4,095,227	11,890,947	1,478,079	2,215,248	43,300	18,316
1891	27,534,579	3,593,020	12,991,043	1,087,542	2,169,912	39,520	95,227
1892	26,916,138	2,381,039	12,750,709	1,053,230	2,328,292	43,514	579,631
1893	27,582,653	3,334,783	12,938,044	1,604,404	1,989,491	162,211	19,749
1894	28,250,796	4,029,434	13,998,892	1,050,902	2,087,945	68,116	439,921

REPORTS ON FOREIGN CROPS.

CROPS IN THE UNITED STATES.

The October report of the Statistician of the Department of Agriculture of the United States contains the preliminary estimates of the results of the past harvest in that country. The returns as to the yield of wheat are stated to have indicated an average production of 12.5 bushels per acre as compared with 13.1 last year, 11.3 in 1893, 13.0 in 1892, and 15.3 in 1891. The estimated area under this crop as reported by the statistician in June last appears to have been 33,870,000 acres, so that a yield of 12.5 bushels would represent a total production of 423,375,000 Winchester bushels as compared with 460,267,000 bushels last year. The yield per acre is reported to have ranged from 7.5 bushels in Kansas to 20.0 in Oregon.

The yield of maize is returned in the November report at 26.2 bushels per acre, as compared with 19.7 bushels last year.

The average yield per acre of oats as reported in October was 29.6 bushels per acre on an estimated area of 27,888,000 acres. These figures would indicate a total yield of 825,485,000 Winchester bushels as compared with a production of 662,037,000 in 1894. The average yield per acre of oats in the five years 1890 to 1894 was 24.2 bushels.

The average yield of rye is reported to have been 14.4 bushels per acre on 1,880,602 acres, making a total production of 27,080,000 Winchester bushels as against 26,727,000 bushels in the previous year.

According to the June report of the Statistician, the area sown with barley was about 3,297,000 acres. The yield per acre is stated in the October report to have been 26.4 bushels, so that the total production of this cereal works out to 87,041,000 Winchester bushels. In the previous year a crop of 61,400,000 bushels was obtained from an area of 3,170,000 acres.

The condition of the potato crop on October 1 was reported to be 87.4 as compared with 64.3 on the same date last year. The total yield last year was 170,787,000 Winchester bushels, or 62.3 bushels per acre. Drought is stated to have been the most widespread cause of reduced condition, while rot had also damaged the crop in a few States. Low prices are said to be the chief complaints of the potato growers this season, particularly in the North-West. In Minnesota this year's yield of potatoes is said to be enormous, on an average three times as great as last year.

The yield of hops is returned at 80.9 per cent. of a full crop. The quality is reported to have been very good, except in Washington, where lice and mould had done material damage.

As regards apples, the continued drought, hot weather, and high winds of September caused premature ripening and

dropping, which entailed a loss of over two points in the average condition of the crop. The greatest losses are stated to have occurred in the central west, where the crop was abundant. Both the eating and keeping qualities of the fruit are believed to have been much impaired, and in many sections a tendency to rot was noted. The yield of apples was reported on November 1st to have been 71.7 per cent. of a full crop.

According to a despatch received from Mr. Vansittart, the British Consul at Chicago, the apple crop in Kansas this year appears to have been phenomenal. One large orchard owner intended exporting a quantity of apples to England. No previous shipment of apples has been made from Kansas.

RUSSIAN HARVEST OF 1895.

The Official Messenger of Finance, *Viestnik Finansov*, of November 17th last, contained the preliminary estimates of the cereal harvest of 1895 in the 50 governments of European Russia.

The yield of the several varieties of grain are shown below in bushels, together with the estimated production of 1894, and the average of the 10 years 1883-1892, for purposes of comparison.

Cereal.	1895.	1894.	Average 1883-1892.
	Bushels.	Bushels.	Bushels.
Rye - - -	659,032,090	827,405,306	630,309,030
Winter wheat - - -	82,497,729	103,210,298	70,913,300
Spring wheat - - -	149,212,200	250,419,154	157,884,510
Oats - - -	545,686,210	629,061,556	511,181,610
Barley - - -	157,792,190	230,273,776	147,746,620
Buckwheat - - -	39,163,875	42,429,695	54,494,765
Millet - - -	36,662,580	45,671,858	47,968,695
Maize - - -	20,881,630	18,373,411	21,677,890
Pease - - -	14,112,843	26,964,864	14,688,112

CROPS IN ARGENTINA.

According to the River Plate Review, satisfactory reports have been received from the provinces of Cordoba, Entre Rios, and Buenos Ayres, and it is believed that the wheat crop will be equal to that of 1893-94, if not greater. Reports from the province of Entre Rios place the wheat crop at 85, taking 100 as a full crop. Locusts are reported to have caused some injury to the crop, but their ravages appear to have been mainly confined to the north of the province of Santa Fé.

CROPS IN AUSTRIA.

According to the official reports of the Austrian Ministry of Agriculture, as quoted by the *Wiener Landwirtschaftliche Zeitung*, the cereal crops appear to have been nowhere very much above the average this year, while in a few districts they were reported to be considerably below. On the whole, the cereal harvest may be considered as average, or slightly under average.

The country had suffered considerably until October from drought, which had rendered the soil dry and hard, work of all descriptions being thus seriously hindered until rain set in. Field mice had done much damage in Bohemia, roots having especially suffered from their attacks.

As regards crops other than cereals, peas and other legumes had done very well. Potatoes were generally good. Sugar-beet had developed only small roots: this and the much diminished area under the crop were the cause of the total yield of beet being very much below the average. Other roots were up to the average; cabbages had generally done badly. The aftermath, owing to the late drought, did not nearly come up to expectation.

Sowing had in many cases been delayed until the wet weather set in, and in many places had not been begun by the middle of October. But in general the seed sown soon after the rain promised well, especially rape. The chief exception was Bohemia, where the mice had destroyed the seed in many localities.

CROPS IN FRANCE.

The official preliminary estimates of the yields of the principal cereals in France in the harvest of 1895 have been published in the *Journal Officiel*.

The figures of the acreage and production, converted into English equivalents, are shown in the following table, together with the estimates for the previous year:—

	1895.	1894.	1895.	1894.
	Acres.	Acres.	Bushels.	Bushels.
Wheat	17,151,825	17,268,879	328,647,992	336,790,319
Barley	2,267,422	2,199,075	49,416,889	46,954,622
Oats	9,683,785	9,587,055	262,843,366	252,666,518
Rye	3,802,826	3,842,635	68,719,417	72,618,975

CROPS IN GERMANY.

The latest reports on the crops in Prussia, dated October and November, afford a preliminary estimate of the production in 1895.

The yield of winter wheat is put at 26·2 bushels per acre, against 25·1 in 1894; spring wheat at 23·2, as against 24·4 bushels per acre last year. On the whole, the best results have been obtained in the extreme north (Schleswig) and centre (about Magdeburg), while the poorest yields are reported from the extreme east (East Prussia). The crop is above the average.

Rye has proved slightly above the average, and slightly below last year; the yield being put at about 19·3 bushels per acre, against 19·9 bushels in 1894, and an average of 19 bushels, in the case of autumn rye. The harvest was best in the Rhine provinces, and was least satisfactory towards the east. Spring rye, of which there is a comparatively small quantity, gave a smaller yield, viz., a little over 13 bushels to the acre.

The yield of oats is less than last year, but above the average, being 35·4 bushels per acre in 1895, 38·3 in 1894, and the average being taken as 32·2 bushels per acre.

A similar remark applies to peas, the yield this year being 15½ bushels per acre, against 16½ in 1894, and an average of 14½.

Spring barley gave 31 bushels per acre, this being rather less than in 1894, but well above the average.

Potatoes have turned out better than was expected, especially in the eastern part of the kingdom. In Prussia proper, the crop has proved a very heavy one, and is the best for many years in some districts. It is stated to average 5½ tons per acre throughout the kingdom, against 4·44 tons in 1894, and an average of 4·36 tons. Halle reports a yield of over 10 tons to the acre. The condition of the tubers is also exceptionally good, although some doubts are expressed as to their keeping qualities.

Hay, both from clover and pasture, was rather better than last year, and considerably above the average; the yield was estimated at about 34½ cwts. per acre from clover and lucerne, and 27½ cwts. from pasture.

CROPS IN ITALY.

The official preliminary forecast of the yield of wheat, barley, and oats in Italy in the harvest of 1895 has been published in the *Bollettino di Notizie Agrarie*.

Wheat is estimated to have yielded 102,899,808 bushels in 1895, as compared with 117,837,225 bushels in 1894; being a decrease of nearly 15,000,000 bushels; the decrease in the production of this cereal since 1893 has amounted to over 28,000,000 bushels. The production of barley is estimated to have been 6,983,146 bushels as compared with 8,079,808 bushels in 1895. The oat crop is estimated to have yielded 16,287,662 bushels; in 1894 it amounted to 15,724,857 bushels.

The out-turn of maize is officially stated to have been 58,190,000 bushels, as compared with 57,700,000 bushels in 1894, and 76,000,000 bushels in 1893.

CROPS IN THE NETHERLANDS.

According to the *Landbouw Weekblad*, the official reports as to the results of this year's harvest in the Netherlands indicated that the cereal crop was on the whole satisfactory, though the shortness of the straw had been a subject of complaint in many districts. It appears that wheat was grown on a smaller area than that of last year owing to the low prices prevailing for this cereal. Oats are stated to have yielded abundantly everywhere except in the provinces of Groningen and Utrecht.

The reports as to the potato crop all pointed to an exceptionally good crop; on the whole, very little disease was noticed, and where it made its appearance it generally affected the earlier varieties. Mangolds and roots were returned as satisfactory both as regards quantity and quality.

The hay crop is reported to have been abundant, and was harvested in remarkably good condition.

CROPS IN SERVIA.

According to the *Curierul Financiar*, the production of wheat this year in Servia is 8,800,000 bushels. The yield of barley has amounted to 1,540,000 bushels. After allowing for the requirements of the country it is estimated that there will remain a surplus of these two grains available for exportation amounting to 2,566,666 bushels, as compared with 2,200,000 bushels last year. The area under wheat is estimated to have been 988,000 acres, which is 25 per cent. more than the area in 1894. The area under barley was 172,900 acres.

CROPS IN SWEDEN.

The Board have received a despatch from the Foreign Office containing the official harvest returns for the different provinces of Sweden which have been recently published by the Royal Statistical Bureau of Stockholm. These returns also give a general estimate of the crops for the country as a whole, as is shown in the following table:—

Crop.				1895.
				Bushels.
Wheat	-	-	-	3,400,000
Rye	-	-	-	18,100,000
Barley	-	-	-	13,100,000
Oats	-	-	-	62,500,000
Potatoes	-	-	-	50,100,000

The yield of wheat and rye was below the average, while the oat crop and other kinds of cereals were above the average. An ordinary supply of straw was obtained from the autumn crops, and the supply from the spring crops was both abundant and of good quality. The quality of fodder was also good, but the hay was to some extent damaged by rain. The yield of flax and of root crops was up to the average, but the potato crop suffered from disease in several provinces.

CROPS IN MANITOBA.

The statistics of the estimated acreage and production of cereals in this province for 1895 were given in the September number of the Journal for this year. According to the official estimates the average yield of wheat for the province was 25½ bushels per acre. It is stated, however, that yields of 40 bushels per acre were by no means uncommon, and some limited areas are reported to have yielded as much as 45 and even 50 bushels. It is believed, therefore, that the Government estimate of 29,139,815 bushels will prove to be under the mark. Frost is stated to have injured the grain to some extent in a few districts, but the average quality of the crop will not be materially affected thereby. Potatoes and root crops are said to have yielded abundantly this year.

CROPS IN ONTARIO.

The official estimates for 1895 of the cereal and other crops in the province of Ontario have been published by the Department of Agriculture at Toronto. Winter wheat was harvested in good condition, but spring wheat and barley ripened unevenly, and the straw in both cases was very short. The yield of oats is estimated at about three bushels below the average, but there seems to have been a splendid crop of rye, and more of it was grown than usual. The following table gives the official estimates of area and yield:—

—	1895.	1894.	1895.	1894.
	Acres.	Acres.	Bushels.	Bushels.
Winter wheat -	743,199	778,992	13,254,452	16,512,106
Spring wheat -	223,957	230,016	3,321,700	3,367,854
Barley -	478,046	486,261	10,933,816	10,980,404
Oats -	2,373,309	2,342,766	74,986,956	70,172,516
Rye -	120,350	90,144	1,832,614	1,886,606

The yield of hay is stated to have ranged from a quarter of a ton to two and a half tons per acre, but the majority of returns were under one ton to the acre, and the average for the season

is reputed at about three-quarters of a ton per acre, which is about half an average crop. Potatoes looked well, and an abundant yield was expected.

The reports received by the Department on the fruit crops were very discouraging. Apples appear to have been a complete failure. The number of apple trees 15 years old and over in the province is 5,835,915, while 3,362,401 are under that age. These figures do not include nursery stocks.

CROPS IN NEW ZEALAND.

The area devoted to wheat in this colony in 1895 was only 148,605 acres. This is a smaller acreage than has been sown for 18 years, and is 40 per cent. less than the area cultivated in 1894. The acreage in 1893 was 381,250 acres. The yield per acre is slightly higher than the last two years, being 24·3 bushels this year as compared with 20·2 in 1894 and 22 in 1893.

The area under oats increased last year by 50,000 acres, but decreased in 1895 by 25,000 acres. The figures are 326,000 acres in 1893, 376,000 acres in 1894, and 351,000 acres in 1895. In addition to this decrease in area, the average yield per acre this year is estimated to be over three bushels less than in 1894, when it was 32·3.

The area under barley was 50 per cent. more than it was two years ago, being 36,520 acres in 1895 as compared with 24,910 acres in 1893. The average yield was 27·4 bushels.

The cattle in the Colony continue steadily to increase, the numbers being 688,590 head in 1895 as compared with 614,670 head, and 557,570 head in 1894 and 1893 respectively. The increase since 1892 amounts to nearly 30 per cent.

CROPS IN TASMANIA.

According to the crop and stock returns for 1894-95 issued by the Government Statistician of Tasmania, the area under wheat in this colony was 52,028 acres, being a decrease of 3,284 acres on the previous year. The estimated yield per acre for 1894-95 is 16·76 bushels, which gives a return of 872,000 bushels, or an increase of 38,229 bushels.

The area under oats in 1894-95 was 34,385 as compared with 33,755 in the previous year, the estimated produce being 927,875 bushels as compared with 837,720 bushels in 1893-94.

There was an increase in 1894-95 of over 20 per cent. in the area devoted to peas, the figures being 12,465 acres as compared with 10,138 acres, while the estimated produce is given as 217,830 bushels, which exceeds the previous year's record by 22,710 bushels. There was also an increase of 4,327 acres in the area sown with potatoes, as compared with 1893-94, when it was 19,068 acres. The estimated yield in the season of 1894-95 is returned at 3·87 tons per acre, representing a total production of 90,810 tons.

There was a considerable increase in the number of live stock, notably in the number of sheep, which increased from 1,535,000 in 1893-94 to 1,727,000 in 1894-95. Pigs also increased by 13,668 on a total of 52,000 in 1893-94.

The area of apple and pear orchards was 11,068 acres and the estimated yield 677,675 bushels of apples, and 29,183 bushels of pears.

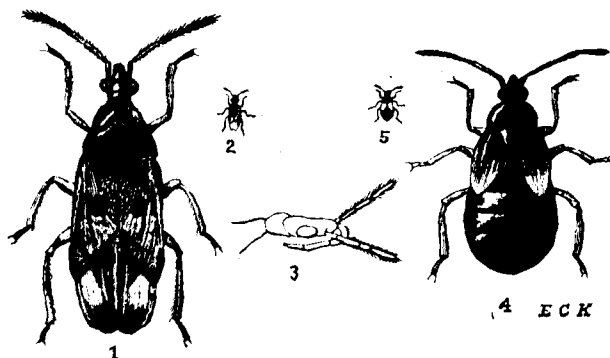
CROPS IN ROUMANIA.

A recent number of the *Curierul Financiar* contained the official preliminary estimates of the acreage and yield of the principal cereal crops in Roumania in 1895; the figures are reproduced in the table below, together with those for 1894:—

Cereal.	1895.	1894.	1895.	1894.
	Acres.	Acres.	Bushels.	Bushels.
Wheat	3,551,000	3,441,000	66,384,000	42,255,000
Rye	537,000	395,000	8,968,000	5,592,000
Barley	1,365,000	1,382,000	21,696,000	15,391,000
Oats	668,000	649,000	10,053,917	9,714,000

The yield of wheat and rye is stated to have been 18·7 bushels and 16·7 bushels per acre as compared with 12·3 and 14·2 bushels per acre in 1894. The production of barley, though showing an increase of five million bushels, was still considerably below the production of 1893, when the yield of this cereal amounted to 34,545,000 bushels. The yield of oats was 15 bushels per acre, or about the same as in the previous year.

INJURIOUS INSECTS AND FUNGI.

THE "SHY" BUG (*Anthocoris sylvestris*).

1 and 2, Perfect insect; mag. and nat. size; 4 and 5, Pupa, mag. and nat. size; 3, Head, with antennae and rostrum.

Curtis terms this insect *Hylophila nemorum*, and gives a good description of it in *Farm Insects*. Mr. Saunders, in his work on the *Hemiptera-Heteroptera*, calls it *Anthocoris sylvestris*, L., and *Anthocoris nemorum*, L. It is styled *Anthocoris nemorum* by Douglas and Scott in their *British Hemiptera*, and belongs to a family of the same order of insects as the "Chinch Bug," *Micropus leucopterus*, Say., which causes so much damage to all kinds of corn crops in the United States. The "Shy Bug" is so called by hop planters and workmen in hop districts, because, upon being interrupted, it gets out of sight on the other side of the hop vines and under the leaves as rapidly as it can. In some seasons it seriously injures the hop plants, especially when they are backward and weakly, by piercing the vine with its exceedingly long, pointed sucker. The punctures, or rather the exudations of sap from them, can be easily seen. If the leading shoots are much pierced it frequently happens that they turn black and die, thus preventing those particular vines from going straight up the poles or wires, and causing them to throw out premature and, probably, unfruitful laterals.

The "Shy Bug" makes its first appearance early in the summer, and remains upon the hop plants throughout the season. If the bug is present in numbers it seriously affects the progress of the vine, making it unhealthy, and liable to the attacks of insects and fungi. Sometimes in the hop picking season, and especially after hot summers, the pokes, or bags, made of wide meshed sacking, in which the green hops are put, have quantities of "Shy Bugs" upon them, which have come through the meshes, and from the hop cones. In August

last these insects were found in many of the cones, and upon close investigation it was seen that the cones containing them also contained aphides—lice—and, further, that there were no "Shy Bugs" in cones that were free from aphides. No trace of piercing was found in any of the strigs of the cones infested by the "Shy Bugs," their object clearly being to feed upon the aphides. In further illustration of this point, it may be observed that some specimens of the bug were put into glass-topped cases, and supplied with aphides from time to time, together with succulent shoots of various plants. When the aphides were put into the cases the "Shy Bugs" ran at them at once ferociously and transfixed them with their sharp suckers, or beaks, upon which the aphides, however large, were retained in spite of incessant strugglings. When the contents of one aphid were sucked up the beak was withdrawn and another aphid attacked. One "Shy Bug" destroyed 40 aphides in 10 hours. This habit of insects of this and allied families has been alluded to by Curtis, Stainton, Saunders, and other entomologists, but their extreme usefulness in this direction has never been so palpably demonstrated. In one hop ground, carefully watched for a month before hop picking, it was entirely due to the presence of "Shy Bugs" in large numbers, and their destruction of the aphides in the cones, that the cones did not become "black at the strig." There is no doubt that the unusual heat of the summer of 1895 favoured the increase of the *Anthocoris sylvestris*, and that two, and perhaps three, generations were produced in many cases.

Description and Life History.

The full-grown insect is a sixth of an inch in length. It is smooth and shining; the head, thorax, and scutellum, or shield, are dark red. The wing cases are pale yellow, with dark red margins, and a round spot on the membranes, and the legs, six in number, are honey coloured, with black feet. There are four joints to the long antennae, of which the end joint is black, the second and third light straw colour, and the basal joint reddish black.

The females lay their eggs, which are long shaped and whitish (becoming reddish later on), in the spring time, when the weather is warm. The number of eggs produced is very large. Larvæ, which are lighter in colour than the perfect insect and entirely without wings, come from the eggs in about 14 days, and begin to feed at once upon the vines. It is believed that there are two moults before the pupa, or nymph stage is reached. There is certainly one, after which the larva is of a darker red, and rudimentary wings, or "wing-pads," as Packard calls them, are visible. When the pupal stage is assumed, there is not much change in colour or appearance, except that the wing-pads are larger and extend nearly half way down the body. At the time of the final transformation the insect assumes

a carmine hue, which, however, quickly changes to the normal colour of the perfect insect, and the wings are fully developed. The insects are seen together in all stages, in each of which they are able to suck up the food both from the shoots and from the bodies of the aphides with their long beaks (Fig. 3). At the close of the summer the perfect insects conceal themselves in the ground, under rubbish and weeds, in cracks of poles, in the hop stocks, in the hollows of bines, and in other similar retreats, where they pass the winter. It would appear that they do not use their wings at the end of the season, but hibernate close to their feeding grounds. At the beginning of the season the perfect insects that have hibernated fly to fresh fields and pastures new.

It is certain that there are two generations in a year when food and weather conditions are favourable; in the summer of 1895 there would seem to have been three or even more generations, as in the second week of September larvæ before the first moult were taken from hop cones.

Methods of Prevention and Remedies.

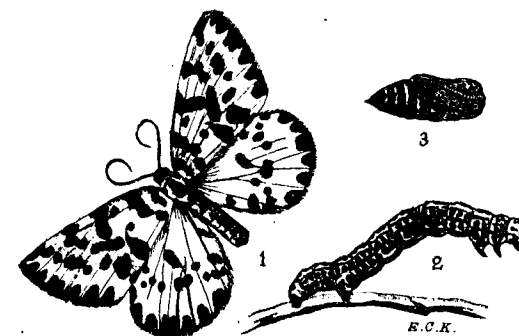
The question arises as to whether this insect is to be protected or exterminated. On the one hand, it frequently does much direct mischief to the hop plants by extracting their sap and making the bines bleed, thus weakening them and rendering them liable to fungoid and insect attacks; and on the other hand, in hot seasons favourable to their propagation, the "Shy Bugs" are certainly beneficial by destroying lice within the cones.

It must be said, however, that it is most difficult to discover any means of preventing the recurrence of an attack. It would be desirable to get the weeds round the "hills" dug in as deeply as possible in the winter, and to dig round the "hills" very early in the spring, and apply lime, or lime and soot. And, with regard to remedies, syringing with soap and quassia mixtures have not apparently the least effect upon these insects; sulphuring has also not the slightest influence. Syringing with paraffin, or kerosene emulsion—soft soap and paraffin—might keep them from the plants for a time. Or it might be well to try creosin, an extract of tar, which has recently come into notice as an insectifuge of some value. It is not expensive, and can be put on economically with hop-washing machines, which, if properly set and driven, distribute liquids over every part of the plants.

THE MAGPIE MOTH (*Abraxas grossulariata*).

The caterpillars of this moth, called the "Magpie Moth" from its peculiar markings, occasionally cause serious injury to the gooseberry and currant crops. They are sometimes also destructive to apricot trees, and are frequently found upon the sloe and the blackthorn.

Casual observers often confound the attacks of these caterpillars upon gooseberry and currant bushes with those of the larvæ of the gooseberry and currant sawfly, *Nematus ribesii*, but they are essentially distinct. In the first place, the attack of the *Abraxas* caterpillar is not nearly so serious as that of the sawfly larva, and the insects differ materially in every stage. In the



1, Moth; 2, Caterpillar; 3, Cocoon. All natural size.

winged state there are no points of resemblance, and in the larval condition the *Abraxas* caterpillars are different in size, colour, and shape, from the grubs of the sawfly. Their habits also are totally distinct. In the former case, the caterpillars live through the winter in the larval state, and are ready to attack the fruit bushes directly there is a vestige of green upon them. In the case of the sawfly grubs, they are hatched from eggs laid by the female flies upon leaves in the spring, and do not, therefore, appear upon the scene until vegetation is far advanced.

It is very fortunate that the Magpie Moth is not nearly so abundant as the sawfly, and when it gets a footing in fruit plantations and gardens it is most important that active steps should at once be taken to arrest its progress. In 1876, 1881, 1885, it was unusually prevalent, and in the season of 1895 many complaints were received of harm caused by it to gooseberry and blackcurrant bushes.

Description and Life History.

The moth, *Abraxas grossulariata*, belonging to the *Geometridæ*, is a very pretty insect, nearly an inch and three quarters across the wings, and over an inch long in the body. It varies greatly in colouring, but the typical moth has a yellowish body with a black spot on the thorax and a row of six black spots along its back. The fore wings have a white ground with many black spots dotted irregularly upon them, with yellow blotches at their bases, and an orange coloured band beyond the middle. In some specimens the black spots on the fore wings are almost confluent, while in others they are few and far between. The hinder wings are white with black spots round the margins, and other black spots placed irregularly upon them. The head is black with short antennæ.

The Magpie Moth appears late in the summer, and places eggs upon gooseberry and currant leaves near the midribs, in groups of three or four. The egg is yellow and somewhat broad, with rows of dots upon it. In about 11 days the caterpillars come forth and feed for a brief period upon the foliage, which at that time of the year is by no means succulent or attractive. The caterpillar, unlike most other caterpillars, resembles somewhat curiously the parent moth in its distinctive markings and coloration. It has a black head. Its body is whitish-yellow with a row of variously shaped large black spots along its back, and a row of much smaller black spots on the upper part of each of its sides. There is also a continuous band of a dark orange colour running from the head to the tail on each side, and below this another row of black spots, and two narrow black stripes underneath the body. The first two and last two segments are somewhat coloured with orange. There are three pairs of claw feet, which are black, and only two pairs of sucker feet, so that it progresses by a series of loops. It is an inch and a quarter in length when fully extended. The caterpillars either spin leaves together and ensconce themselves in them and fall to the ground with the leaves; or they drop to the ground and get just under its surface. They remain in the caterpillar state until the early spring, when they ascend the bushes, and proceed to devour the young and juicy leafage. At this time they do much harm, as they are large and clear the leaves off rapidly. When full grown, which is generally about the middle of May, they turn into chrysalids in a light cocoon, and the moths emerge in due time and place eggs upon the leaves of the gooseberry and currant bushes during August.

The chrysalid is black and has three rings of a golden colour at the extremity. It is sometimes fastened to the leaves or stems by means of threads, or the caterpillar lets itself down to the ground and pupates there under leaves, weeds, or clods.

Methods of Prevention and Remedies.

Unusual warning is given of a coming attack of this insect by reason of the strange arrival of the caterpillars in the autumn upon the gooseberry and currant bushes, showing plainly what may probably be expected in the following spring. On the appearance of the caterpillars, the ground beneath the bushes should be covered with quicklime, or gas-lime, and dug deeply in the early days of the winter. The fruit bushes should be previously pruned in order that any caterpillars that have "spun up" on the branches and shoots may be cut away or dislodged. If it is found after pruning that there are many caterpillars on the bushes it would pay to hand-pick them. All the cuttings from infested bushes should be collected and burnt.

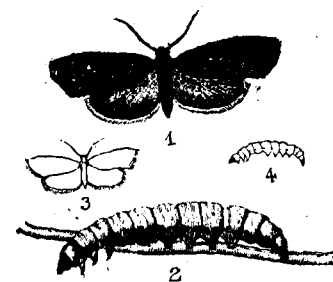
In the early spring, and before the leaves appear, the ground round the bushes should be hoed, the soil pulverized with prong

hoes, and more lime, or a mixture consisting of two bushels of lime to one of soot, applied.

Hand-picking may be adopted also in the spring in gardens and on small fruit farms where there is serious infestation. But in large plantations this could hardly be carried out.

A mixture of lime and soot thrown upon the leaves of infested trees very early in the morning while the dew is on them has proved of considerable advantage. Powdered hellebore is efficacious, and can be put on with bellows made especially for the purpose. But hellebore is poisonous and most dangerous if put on when the fruit is formed. Syringing with soft soap and quassia, at the rate of 6 lbs. of soft soap and the extract of 7 lbs. of quassia to 100 gallons of water, has been found very effective. Many caterpillars are dislodged, and it is found that they do not like the leaves that have been syringed with quassia. Paraffin "emulsion," made with 6 pints of oil and 3½ lbs. of soft soap, mixed well together in 4 pints of water and diluted with 25 times its volume of water, has been used with advantage. This should be well and constantly stirred, and put on with a fine spray. It will not, however, do to use the emulsion when the fruit is of any size, as the oil will flavour it.

THE PLUM MOTH (*Carpocapsa (Opadja) funebrana*).



1, moth, magnified; 2, caterpillar, magnified; 3, moth, nat. size; 4, caterpillar, nat. size.

The habits of this Plum Moth closely resemble those of the Codlin Moth, *Carpocapsa pomonella*, though, fortunately, it is not nearly so abundant. But, like many other moths, the Plum Moth was unusually plentiful in the summer of 1895, owing to the warm dry season, and the Codlin Moth was destructive beyond precedent in many orchards. The caterpillar of the Plum Moth sometimes causes plums to drop prematurely, thus spoiling the fruit, and rendering it useless. More frequently infested plums remain on the trees until they are gathered. The external signs of infestation in plums are

much less apparent than in the case of apples, so that it is difficult to pick out the infested fruits in order to avoid eating or cooking them.

Description and Life History.

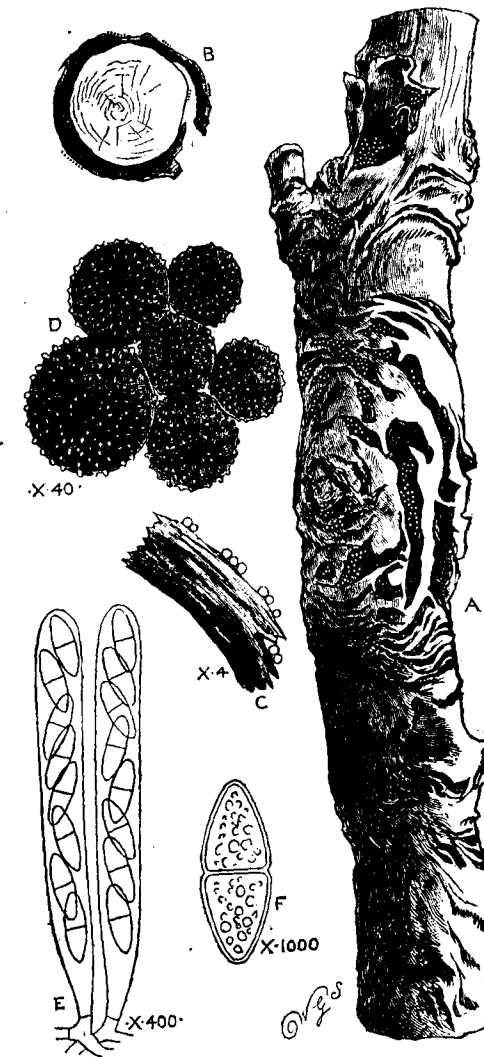
The moth (Figs. 1 and 3) has a wing expanse of about three-fourths of an inch, and its body is not quite one-fourth of an inch in length. In colour it is grey with darker grey markings upon the forewings. At the oval angle of the fore-wings, there is a spot edged with shiny pale grey, enclosing four black dots, which distinguish this species from the four other species of the genus *Carpocapsa*. The moth appears in July and places eggs singly upon the plums. Caterpillars come from the eggs in a few days, and bore holes into the fruit. They are very small, and the hole is almost imperceptible to the naked eye, so that infested plums cannot be readily distinguished. Sometimes there is a slight exudation of gum, or a slight crack in the skin. When the caterpillar is fully fed it makes a small hole, and escapes, letting itself down to the ground by means of a silk thread, if the plum is still on the tree. It does not touch the stone, but lives in the most fleshy parts of the fruit. The caterpillar at first is dirty white in colour, then becomes pink, and finally reddish. It has three pairs of claw feet, and four pairs of sucker feet, and is nearly three-quarters of an inch long (Fig. 4). The caterpillar crawls up the plum trees near, and gets into the cracks in the bark, constructing a cocoon in which it remains until the spring, when it changes to a chrysalis of an amber colour. In two or three weeks the moths come forth. The white cocoon in which the caterpillars spin is very small, so that it requires close inspection to find it on the trees. Some caterpillars kept in boxes emerged from the plums and spun up in the corners of the boxes as well as upon twigs placed in them. It is believed that the caterpillars occasionally make cocoons under the plum trees upon dead leaves and pieces of dead twigs and branches.

Methods of Prevention and Remedies.

Plum trees should be carefully examined with the help of a pocket magnifying glass for the small white web-like cocoons in the rifts of the bark. If they are noticed the trees should be scraped. It would be well also after an attack, to dig hot lime in close round the plum trees deeply so that any caterpillars there would be buried.

CANKER (*Nectria ditissima*).

FIG. 1.



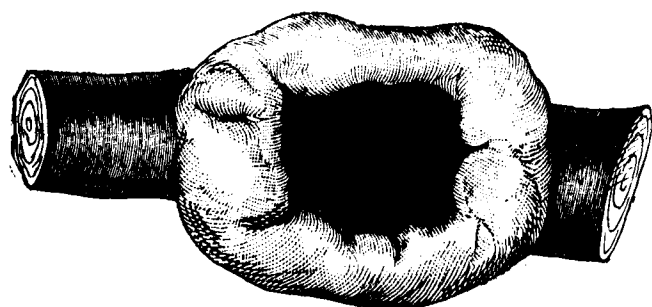
- A. Piece of apple-tree affected by *Nectria ditissima*.
- B. Section of branch with *Nectria* upon it.
- C. Bark, with *Nectria*, $\times 4$.
- D. *Nectria* with crimson perithecia, showing orifices from which spores emerge, $\times 40$.
- E. Asci from perithecia, each ascus with 8 spores, $\times 400$.
- F. Spore, uniseptate, $\times 1,000$.

It is customary with fruit growers to style the various disorders which affect and kill branches and boughs of apple-trees "canker." Injuries from frost, hail, improper and excessive pruning, and from insects, such as the Woolly Aphis and species of *Lachnus*, all come under this common appellation. It is the

same in Germany, where these diseases are termed *Krebs*, and in France, where the name is *Chancre*; and much confusion exists generally as to the real nature of the maladies.

There is no doubt that frost, hail, wrong and untimely pruning, and insects have injurious effects upon apple-trees, but these are quite distinct. Injuries of this nature are also frequently described somewhat vaguely as being due to hypertrophy, or excessive sap formation, whereas hypertrophy may be said to be the effect rather than the active cause of these troubles. A not infrequent notion regarding canker is that it is due to unsuitable soil, to want of drainage, or to excess, or lack, of manure, or of certain manurial constituents. But cankered trees are found on all soils, drained as well as undrained, and where manure has been freely or sparingly applied. And it is natural to find this, seeing that the real cause of canker is the very dangerous fungus figured above, known as *Nectria ditissima*, which is far more destructive than frost, hail, bad pruning, soil, too much or too little manure. Like most other injurious fungi it is difficult of detection, except by careful or trained observers. Upon examination of a bough or branch infected by *Nectria ditissima*, it will be seen that some of the twigs or shoots formed are dead or dying, and that there are series of wide cracks or fissures in the bark for some distance round them (A. Fig. 1), and sometimes also running upwards and downwards on the boughs, which are abnormally swollen near the twigs.

FIG. 2.



Places will be noticed in some cases upon infected trees where the bark is rolled back in raised and distorted forms round the back of the affected branches, leaving the black and decaying wood exposed in the middle of the circular or oval spaces denuded of bark (Fig. 2). Above these, the branches are dead, partly dead, or dying; further investigation will demonstrate that there is but little living wood, and that the formation of wood has been for some long period disorganised, as shown by the irregularity of the "annual rings." The fungus on one stem, or bough, may be still living and destroying; on another stem, or bough, it may have died, but the bough, or stem, has been rendered practically

useless for fruit bearing. Very large boughs are often found ruined in this way, and occasionally young trees have large canker centres in their main stems which must materially affect their powers of fruit production and their full development.

Young boughs of apple-trees often have the whole of their bark ringed by the fungus, especially near the tips, so that they die, and in this case it is generally held that frost has caused their death. It will be found that the fungus, as a rule, is located near and round the shoots or twigs, because the cuticle there is tender and to some degree extravasated and liable to receive injuries from frost or hail, making it a convenient *nidus* for the spores of the fungus, which commences life as a saprophyte—i.e., a feeder on decayed substances.

Canker attacks some varieties of apple-trees more than others. Those which yield the best eating apples are most liable to it. Cox's Orange Pippin is a variety subject to this disorder, as is also the Ribston Pippin, while the Golden Pippin, and several of the Rennets, or Reinettes, notably Reinette des Carmes, are somewhat liable to canker. Trees with the thinnest and smoothest bark are most liable. In France, trees bearing cider fruit are not usually cankered as much as those growing fruit for the table. Varieties of the Reinette type are specially attacked, as well as some of the Calville tribe; and in Germany, according to Goethe, Reinettes, especially the Reinette de Canada, are most frequently infected. Goethe states that canker is very common in Alsace, and in the Rhine districts of Prussia, where thousands of trees succumb every year to this malady. He adds that there are certain regions where the apple trees most liable to infection cannot be cultivated.

Pear-trees are affected by *Nectria ditissima* in the same way as apple-trees. Fortunately in this country the attack on pear-trees is not so frequent as on apple-trees, though in France it appears to affect both pretty equally. The effect of the fungus and its methods of attack are precisely the same as upon apple trees.

This fungus is also destructive to oak, beech, ash, hazel, and lime trees.

Description and Life History.

The perithecia, or spore-bearing cases, of the fungus appear first as minute red dots, as shown at B (Fig. 1). From the spores emanating from these a mycelium is produced, which penetrates the rind and wood, whose juicy tissues are dried up and destroyed. The action of the mycelium in course of time, though it moves slowly, causes distortions and malformations of the surrounding parts, and death to all the branch above the centre of its action. Perithecia, or spore-bearing cases, are formed on the surface of the rind after a time (D., Fig. 1). They are crimson, and are found in small groups; they are

clearly visible to the naked eye, and are slightly flask-shaped. Within these are cylindrically-formed asci (E., Fig. 1), containing eight spores, each having two colourless cells (F., Fig. 1). They germinate in water quickly, and placed upon trees infect them with canker. Hartig and Goethe have infected forest trees by placing spores of *Nectria ditissima* upon their living parts. They have also infected trees by placing *Nectria* spores upon parts injured by hail, or with decayed substances on them, and show that *Nectria ditissima* is both saprophytic and parasitic. This has also been proved by De Bary.

In addition to the perithecia emanating from the mycelium of *Nectria ditissima* there is, at all events when it is actively parasitic, a formation of conidia evolved from a stroma of cushion shape. This takes place before the development of the perithecia, which contain the spore-bearing asci. These conidia have also been made by Hartig and Goethe to infect forest trees, and to germinate freely upon decayed and living tissues.

Methods of Prevention and Remedies.

One obvious way of preventing the spread of canker is to be careful not to make use of grafts from infected trees, or grafts showing any trace of the fungus.

Young trees should be examined closely for any signs of canker. Any wounds upon them should be viewed with a strong pocket glass to discover the red perithecia of the fungus.

Where possible, infected branches should be cut away, and the pieces burnt to prevent the spread of the fungus.

It would be desirable to note the trees that canker most readily, and to avoid planting these varieties. And if a tree is badly cankered in an orchard, or near other trees, it would probably pay best to cut it down.

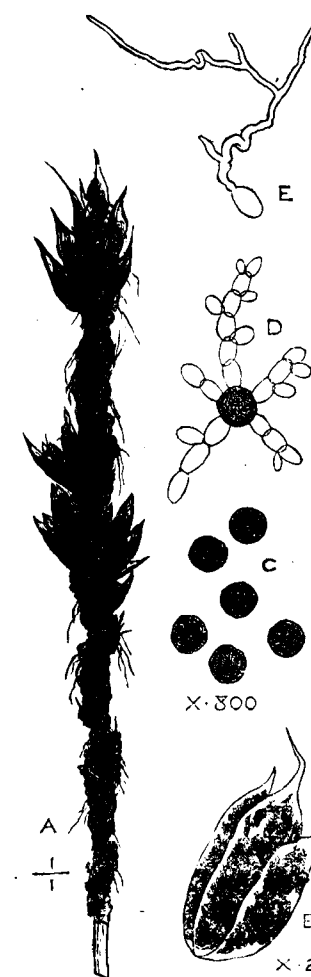
A strong solution made with 20 lbs. of sulphate of copper to 100 gallons of water, would undoubtedly check the fungus and destroy it in its conidia and spore stages. This could be applied with a knapsack machine where the trees are small, and upon large trees with the help of a ladder where the disease has affected only a few branches. The spray should be directed for some time on the infected spots, and it would be necessary to spray them two or three times during the winter.

When trees are badly infected they must be sprayed all over by means of a garden engine with strong pumps and long hose, like the engine used for hop washing.

Sulphate of iron, dissolved in warm water at the rate of 1 lb. to every gallon of water, would be of value if applied in the autumn and winter. It would at the same time remove lichenous and mossy growths which harbour fungi and insects, and injuriously affect the trees.

Apple-trees should be kept free from the common Apple Aphis, and the Woolly Aphis, as these convey fungus spores from tree to tree. In woods and plantations the cankered branches should be removed from infected trees and burnt. Careful foresters will examine trees that show signs of decay with a pocket lens to ascertain if the *Nectria ditissima* is the cause of the evil.

SMUT OF CORN (*Ustilago tritici*, Persoon).



A. Wheat ear, natural size, destroyed by *Ustilago*.
B. Glumes, twice natural size, destroyed by *Ustilago*.
C. Spores of *Ustilago tritici* much magnified.
D. Spore germinating and producing conidia, much magnified.
E. Conidia germinating, much magnified.

Every corn-grower is familiar with the appearance of smutted ears of wheat, as shown at A in the illustration, which in

some seasons are abundant in the fields, and lessen the crops in various degrees. This is due to the fungus *Ustilago tritici*, which is often confounded with the disorder known as "Bunt," *Tilletia caries*, though essentially distinct. In the latter case the grains alone are affected and spoiled, while smut blackens and blasts the whole ear. Oat and barley plants, especially the former, are also liable to smut. The *Ustilago* affects the organs of reproduction, and it attacks the inflorescence and prevents the formation of grain, turning the whole of the ear into a mass of black powder. It lives upon the parts of the plant designed for fructification and entirely destroys them, so that at harvest time there is no trace of grain or glumes; only the bare stalk remains blackened somewhat by the spores, most of which have been blown away. Upon examination of an infected ear in the earlier stages of the disorder, it will be seen that the grain at first is much swollen and filled with a thick whitish substance and is permeated throughout by the hyphæ or branching filaments of the fungus. After a while the cell walls are broken down and the grain becomes a mass of black spores. The glumes are also disintegrated by the fungus and covered with spores.

Life History.

This fungus belongs to the *Ustilagineæ*, or the burning, or charring, fungi, so called because they make plants look as if they were burnt, or charred. It was called *Ustilago carbo* by Tulasne. Then it was termed *Ustilago segetum* by Bullard, and recently it has been described as *Ustilago tritici*, Persoon, as peculiar to wheat. It was supposed that the same species—*Ustilago segetum*—attacked wheat, oats, and barley indiscriminately, but the researches of Brefeld, Jensen, and Rostrup have proved that one species of *Ustilago* is found on oats, another on barley, and a third on wheat.

The spores of the fungus (as shown at C), are round to ovoid in shape, and rather irregular. They are very small and are produced in enormous quantities. In colour they are black with an olive tinge. They are sown with the seed wheat; being so minute that they would find an ample resting place in the furrow, or line, on the under part of the wheat grain, as well as in the downy tuft at its extremity. The spores are carried by the wind to the grain while yet in the ears, or during the harvesting, threshing, and winnowing processes. After the grain of wheat has germinated and put forth its plumule from the seed, the spore of the *Ustilago* sends out a germ tube (D) which makes its way into the tissues of the young tender shoot. The fungus develops a mycelium, or a series of fine threads, which grows with the wheat stem and finally attacks the grain forming in the ear, which has been the object of its existence in the stems for so many months. The grain is pervaded by the hyphæ, or branching arms of the fungus, and is reduced to a mass of viscid

putridity, and quickly shrivels up. At this time the fungus produces quantities of seeds, or spores, which are dispersed to begin a new cycle of destruction.

Mr. Worthington Smith states that the mycelium always attacks the lowest part of the ear first and that he has never noticed the upper part of the ear diseased while the lower part was sound. On the other hand, it sometimes happens that the upper part of an ear is not infected, although the lower part is attacked.

Oat plants are smutted by a kindred fungus described as *Ustilago avenæ*, Persoon; and barley plants by another styled *Ustilago hordei*, Persoon. The life history and action of these fungi are similar to those of *Ustilago tritici*. The oat is more liable to smut than wheat, because the seed has a rough, somewhat loose husk, with breaks at the extremity whence the stamen arises in which the spores of the fungus are readily retained and sheltered. Barley is also more frequently smutted than wheat, as the grain has a thick tegument with folds in which spores may easily rest. Jensen states that there are two distinct varieties of *Ustilago* which attack barley. He defines them as *Ustilago tecta* and *Ustilago nuda*. He shows that the spores of these varieties are clearly distinct, and that their action on the ears is slightly different.

Methods of Prevention.

Seed wheat should not be taken from an infected crop. Wheat growers who sow seed of their own growth must be careful to avoid taking seed from fields where smutted ears have been noticed. The spores are so numerous that infection is widely spread in various ways, and it would be better to buy seed wheat than to run risks of perpetuating the disease and spreading it throughout the farm.

Seed wheat should be "pickled," or dressed, to destroy any spores of fungi that may be upon it. This should always be done as a matter of precaution, and especially where there is any suspicion that there was smut in the crop from which it came.

Sulphate of copper dressings are those usually adopted, and they are undoubtedly the best and most economical in the long run. Sulphuric acid has been used in America, but the results were not satisfactory. Sulphate of potassium has also been tried in France and America with some degree of success.

The ordinary mode of dressing seed wheat with sulphate of copper in this country is to make a solution of from 1½ to 2 lbs. of sulphate of copper dissolved in two or three gallons of water, which is supposed to be sufficient for eight bushels of wheat. This solution is ladled, or sprinkled over, the seed wheat, which is turned several times, so that all the grains may be wetted as far as possible; and the seed is sown as soon as it is dry. This is a rough and ready, and by no means a satisfac-

tory, process. Parts of the wheat are not wetted, especially the furrow, or line, down the underside where the spores find a safe resting place. To ensure perfect and complete wetting of every part the seed should be soaked in the sulphate of copper solution. This is done in America and on the Continent. The seed wheat is put into a long shallow tank, and is kept there from 6 to 12 hours, completely covered with a solution made of about 4½ lbs. of sulphate of copper to 100 gallons of water. After the grain in steep has been moved twice or thrice it is taken out of the tank and spread out to dry. To make the solution properly the sulphate of copper must be first dissolved in a small quantity of water and then put into the tank containing the proper amount of water for the requisite strength of the dressing. Care must be taken to dissolve every particle of the sulphate of copper, and to stir the solution in the tank well before the wheat is put in.

There is another mode of dressing wheat with sulphate of copper, which is more simple, and is suitable for small holdings. A solution of sulphate of copper is made at the rate of 8 lbs. of sulphate of copper to 100 gallons of water. This is put in a large tub into which the seed-wheat in a basket is covered and permeated by the liquid. The basket is moved up and down several times, and kept there from five to seven minutes, so that the solution penetrates the whole of its contents. The wheat is then spread on a floor to dry, and the basket is refilled and the operation repeated until the liquid is exhausted.

This is a far better method than the common one of merely laddling the solution over a heap of corn and turning it two or three times.

All corn after this treatment should be thinly spread on a floor and turned over occasionally, or upon an old tilt in the open air.

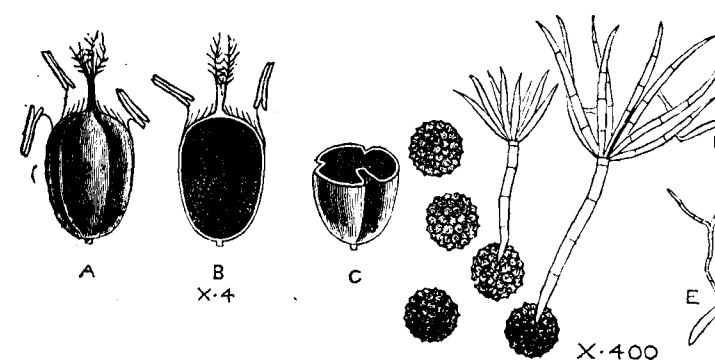
The Hot-water Treatment.

M. Jensen, of Copenhagen, strongly advocates the disinfection of seed corn by immersing it in hot water. He states that the spores of the fungus attacking oats and barley cannot survive at a temperature of from 127° to 133° Fahr., and that at these temperatures the vitality of the seed corn is not injured, and strongly recommends this treatment as the best that can be adopted. Experiments upon seed-wheat have been made in America in this direction by Messrs. Kellerman and Swingle and they conclude from these that certain forms of hot-water treatment are effective against loose smut, but injure the germinative power of the seed.

"Wheat growers," they say, "should therefore be on their guard against this enemy and try to secure seed wheat from fields known by careful examination at flowering time to be free from loose smut. It can, however, be combated by treating

enough wheat to furnish seed for the following year, and this should be done when any considerable per cent. of the crop is affected." In treating wheat for loose smut, Messrs. Kellerman and Swingle advise that the grain should be soaked for four hours in cold water, then put away about four hours more in wet sacks, and finally put in hot water, but only for five minutes, at a temperature of 132° Fahr. But they add, "in planting, one half more seed must be used per acre to compensate for the seed killed by the treatment."

BUNT (Tilletia tritici, Bjerkander; Tilletia Caries, Tulasne).



- A. Wheat grain attacked by *Tilletia*, enlarged 4 diameters.
 B. Section of grain, showing farina replaced by spores of fungus.
 C. Cross section of infected grain.
 D. Spores of *Tilletia*, two germinating and producing rods, one at the right producing a conidium, enlarged 400 diameters.
 E. Conidium germinating, enlarged 400 diameters.

"Bunt," or "stinking smut," is more injurious to the wheat crop than loose smut, *Ustilago tritici*, as the grains infected by it are formed and conveyed full of its spores into the ricks or barns, and when the corn is threshed many of them go into the heap, or in the sacks, with the sound grain, whereas loose smut destroys the grain in its embryonic state. Before wheat plants are fit to cut it is not always easy to ascertain whether they are bunted unless the plants and ears are examined with some attention and the discoloured grains exposed to view. In the case of smut the ears are completely disintegrated, and nothing is left but the blackened stems. Sometimes the ears that have bunted grains within them are greener than those not infected, and appear to be more luxuriant. As a rule, this difference is shown when the plants are seven or eight inches high, and they do not generally grow so tall as those that are not bunted. An observer would also notice that the infected ears are pale in colour, and have a bleached appearance, in contrast with the brown hue of red, and the golden tinge of white, wheats. Infected grains are distorted and swollen, and are shorter and smaller than

those not infected. They are of a dull lead colour, and the line or furrow on the underside is often indistinct; upon pressing the grains they crush easily, and it is seen that they are full of the olive-coloured stinking spores, like the finest dust, of the fungus. Mr. Worthington Smith calculates that one grain of wheat can contain 4,000,000 spores. These bunted grains spread infection throughout the bulk of the grain in which they happen to be, through the spores escaping from them and falling upon the grains in their vicinity. Not only is the yield often lessened materially by bunt, but the flour made from wheat containing bunted grains is, and remains, tainted by the foetid odour given off by its spores. This unpleasant smell, which is like that of bad fish, is characteristic of this fungus. It is so powerful that a very small per centage of infected wheat will communicate a most unpleasant flavour to flour made from it. Dealers, therefore, decline to buy wheat in which bunt appears, as it is not fit for flour. In some bunted grains of wheat kept for eight years, the fishy smell was still very strong.

This fungus causes much harm to wheat in most continental countries, and in America.

Life History.

Bunt—*Tilletia tritici*—is one of the *Ustilagineæ*. The fungus is propagated by means of spores, as shown in the Figure, drawn by Mr. Worthington Smith, which are for the most part globular, and olive brown. When wheat is sown with the spores upon it either in the line, or furrow, on the underside of the grain or among the downy hairs at its extremity, or upon its cuticle, these spores throw out the wreaths of *sporidia* shown at D., between some of which, according to Kühn, there is congregation, or fusion. Conidia (E.) are developed and germinate, throwing out delicate threads, which enter the wheat plant at the root knots or joints (*Wurzelknoten*) directly it has commenced growing, as has been observed by Kühn, who has made many interesting experiments in this direction. Mycelium is formed from the conidia, which grows with the plant and finally sends its hyphæ, or branching filaments, into the ear, stems, and forming grains, whose substance is entirely absorbed, and the husks filled with countless spores.

Kühn says that in his experiments he found that infection with too many spores of the fungus caused the mycelium to be produced so abundantly that the wheat plants were destroyed. He also found that spring wheat is more attacked by this fungus than winter wheat. This fungus preserves vitality for a long time. Spores from the bunted grain, kept in a dry place for eight years germinated in 24 hours, when placed in water on a slide in a temperature of 60° Fahr.

Methods of Prevention.

It is obvious that no remedial measures can be adopted for this attack. There are, however, means whereby the spread of the

fungus may be materially checked, and the first is the avoidance of seed-wheat among which there are any bunted grains, or the least suspicion of bunt, in the sample. This can be detected by the abnormal shape and colour of bunted grains. In many cases it happens in bunted samples that the spores which have escaped from the infected grains blacken the sound, and that they are especially visible upon the downy tufts on the ends of the grains. It is hardly necessary to say that grains so blackened should not be used for seed.

Seed-wheat in which there is the least trace of bunt should be "pickled" or "dressed" before it is sown. Sulphate of copper solutions have been proved to be efficacious if they are applied properly. But merely to ladle these solutions over the seed corn and to turn it over two or three times can hardly be said to be a satisfactory and sufficient mode of "pickling" it, as every part of the grains cannot be covered and saturated with the solution applied in this perfunctory manner. The best way of "blue-stoning" is to put the solution into a large tub—half a wine-pipe, or a similarly deep tub—and to immerse the seed corn, in a basket or bag, in it for five minutes. After the seed corn is taken out of the solution it must be spread upon a floor to dry, or upon old rick-cloths in the open air. It should be dried quickly, particularly when it has been immersed for a long time, and sown as soon as it will run in the drills. For this brief immersion the solution should be strong, at the rate of 1 lb. of sulphate of copper to 10 gallons of water. If it is convenient and there is not a great quantity of seed to "blue-stone," it would be better to reduce the strength of the solution by using $\frac{3}{4}$ lb. of sulphate of copper to 10 gallons of water and to keep the seed-wheat in the solution for three quarters of an hour. The basket or sack should be moved about in the solution so that all the grain may be wetted. It is calculated that 10 gallons of solution will "bluestone" about 7 bushels of wheat.

Another method of "blue-stoning" adopted to some extent in France and America is to soak the seed wheat in a solution of 1 lb. of sulphate of copper to 25 gallons of water for 12 hours. After this it is sometimes put into a solution made by slaking 1 lb. of lime in 10 gallons of water. Shallow tanks, or vats, are necessary for this method.

It is most important that in all solutions the sulphate of copper should be thoroughly dissolved. If it is hung in a bag in the water this object will soon be secured, and there will be no refuse, dirt, or undissolved particles in the solution.

Bags with wide meshes, like gunny bags, may be used instead of baskets.

Salt, lime, sulphate of soda, and sulphate of potassium are used for "pickling" wheat, but neither of them is as good as sulphate of copper. There are also various compositions sold for this purpose of more or less value and efficacy.

Jensen's Hot-water Method.

M. Jensen advocates putting seed corn into hot water as certain to disinfect it and not to destroy its vitality, which he says blue-stoning does to the extent of from 3 to 10 per cent.

M. Jensen's plan involves a boiler, or what is known as a "copper," to be found on most farms. This is filled with water and heated to boiling point. Two tubs—half-pipes, for instance—are set near the copper, in which water is kept and maintained at a temperature ranging between 110° Fahr. and 130° Fahr. by taking boiling water from the copper. The seed corn is placed in a vessel of wire with a close mesh and secured lid, or in a bag of coarse mesh, and is put into one of the tubs containing water heated to 110° to 120° Fahr. The basket or bag is kept moving up and down in the water. After one minute the basket or bag is dipped into the other tub containing water at 127° to 130° Fahr. The temperature of the water must be gauged by a thermometer and regulated by pouring in hot or cold water into the tubs. This second immersion should last from six to seven minutes, during which time the basket or bag must be continually agitated so that every grain is exposed to the hot water. After this the seed corn is spread out on a floor or cloth to dry.

GENERAL AGRICULTURAL NOTES.

AGRICULTURAL WAGES IN AUSTRIA.

A special inquiry was made last year into the wages and economic condition of agricultural labourers in Austria during 1893, the results of which have been published in a volume issued by the Central Statistical Commission, (*Oesterreichische Statistik*, Vol. XLIV., part I.). The statistics were obtained from two sources, viz., from the reports of special agricultural agents on the average wages of day labourers (men, women, and children) during seed-time, harvest, and at other seasons; and from extracts from accounts furnished by owners and farmers themselves.

No average for the whole country is given of the wages ascertained in this inquiry, as the varying conditions throughout the Empire would render such an attempt of little value; but the following table reproduces the extreme figures, between which the rates of pay to day labourers range in the various provinces of Austria. It should be mentioned that in grouping the localities into districts (of which the provinces are composed), the Central Commission has adopted natural, in preference to strictly political, boundaries.

RANGE OF WAGES OF DAY LABOURERS (MEN).

WITHOUT BOARD.

Provinces.	Seed-time.		Harvest.		Other Seasons.	
	d.	d.	d.	d.	d.	d.
Lower Austria	13·2	43·2	14·4	48·0	8·4	28·8
Upper "	15·6	28·8	16·8	33·6	12·0	24·7
Salzburg	19·6	24·0	21·6	28·8	17·5	24·0
Styria	10·8	36·0	12·0	48·0	9·6	24·0
Carinthia	14·8	24·0	18·0	28·8	12·0	24·0
Carniola	14·4	21·6	16·8	22·8	12·0	19·2
Trieste and Territory	21·6	24·0	21·6	24·0	19·2	21·6
Görz and Gradisca	18·0	21·6	20·4	24·0	15·6	19·2
Istria	20·4	31·2	20·4	31·2	16·8	27·3
Tyrol	18·2	43·2	21·3	55·2	15·8	43·2
Vorarlberg	26·4	38·4	26·4	48·0	24·0	38·4
Bohemia	7·2	36·0	8·4	60·0	7·2	36·0
Moravia	9·6	19·2	14·4	28·8	8·4	16·8
Silesia	7·2	21·6	10·8	36·4	6·0	20·4
West Galicia	7·2	21·6	8·4	28·8	5·0	16·8
East Galicia	6·4	13·6	7·6	26·8	5·5	10·8
Rukowina	7·6	16·8	9·6	24·0	5·7	12·0

There is one exceptional district in the Tyrol (the Lech Valley) where wages are far higher than in any neighbouring district; and, except in the case of a single district during harvest time in Bohemia, the inhabitants of this district pay at all times the maximum wages in all Austria.

Generally speaking, women's wages are from 4*d.* to 6*d.* per day lower than those of the men. In the Tyrol, however, the difference is greater. When meals are not given, the men usually receive from 7½*d.* to 1*s.* per day more (in Bohemia, Moravia, and Steiermark, the difference is usually 5*d.* to 7½*d.*, and in Galicia, 2½*d.* to 5*d.*); while the women receive about 10*d.* per day more in Salzburg, 2½*d.* to 5*d.* in Bohemia, Moravia, and Galicia, and about 5*d.* to 7½*d.* in most other districts. It is generally reckoned that the women eat less than the men, hence the difference in wages with and without meals is not so great in their case.

Piece-work is paid, generally, in two ways. The most usual practice is to pay according to the area; the amount of course varies greatly, but the following may be accepted as about the *minimum* prices in the provinces named: Haymaking, 2*s.* 3*d.* per acre in Lower Austria and Steiermark, 2*s.* 1*d.* in Carinthia, 2*s.* 10*d.* in Upper Austria, 1*s.* 3*d.* in Bohemia, 2*s.* in Moravia, 9*d.* in Silesia, and 1*s.* 1*d.* in Galicia; corn-reaping, 2*s.* 3*d.* in Upper Austria, 1*s.* 3*d.* in Bohemia, 1*s.* 5*d.* in Silesia, and 1*s.* 3*d.* in Galicia. Piece-work is generally adopted for almost all purposes in Bohemia, Moravia, and Silesia, threshing by machinery being almost the only labour paid by time; in most other districts, however, time wages are the more common.

The second method is to pay the labourer a certain proportion of the crop, but this is not so common as payment by area. It is mostly adopted in connection with threshing, when the workman receives an amount varying from one-fourteenth to one-eighth of the threshed corn; the higher fraction being given only in Lower Austria and Moravia, and the lower in Bohemia. In some cases a certain amount of food is given as well. Threshing by hand is usually paid with a larger proportion of the produce than in the case of machine-threshing. In the eastern districts, haymaking is also sometimes paid for in this way—as much as half the hay made being given in some cases. The proportion is generally highest for the aftermath, and least for clover.

Commenting upon the results of this inquiry into wages, Dr. Inama Sternegg, President of the Central Statistical Commission, concludes that the variations in the management of estates, and the differences in the physical conditions of the land, are not accompanied by corresponding variations in the rates of wages. The difference between the wages of men and women depends upon local customs; it is least where the conditions of labour are simple and regular. Women's wages are, he points out, always more nearly equal to those of the men whenever meals are given in part payment; the maintenance of the man is reckoned to cost more, so that the difference in real wages is greater than appears. The difference between wages with and without meals depends, according to Dr. Inama Sternegg, very much on the simplicity of the workman's requirements, and also upon how easily he can keep himself at home, but the quality of the food has very little effect (its influence is greater in harvest-

time, on account of the quantity of drink necessary) and hours of labour have a less appreciable influence, so long as there is no overtime.

On smaller farms, it appears that farm servants are preferred to day labourers. The difference in this respect is said to be noticeable among different nationalities, the Germans employing servants to a greater extent than the Italians or Slavs.

But little information is forthcoming as to hours of labour. In most districts they appear to be, roughly speaking, from 6 a.m. to 6 p.m., with from 1½ to 2 hours' interval for meals. Nor are these hours universally shorter in winter; although generally speaking 12 hours daily appears to be about an average of winter and summer. The most definite information (taken from a work published by Dr. Pilat in 1882) is given as regards Galicia, according to which the hours of labour in that province were as follows:—

		Number of Political Districts in which the number of hours usually worked (day labourers) was													
		4	5	6	7	8	9	10	11	12	13	14	15		
Summer:															
Minimum	-	-	-	1	3	24	16	21	4	5	-	-	-		
Maximum	-	-	-	-	-	-	1	3	6	28	11	19	6		
Winter:															
Minimum	-	-	4	24	36	9	1	-	-	-	-	-	-		
Maximum	-	-	-	-	3	7	43	15	5	1	-	-	-		

Payment by piece-work shows a tendency to vary, from one district to another, according to the level of the general daily wage. It is less frequent among women and children, and on small farms: the larger the property the larger is the proportion of work paid by the piece. It is more especially favoured on farms where the crops grown are of a very uniform character, such as beetroot, and in silviculture.

AGRICULTURAL CENSUS IN BELGIUM.

The Belgian Government has, by a law passed this autumn, provided for an exhaustive agricultural census to be taken at the close of the present year. No information as to the areas under the different crops in that country has been published since 1880. At the new census it is proposed to ascertain the acreage under different crops, the average yield of each crop, the number and occupation of persons employed in agriculture, the number of the principal farm animals, the number of births and deaths among these animals, the number of animals

slaughtered on account of contagious diseases since the last enumeration; to collect information concerning the manures, fertilisers, and feeding stuffs used, the wages of agricultural labour, the selling value of land and the average value of leases, the improvement of lands of whatever kind since 1880, the position of agricultural credit, insurance, and co-operative societies, as well as of institutions having for their object the advancement of various branches of this industry. Detailed statistics are also to be collected concerning forests, uncultivated lands, and communal lands which are utilised in any way.

The data as to the yield of the various crops are to be taken from the annual returns, and those of the animals slaughtered on account of disease from the information already in possession of the Minister of Agriculture. The statistics of wages, and of the value of land are to be furnished by the communal authorities. The returns of forests, uncultivated and communal lands, will be collected by the Administration of Woods and Forests. All the other returns are to be furnished by the individual farmers, on four schedules, which are to be distributed by special agents between the 1st and 20th December, and collected again during the first fortnight of January. These agents are also to examine and check the schedules as far as possible.

Among the more noteworthy features of this census are the following:—The agents are to be paid by results, *i.e.*, they will receive a fixed sum for each schedule filled in. The return is obligatory, refusal to furnish the information rendering a person liable to a fine (not exceeding 1*l.*) or imprisonment (up to seven days) or both. The schedules provide for very detailed returns concerning certain of the crops, *e.g.*, information is required as to clover under the five separate heads of *Trifolium incarnatum*, red, white, and hybrid clover, and trefoil. Beetroot is in two categories, according to whether it is to be used for sugar or for feeding purposes. The quantity of seed sown per hectare is also demanded in the case of wheat, rye, spelt, oats, barley, and sarrasin. A special return is to be made concerning second crops and plants grown for green-manuring, &c. The census of agricultural machines, manures, feeding stuffs, &c., is also intended to be peculiarly complete.

A partial agricultural census, bearing especially on the crops and the number of principal animals used in agriculture, may, under the provisions of this law, be taken annually in future.

LIVE STOCK IN BULGARIA.

The Board have received from the Bulgarian Bureau of Statistics, a volume containing the results of the live stock census taken in January, 1893. The number of horses, cattle, sheep, and

swine in Bulgaria at that date is shown in the following table:—

Animals.							No.
Horses	-	-	-	-	-	-	343,946
Cattle	-	-	-	-	-	-	1,767,974
Sheep	-	-	-	-	-	-	6,868,291
Swine	-	-	-	-	-	-	461,635

Of the horses enumerated above about 60,000 were used for draught purposes and 83,000 for riding. The cattle included 630,000 oxen and nearly 800,000 heifers and calves; there were also 124,000 buffaloes and 120,000 buffalo cows. The number of mules in Bulgaria in 1893 was stated to be 8,200 and of asses 81,600.

The number of poultry was returned at 3,427,000, the greater proportion being fowls, the number of which was given as 2,860,000. The remainder included 300,000 geese, 166,000 turkeys, and 95,000 ducks.

AGRICULTURAL SCHOOLS IN HOLLAND.

The Board have received through the Foreign Office a despatch from Her Majesty's Minister at the Hague, in which it is stated that a supplementary credit of 7,464*l.* is demanded by the Dutch Minister of the Interior towards the intended reorganisation of the Government School of Agriculture (*Rijks-landbouwschool*).

A suggestion having been made in the Committee of the Second Chamber that the above-mentioned school might with advantage be suppressed, the State confining itself to granting subsidies to Communal and private agricultural schools, the Minister, in an explanatory statement, replied that private initiative had proved inadequate to provide for the object in view. The State School of Agriculture will, therefore, be maintained, reorganised, and supplemented by a State School for Horticulture (*Rijkstuinbouwschool*), both to be located at Wageningen, but to be kept entirely apart, except from an administrative point of view.

Among the modifications proposed is the creation of a class for Indian or tropical husbandry. It is likewise intended that in the technical instruction given to the pupils being trained for the forest department in the East Indies, account should be taken of those pupils who wish to qualify for forestry at home.

A two-years' course of scientific instruction in kitchen-gardening (*warmoezerij*) and horticulture as well as winter schools and classes, will also be introduced, but only when the

requisite teaching staff shall have been formed and the necessary arrangements completed with the Communal authorities.

The subsidies hitherto granted to the Agricultural school belonging to the *Maatschappij van Weldadigheid* at Fredriksvord, to the Netherlands Horticultural Society, and to a similar society at Maestricht, will be continued. Subsidies will also be allotted in aid of winter courses in those places where sufficient local interest is shown.

The Minister puts the primary cost of establishing the new horticultural school at 8,111*l.*, with a yearly expenditure of 791*l.* for the staff to be employed, and of 250*l.* for equipment. It is estimated that a further outlay of 1,250*l.* will be required for putting in order the ground destined for the school.

SWISS SUBVENTIONS IN AID OF AGRICULTURE.

A parliamentary paper* was issued in 1894 containing reports, made at the request of the Royal Commission on Agricultural Depression, on the direct action taken by the Governments of various foreign countries to promote the interests of agriculture. Amongst those countries was Switzerland. Since the date of the report for this country, a new law (Law of 22nd December 1893), modifying the conditions under which the various Government subsidies are granted, has been enacted.

As noticed in the parliamentary paper referred to (pp. 133-7) the direct encouragement of agriculture is to a great extent left to the cantons and private enterprise. In fact, the initiative, where fresh work in this direction is undertaken, is always left to the cantonal administration and to societies or individuals, the aim of the Federal Government being to help existing institutions. In all cases concerning any enterprise officially connected with a canton, the subsidy accorded by the latter must be at least equal to that of the State.

The subventions accorded by the Government may be grouped under three main heads: (a) subventions in aid of agricultural education; (b) subventions in aid of the improvement of animals and the land; (c) indemnification against calamities which threaten agriculture. Indemnification for animals slaughtered on account of contagious diseases is paid by the different cantons, except in the case of the cattle plague, when, subject to the proper regulations being enforced, one half of the indemnity paid may be refunded to the canton by the State; also, if by an unusual extension of pleuro-pneumonia, or other extraordinary circumstance, the expenses under this head are so abnormal as to be a serious burden on the canton, the State may defray a portion.

* C.—7356.

Agricultural education is aided chiefly by scholarships and grants to experimental stations. As regards the former, the State is empowered to give as much as 24*l.* per annum to students who intend to devote themselves to agricultural teaching or to agricultural engineering, conditionally upon their having been engaged during at least a year in practical agriculture, upon the canton joining to the scholarship a sum which must be at least equal to that of the Confederation, and upon the candidate formally binding himself to devote the next six years at least to Swiss agriculture. Failure to carry out this last condition involves the return of the scholarship unless satisfactory reasons can be adduced.

The Confederation also grants a regular annual subsidy to such cantons as already possess, or which intend to create, theoretical and practical schools of agriculture, and summer and winter courses of lectures; the proposed schemes of these schools and lectures being previously approved by the Federal Council. Cantons engaging travelling agricultural professors and organising special conferences, lectures, or inspections of dairies, cattle sheds, and pastures, or undertaking other steps tending to benefit agriculture, are also eligible to receive grants.

According to requirements, subsidies are granted in aid of the creation and working of dairy stations, model dairies, experimental arboricultural and viticultural stations, as well as laboratories, &c. The money for this purpose is provided for in the Budget, after the Federal Council and the canton have come to a satisfactory agreement as to the amount required. The Confederation may also establish State laboratories and experimental stations.

The amounts paid by the State under this head during the five years 1890-94 were as follows:—

FEDERAL SUBVENTIONS IN AID OF AGRICULTURAL EDUCATION AND EXPERIMENTS.

—	1890.	1891.	1892.	1893.	1894.
	£	£	£	£	£
Scholarships - - -	188	151	133	112	131
Agricultural schools - -	277	3,270	3,732	3,739	3,923
Travelling conferences and special courses - - -	513	577	615	624	} 691
Dairy and pasture inspection -	107	120	153	125	
Experimental stations and researches - - -	} 906	1,438	2,013	573	} 570
Schools of viticulture - -				1,824	
Total - - -	4,489	5,556	6,645	6,996	7,164

A credit of at least 16,000*l.* is annually provided for in the Budget for the improvement of cattle. This money is devoted to seconding the efforts of the cantons in supplying the country districts with good bulls, in increasing the number and improving



the quality of breeding heifers and cows by means of premiums, and in paying a portion of the expenses of forming breeding syndicates and of granting prizes for families and groups of cattle whose descendants are registered in a properly kept herd book. Some portion may also be devoted to assisting Switzerland to take part in exhibitions of cattle abroad. The amount granted depends upon the number of cows and heifers of over one year in each canton according to the last census (such a census is taken every five years). The subsidy allowed for the purchase of bulls and premiums must not exceed the amount allotted by the canton, and the total sum granted for the purchase of bulls by the Confederation and the canton, must amount to at least 4*l.* per bull. Credits destined to help in the formation of breeding syndicates are granted independently of the sums contributed by the canton.

Premiums are only paid nine months after award, and only upon proof that, during this interval, the animal has served for breeding purposes. If the canton requires it, the premium may be paid only on account of animals which have been used for breeding during a longer or shorter period. An exception may be made in the case of Alpine cantons. With regard to foreign exhibitions, the Federal Council may add the proviso that the animals shown must be brought back into the country after the exhibition.

In 1894 premiums were for the first time awarded for cows and heifers, the total being 3,049*l.* The payment of this sum, or of such a portion as can be claimed by fulfilment of the conditions, falls due in 1895.

A credit of at least 8,000*l.* per annum is entered in the Budget for the development and improvement of horses. It is provided: for the purchase and (if necessary) maintenance of foreign stallions, and eventually of Swiss stallions when these latter are proved to be not inferior to the foreign; for premiums for mares and fillies the issue of stallions acquired by the help of the Federal grant; for increasing the sum total of the prizes awarded at exhibitions of horses by cantons or societies; and for subsidizing societies, syndicates, or cantons owning good pastures for colts.

Subject to conditions fixed by the State, subventions may also be granted to cantons for improvement in the breeds of smaller animals.

As regards improvement of the land, the requests for subsidies must be forwarded to the Federal Council before the commencement of the works, accompanied by all necessary particulars. The aid granted by the canton must be at least equal to that of the Government, and the latter should not exceed 40 per cent. of the whole cost. Government does not contribute to maintenance expenses. The subsidy is paid after completion of the works and inspection by the Federal Authority.

The subsidies for improvement of the land are chiefly on account of drainage of marsh land, and, to a less extent, the

construction of cattle sheds, roads, and irrigation works, surveying, &c. The present rapid increase in the subsidies under this head will probably not be maintained; it appears to be due to the scheme having been introduced only shortly before 1890. The grants sanctioned in 1894 amounted to 8,591*l.* for 81 undertakings. The number of works undertaken with promise of State aid in the five years 1893-94 were respectively 40, 100, 109, 106, and 81, many of which are, of course, not yet completed, and consequently not paid for.

The Federal Council exercises a general control over the means adopted for combating the phylloxera and other agricultural parasites; and cantons which have taken proper measures in this direction can recover up to 50 per cent. of their expenses from the State. These amounts are annually provided for in the Budget.

The Federal Council also assists the cantons in their endeavours with regard to the insurance of cattle and insurance against hail. Such subsidies may be granted to cantons where obligatory insurance of cattle is enforced (whether for the whole canton or for a part only). The sums on account of damage by hail are paid to such cantons as assist insurance by bearing the expenses of the policy, by contributing to the payment of the premiums, and by forming a reserve capital. In no case, however, must the sum allotted by the State exceed the amount given by the canton.

Besides the above, the State subsidises certain societies and agricultural syndicates. In the use of these grants the interests of the "petite exploitation" must be especially borne in mind. Special indemnities for works executed at the request of the Government may be granted to the principal agricultural societies.

Grants are also given towards general agricultural exhibitions, which are held at intervals of not less than six years in various parts of the country. Such grants can only be employed as part of the prizes. Exceptionally, grants may be made to special exhibitions (whether national or cantonal), provided they do not take place in the same year as a general exhibition.

CO-OPERATION AMONG FRUIT-GROWERS IN OREGON.

The Report of the Department of Agriculture of British Columbia for the year 1894 contains information relating to the Oregon Fruit Union, which is an association founded by a number of fruit-growers, whose object is to buy and sell all kinds of farm and orchard produce; and to transact a general commission and agency business. In the prospectus of the union the object is further defined as being one to facilitate the marketing of Oregon green and dried fruits; to make it possible for the small grower to be able to dispose of his fruit with as

exceptions, favour the factory system, and it is confidently expected that within the next 12 months individual dairying to any extent will have become a thing of the past. There were, at the end of 1894, 23 cheese and butter factories, and 27 creameries, in the southern portion of the colony, as compared with 16 factories and 13 creameries in the previous year.

A more perfect system of dairying is said to be required in the colony, and it is maintained that the industry will not be as profitable as it otherwise might be, until the average yield per cow amounts to 4 lbs. of butter weekly.

To arrive at these results farmers are recommended to breed for quality and feed for quantity, and to regulate their herds so as to always have a number of cows in milk.

The imports of butter and cheese into Queensland in 1893 amounted to 271,106 lbs., and 366,031 lbs. respectively, while in 1894, 221,724 lbs. of butter, and 65,720 lbs. of cheese were imported into the colony. These figures show a considerable falling off in the importations, particularly in cheese.

According to regulations made under the provisions of the Meat and Dairy Produce Encouragement Acts, 1893 to 1894, a bonus may be paid upon all butter and cheese made in Queensland of Queensland produce, whether at a factory or elsewhere, and exported after the 1st of January 1895, to any port outside the Australian colonies. The bonus is at the rate of one penny per pound for butter, and one half-penny per pound for cheese. The quantity exported in each shipment must not be less than 10 cwts. in the case of factories, or than 1 cwt. in other cases. There is also an arrangement whereby any balance from the dairy fund at the end of the year shall be divided *pro rata* amongst the persons who have received bonuses during the year, but the total bonuses thus received must not in any case exceed twopence per pound on butter or one penny on cheese. All butter and cheese exported under these regulations must be examined and approved on behalf of the Government. After such approval the bonus becomes payable, but the butter must be placed on board ship for export within seven days.

The fees charged for inspecting and stamping butter or cheese for export are at the rate of 6*d.* per cwt., the lowest fee being 2*s.* 6*d.* and the highest 42*s.* Penalties are imposed to the amount of 100*l.* for counterfeiting the Government mark or brand, or for possessing the means of counterfeiting the brand, and to the amount of 50*l.* for using a second time a package marked with the Government brand.

According to the Annual Report of the Queensland Department of Agriculture for 1894-95, only two shipments of butter had up to the date of the report (May 30th, 1895) been made under the foregoing provisions.

WHEAT GROWING IN QUEENSLAND.

From the annual report of the Queensland Department of Agriculture for the year 1894-95 it would appear that the total area sown with wheat in the Colony in 1894 amounted to 34,387 acres, of which 28,997 acres were for grain, the area under the crop being larger than in any previous year. The market price for the grain was very low, and farmers complained of the difficulty of selling their crops except at unremunerative prices. The fall in prices is attributed, to some extent, to the good harvest in nearly all wheat-growing countries during the previous four years, and the consequent accumulation of stocks.

The following statistics of the wheat crops in Queensland of the past five years have been taken from the report of the Registrar-General of the Colony. They show the total area sown and the proportion of that area sown for grain, the difference representing the acreage mown for forage.

Years.				Total Area sown.	Area sown for Grain.	Yield of Grain.	Average Yield per Acre on Area sown for Grain.
				Acres.	Acres.	Bushels.	Bushels.
1890	-	-	-	12,063	10,390	207,990	20·20
1891	-	-	-	20,519	19,306	392,309	20·32
1892	-	-	-	33,332	31,742	462,583	14·57
1893	-	-	-	31,750	28,993	413,094	14·25
1894	-	-	-	34,387	28,997	545,185	18·80

Although the wheat returns of late years show a satisfactory change from the conditions previously existing, when Queensland was entirely dependent upon outside sources for the supply of breadstuff, yet the 500,000 bushels of wheat even now grown fall far short both of the requirements of the population, and also of the possibilities to the producer afforded by soil and climate. This is proved from the fact that last year 415,734 bushels of wheat and 34,004 tons of flour were imported into the Colony. This, taken as an equivalent of, say, 2,047,926 bushels of grain, added to that grown locally, as mentioned above, gives—ignoring the export, which is trifling—in round numbers 2,500,000 bushels as the measure of the annual consumption of breadstuffs in Queensland. Of this quantity, it will be seen that one-fifth only is provided for by home production. With these figures in view, and with suitable land to be found in abundance, it is felt that this branch of agriculture should continue to expand at least sufficiently to meet the demand of local requirements.

Wheat cultivation may for all practical purposes be considered as confined to the southern division of the Colony, and to the west of the main range.

The Darling Downs territory is the chief seat of the industry, comprising, 29,000 out of 34,000 acres sown. Three districts situated there, viz., Allora, Toowoomba, and Warwick, contributed very nearly four-fifths of this area, and returned fully 80 per cent. of the total wheat produced in 1894.

It seems that in 1894 fully two-sevenths of the total wheat area was, more or less, affected with rust.

AGRICULTURAL EXPORT TRADE OF SOUTH AUSTRALIA.

According to a report issued by the Ministry of Agriculture at Adelaide, the action of the South Australian Legislature in establishing the Wine and Produce Depôt in London, has had an important bearing on the export trade of the Colony. There is said to be no doubt that an excellent market can be obtained in England for South Australian wines, provided a uniform standard can be maintained. The chief desideratum in this direction is stated to be the establishment of co-operative wineries, which, in the direction of equalising the product are expected to do for small winemakers what the butter factory system has done for milk producers.

As a necessary complement to the storing and distributing depôt in London, a receiving depôt for produce of all kinds has been established at Port Adelaide. An excellent site on the ocean steamers' wharf has been secured for this purpose, and refrigerating machinery and chambers have been erected. The premises were opened and the machinery started by His Excellency the Lieutenant Governor on April 17th, 1894, in the presence of a large gathering of business men and producers.

A trial shipment of frozen produce was made by the ss. "Woollomoolloo" and "Warranbool" in April and May. The produce is reported to have reached London in excellent condition, the poultry having sold at 4s. a head, while the pork was described as very good, the size and dressing being all that could be desired.

The Ministry of Agriculture has also, through the produce depôt, undertaken the export of fresh fruit, with satisfactory results. Apples are said to have reached as high a price as 17s. a case, and on the whole have travelled well; with pears the results have not been so satisfactory, the fruit being frequently worthless on arrival. Hitherto the only variety of grape that has borne the journey well is the Almeira. Shipments of eggs, honey, and other minor products have also been made.

In the working of the depôt as an agency for the benefit of the producers, attention is chiefly directed to building up new industries and opening fresh channels to the markets. The difficulty and expense in these directions are stated to be so great that the individual exporter has but small prospect of

success. Moreover, the charges on small consignments are, proportionately to the value, so heavy as to be practically prohibitive. Through the depôt a means of co-operation is provided by which the resources of several consignors are made available in the common interest, and incidental charges are reduced to a minimum by grouping together the parcels of small producers in one shipment.

The object of the depôt is not only to provide facilities for the marketing of produce, but also to afford a guarantee of quality. All goods consigned to the depôt are examined by experts prior to shipment; if found to be in good condition and properly packed they are sent forward to the London manager with a certificate to that effect. This system of inspection has been adopted in order to prevent the export of inferior goods which might have an injurious effect on the reputation of South Australian products.

AGRICULTURE IN THE FALKLAND ISLANDS.

In the last Colonial Report relating to the Falkland Islands, it is stated that tillage and land cultivation are practically unknown in the Colony except for domestic purposes.

About 100 acres may be said to be appropriated to the cultivation of kitchen gardens by separate families for home consumption only. Tubers and ground crops do well, but the high wind normally prevailing is fatal to the healthy existence of any plant or fruit growing to a height of more than two or three feet above ground. The Colony is essentially pastoral and its sole industry is sheep raising, to which the entire acreage of 6,500 square miles or 4,166,400 acres, is devoted.

Some portions of the land are, of course, useless for any purpose, being nothing but soft bog, and stone runs, where neither grass will grow nor animals can tread. Locomotion inland is entirely on horseback, every farmer keeping a sufficient number of horses for all his hands.

There were at the close of 1894 over three-quarters of a million sheep in the Colony, one firm alone being able to compute its flocks at a quarter of a million. Horned cattle amounted to 8,192, and horses to 3,294.

According to the annual statement of the trade of the United Kingdom for 1894, there were imported last year into this country from the Falkland Islands: 6,394 cwts. of fresh mutton, 81,506 undressed sheep-skins, and 5,383,000 lbs. of sheep or lambs' wool, which alone was valued at over 134,000*l*.

EXTRACTS FROM FOREIGN OFFICE REPORTS.

AGRICULTURE IN NORWAY.

Mr. T. Michell, Her Majesty's Consul-General at Christiania in a report, dated 13th September last, on the trade of Norway in 1894, refers to the condition of agriculture in that country, and gives information published on the subject by a local newspaper—the “Aftenposten”—which he states to be a reliable authority.

It appears that the state of agriculture in Norway for the time being is not very clear. There is every reason to look at the black side of things, for agriculture is in a worse position than it has been for some time past, and the majority of the farmers have, from an economic point of view, undoubtedly lost ground. Taken as a whole they are reported to be at a very low ebb; not many can be said to be fairly well off, and only extremely few are flourishing. In this dark picture, however, there are said to be many bright spots for encouragement. First and foremost may be mentioned the fact that there are farmers to be found who have not lost ground, but who in spite of all have held their own. Some have even improved their economic condition, despite the fact that they had not any particular advantage over the general run of farmers, having attained this result solely through their own personal industry, attention, and thrift.

Farmers are advised to work in the direction of improving their live stock, and to devote their attention to the more extensive production of milk-giving fodder.

According to the Norwegian “Weekly Journal for Farmers,” the condition of farmers in the neighbourhood of Lemvig is considered the most satisfactory, since in that district corn-growing has entirely given way to cattle-breeding.

[*Foreign Office Report, Annual Series, No. 1,644. Price 6d.*]

DEMAND FOR AGRICULTURAL MACHINERY IN SOUTH RUSSIA.

In a report on the trade of the district of the Consulate General at Odessa Vice-Consul Captain Murray states that on account of the scarcity and high price of farm labourers the sale of agricultural machines is each year increasing, and in 1894 much larger sales of such goods were effected in the Taurida than in foregoing years. The agent of one English and one American firm sold machines to the value of 50,000*l.* in the Taurida in 1894, amongst which were 500 binders and 60 pairs of threshing machines and driving engines, and in all over 600 agricultural machines.

The demand is very large, but the purchase of such machines by the farmers, already much ground down by the low price which they actually get for their grain, and the heavy burdens on land, is rendered still further difficult by the very high duties, varying from 7½ to 30 per cent. of the original cost of the implement, and by the enormous prices which they are charged by the sellers of the machines in Russia who make a very handsome profit on the sale of each article.

English and American machines have the highest name, and are obtained by those who can afford to pay a high price, but their very high price puts them out of the reach of many. German machines are bought by those who cannot afford English, or go in for cheap bargains. Russian-made machines are found unsatisfactory.

Several district councils (*Zemstvos*) are now setting about importing agricultural implements themselves to save the middle man's charges, the implements to be sold on credit to the farmers, but the terms on which they are allowed to lend money to farmers for the purchase of implements exact the repayment of the money within 3 years, which is not found a good arrangement as the time that it takes to earn back the cost of an implement differs, as, for instance, a plough can pay itself back in less than 3 years, whereas a portable engine would take double that time, so that the buyer would have to borrow after 3 years to repay the rest of the purchase money.

Strong representations are now being made to Government, on this subject, and also with a view to the large diminution or total removal of the import duty on agricultural machines, as it is pointed out that these duties benefit only a very small number of manufacturers, whilst causing large loss to the many million agriculturists, and further, that these duties are highest on those articles which are not produced at all, or hardly at all in Russia, and lowest on those which are made in some quantity, so that the present duties are not even well arranged for the Russian manufacturers for whose benefit they are imposed, and it is hoped that the Government, which is known to be paying much attention at present to the pitiable condition of the rural population, will shortly make other arrangements, in which case a wide field will be open for English agricultural machine manufacturers.

The German farm implements sell better amongst the less educated farmers as, in addition to their being much cheaper, they are got up to attract the eye, or something of the sort, with a picture painted on them, whereas the English manufacturer puts on a coat of red paint and leaves the machine to sell itself on its merits; which, however, require to be known to induce buyers to pay a higher price than for a German article which looks the same or better, and is much cheaper.

[*Foreign Office Report, No. 1,615 Annual Series. Price 2d.*]

APICULTURE IN SERVIA.

The Foreign Office has recently published a report sent by Mr. A. F. G. Leveson-Gower, Her Majesty's Consul at Belgrade, who states that, while bee culture in Servia is at present in its infancy, a good deal of progress has been made of late years, and that at the present time there are several bee farms of considerable size in different parts of the country.

A description is given of one of these farms, which is situated close to Topschidere, a village about four miles distant from Belgrade. It is the property of a Servian society called "The Society for Bee and Fruit Culture," and contains about 200 hives, placed in regular rows at an equal distance of 6 feet 6 inches from each other in rows facing north. These hives are all on the bar-frame principle, and of the pattern generally known as Dzierzon hives, and contain about 80 lbs. of honey in the comb when full. They are made of wood with straw sides, and are produced at a cost of 15 fr., or about 11s., each. The farm is under the care of a superintendent, who appears thoroughly to understand his business and the manipulation of bees.

The bees, to the uninitiated, appear to be a species of the common hive-bee (*Apis mellifica*), but are rather small in size and unusually tractable. It appears that the Italian bee (*Apis ligustica*) does not succeed well in Servia, and becomes quickly merged with those indigenous to the country.

The bee farm at Topschidere is provided with two centrifugal honey extractors of very simple design, but perfectly practical. The honey is extracted from the comb in these extractors, and put into glass bottles with screw tops of a very neat pattern, imported from Austria, containing respectively $\frac{1}{2}$ lb., 1 lb., and 2 lbs. The price of the honey is 1 fr. per lb. (about 9 $\frac{1}{2}$ d.), exclusive of the bottle, for which an extra charge of 50 c. is made. The wax is sold to the wax chandlers for making into church candles, and realises 3 fr. 40 c. per kilo, or about 1s. 3d. per lb.

The importance of encouraging bee culture is evidently fully realised by the members of this apicultural society and others interested, and the introduction of a law is said to be in contemplation, obliging all priests, schoolmasters, and certain others holding employment under Government to turn their attention to the keeping of bees.

Judging from the organisation of the bee farm at Topschidere, and the scientific and business-like manner in which it is managed, Mr. Leveson-Gower thinks it likely that this society may be the means of introducing a system of bee-keeping on scientific principles, and of developing the industry throughout Servia, where, until lately, the peasants have been in the habit of keeping their bees in conical straw skeps daubed with mud or plaster of the most primitive description, and destroying the bees in order to obtain the honey.

The object of the society would, he maintains, be still better attained if cheap straw skeps with supers, as well as bar-framed hives and other apicultural appliances which have been brought to such perfection in England could be introduced into Servia, and the cumbersome Dzierzon hive dispensed with.

[*Foreign Office Report, Miscellaneous Series, No. 380. Price 1d.*]

AGRICULTURAL CONGRESS AT BRUSSELS.

The Board have received through the Foreign Office a copy of a Report by Mr. C. F. F. Adam, Secretary to Her Majesty's Legation at Brussels, on the proceedings of the third Agricultural Congress, organised by the International Commission of Agriculture, of which M. Jules Méline is President. The Congress sat in Brussels from the 9th to the 15th of September last, and was opened by M. de Bruyn, Belgian Minister of Agriculture and Public Works, who was elected Honorary President, while M. Cartuyvels van der Linden, Director-General of Agriculture, was elected actual President.

The subjects assigned to the several sections of the Congress were as follows:—

1st Section: Agricultural education. 2nd Section: Agronomic sciences. 3rd Section: Rural social institutions, and agricultural co-operation. 4th Section: Questions of legislation and administration. 5th Section: The monetary question. 6th Section: Cattle breeding. 7th Section: Veterinary medicine. 8th Section: Vegetable production. 9th Section: Southern (tropical?) crops, and colonisation. 10th Section: Forest management. 11th Section: Pisciculture. 12th Section: Agricultural industries.

The mornings of Tuesday, September 10th, and Wednesday, September 11th, were devoted to meetings of the several sections. On the latter day, in the 5th section, M. Allard, formerly Director of the Belgian Mint, defended a report which he had presented in favour of bimetallism, and proposed a motion advocating a new Monetary Conference. On Wednesday afternoon, a general meeting was held, under the presidency of M. Cartuyvels van der Linden, at which M. Sagnier, manager of the "Journal de l'Agriculture," of Paris, presented a report on the "Protection of Birds useful to Agriculture." This was followed by a discussion on the proceedings of section 7, in regard to the prevention of tuberculosis, glanders, and contagious pleuropneumonia.

A proposal for an International Sanitary Convention, presented by M. Degive, Director of the Veterinary School of Cureghem, was agreed to unanimously, and a motion was introduced by M. Nocard, Professor at Maisons-Alfort (France), in favour of the systematic use of malleine as a preventive of glanders. This was also carried.

Inspector de Rov introduced a discussion on the prevention of contagious pleuro-pneumonia, and suggested that "preventive inoculation of pneumonia should only take place subject to Government regulations." This was adopted after some opposition.

M. Nocard's motion that "The systematic use of tuberculin is the only means of effectually preventing tuberculosis," was adopted.

On Thursday, September 12th, the debate on bimetallism in the 5th section was continued by the discussion of a motion, introduced by M. Strauss, for the rejection of the proposals contained in M. Allard's report. M. Allard's motion was eventually carried by a large majority.

With regard to a motion of Baron de Royer de Dour, adopted by Section 3, that "Agricultural labourers ought to own their cottages," M. W. de Selys Longchamps pointed out that it would not be enough for them to own the house, without a piece of neighbouring land attached to it. His proposal, to refer this question to the permanent International Commission for their decision, whether it should not be laid before the next Congress, was adopted.

At the general meeting on Friday, the 13th, a short debate took place on the question of insurance against mortality among cattle, which had been discussed at length in Section 3. M. Hector Denis warmly advocated compulsory insurance, but was defeated by about 10 votes.

A motion of M. Denis, in favour of the organisation of a compulsory system of labourers' insurance against old age, ill-health, and accidents, was referred to the permanent Commission, with a view to its discussion at the next Congress.

A report of the 4th section by M. Schmitz, concluding that "Long leases are to be recommended, but cannot properly be imposed," was agreed to unanimously; after which followed a debate respecting the relations of landlord and tenant, and the advisability of suppressing or maintaining the landlord's preferential claim before other creditors. M. Alexandre Louay, a Government agronomist from Mons, spoke strongly against the landlord's claim, and was opposed by M. Schmitz, junior. M. d'Hont and Baron F. Van der Straten-Pouthoy supported a compromise proposed by Baron de Fontbare, limiting the landlord's privilege to one year beyond the current one. M. Lefebvre defended the compromise, and M. Denis the motion of M. Louay, which was lost by a large majority, the compromise being then adopted without opposition.

A motion presented by Section 4, in favour of the employment of prisoners undergoing long sentences in the open air, was adopted without discussion.

The question of compensation for improvements, to which M. Denis wished to give greater extension, led to some discussion between that gentleman and Count Kolowrat, and, after a short debate, M. Denis' proposals were rejected. Various technical

proposals were next discussed before the adjournment of the meeting.

Saturday, the 14th, was devoted to a visit to M. Dumont's sugar-beet farms at Chassart, and the sugar factory, distillery, and other works connected therewith. The final general meeting of the Congress took place on September 15.

The fourth session of the Congress will take place at Buda Pesth.

PARLIAMENTARY PUBLICATIONS.

Royal Commission on Agriculture. Report on the County of Cambridge, by Mr. Wilson Fox, Assistant Commissioner.
[C.—7871.] Price 8½d.

In this report it is stated that agriculture in North Cambridgeshire is in a depressed condition, but that owing to the nature of the soil, which is easier to work and adaptable in certain districts to the growth of seeds, roots, vegetables, and market garden produce, it has suffered less than the southern portion. The position of affairs in the greater part of South Cambridgeshire is, it appears, deplorable, and on the south-western side the effects of the depression upon the land are such that considerable tracts of it are, for all practical purposes, worthless.

The reductions in rent and the fall in the freehold value of land have seriously affected the position of landowners, and the ownership of some of the heavy land in the county is said to be regarded as an expensive burden.

Tenant farmers, too, are reported to have suffered greatly from the general effects of the depression, while the labourers have had to submit to a reduction of wages since 1893, particularly in South Cambridgeshire.

It is the almost unanimous opinion of agriculturists in the county that the depression is due mainly to the fall in prices of agricultural produce. This fall is stated to have been so great that the land is now incapable of sustaining the heavy burdens imposed upon it. It is urged, therefore, that personal property should be subjected to a larger share of taxation than at present and that certain charges, such as education, poor rate, the cost of the police, and the maintenance of highways should be made the subject of Imperial taxation. Among other remedies for the present state of things suggested to the Assistant Commissioner, were the abolition of preferential railway rates on foreign produce; the manufacture of beer from malt and hops; State loans for improvements; the marking of foreign meat; the prevention of adulteration; cheap transfer of land; light railways; old age pensions; and the suppression of gambling in wheat.

It seems that Cambridgeshire, like other eastern counties, has not a high reputation for butter making, and a great deal of foreign butter is sold in towns in the county. The lack of uniformity in the home manufactured article is said to be the chief reason for this, though in a number of cases the quality is inferior. In calling attention to these points, Mr. Wilson Fox observes that there appears to be but little hope of English butter competing successfully with foreign produce until there is more uniformity of quality.

Very few people in Cambridgeshire pay any special attention to the rearing of poultry, though one very successful instance is quoted. In some districts, fruit growing and market gardening are reported to have considerably increased of recent years, though the railway rates are said to be a great disadvantage in these days of severe foreign competition.

Royal Commission on Agriculture; Report on the County of Norfolk, by Mr. R. Henry Rew, Assistant Commissioner.
[C.—7915.] Price 1s. 2d.

From this report it appears that agricultural depression commenced in Norfolk some time prior to the Duke of Richmond's Commission, and that in 1881 the position was trying and troublesome. Since that time matters are said to have been steadily getting worse, the seasons of 1893 and 1894 having brought about a climax.

The burden of the complaints of agriculturists in the county is "low prices." The reduction in the value of produce has, it is maintained, far outrun any attempts which could be made to re-adjust the cost of production.

The position of the owners of land in Norfolk is reported to be very serious, and the evidence of the effects of the depression on this class is, to a large extent, patent. Many of the owners of well-known estates—men whose names are famous in the history of the county—have had their incomes so much curtailed that they have had to let "the hall" and live on a more modest scale elsewhere. Others have been compelled to let their shootings and to practice severe retrenchment in every direction to enable them still to occupy their old homes.

Evidence as to the reductions of rent, collected by the Norfolk Chamber of Agriculture, indicated that rents on the best lands had been reduced by 25 to 35 per cent., and on the medium lands from 40 to 60 per cent. Mr. Rew is disposed to put the range of reduction at from 20 to 60 per cent., the average which would represent the largest quantity of land in Norfolk being probably about 35 to 40 per cent. This estimate does not, of course, take account of farms for which no tenant at any rent can be found, nor does it include exceptional cases such as those, on the one hand, where special circumstances have kept up the rent of particular farms, or, on the other hand, where farms have been let at merely nominal rents.

Speaking of the position of the tenant farmers the Assistant Commissioner says:—

"Twenty or thirty years ago no class connected with the land 'held their heads higher,' to use a colloquialism, than the farmers of Norfolk. As men of considerable capital, conducting a profitable business on a large scale, and with a well-deserved reputation for enterprise and ability, they had a fair right to do so. Many of them owned the whole or a part of the land they farmed, and they lived in a style to which they might not unreasonably claim that their income and property entitled them. But all this has now very largely changed. The typical

Norfolk farmer of to-day is a harrassed and hard-working man, with little time to devote to anything but the struggle to make both ends meet. The survivors of the easy-going class of farmers are few and far between, and those who now occupy the farms are men who are holding on by sheer determination and hard work. Many of those with whom I came in contact were obviously keen and energetic men of business, with a thorough and, as the phrase goes, 'up-to-date' knowledge of all the intricate details of their vocation. This might not, perhaps, apply universally to all the smaller farmers; but, as a general rule, no one who met, as I had the pleasure of meeting, a large number of Norfolk farmers, staying with some of them in their homes and spending a considerable time with many others, could fail to be impressed with the conviction that at the present time all that energy and intelligence can accomplish is being done to combat their difficulties.

"Many of the farms are now occupied by men of the younger generation, who, for the most part, have been educated specially (at Cirencester or Downton in some cases) for the work of farming, and who for many years past have been imbrued with very modest expectations of the profits to be derived from the land. One of the saddest and most significant facts, among the many brought to my notice, is that these men, who often come of a long race of Norfolk farmers, are losing heart and hope, and are looking about for other directions in which they may find better scope for their energies. Often the direction they look is across the seas where, as they think, there are still chances for expert farmers to obtain that return for their skill and capital which in their own country they have relinquished the hope of securing. Many of the older farmers told me that while they would no doubt have to 'hang on' because at their age they could not change their whole life, their sons could not be induced to take up a pursuit which offers now so little attraction for a young man. It is no light matter that agriculture, and often the country also, is thus losing brain and muscle which the nation can ill afford to spare. Whatever the other effects may be, it is at least certain that to deplete the land of intelligence and enterprise cannot make for agricultural progress in the future."

One of the effects has been to diminish the corn-growing acreage of the county, though this has applied specially to wheat. The reduction of corn crops naturally implies a reduction of the arable area and it appears that the land under the plough in Norfolk has decreased during the 13 years 1881-94 by 35,843 acres. Of this 30,887 has apparently been laid down to grass, while the remaining 4,956 acres have presumably gone out of cultivation altogether, and are therefore not now included in the returns.

The following comparison is shown of the number of live stock in the county in 1881 and 1894:—

—				1881.	1894.	Increase + or Decrease -.
				No.	No.	
Horses	-	-	-	63,127	69,023	+ 5,896
Cattle	-	-	-	114,348	113,505	- 843
Sheep	-	-	-	579,691	519,321	- 60,370
Pigs	-	-	-	82,711	96,584	+ 13,873

The increase in the number of horses, which has been progressive, year by year, is believed to be largely accounted for by the attention given by many farmers to the breeding of hackneys, a branch of farming from which good financial results are said to have been attained by those who had the requisite knowledge and capital.

Cattle as a whole show no change, but it may be observed that there has been an increase in recent years in the number of milking cows, thus bearing out the statement made to the Assistant Commissioner by several witnesses that dairying had been extended.

One of the worst features of the present situation is, in Mr. Rew's opinion, the voluntary withdrawal of capital from farming. The large farmers have many of them lost heart and confidence, and they are taking their capital out of the land.

The Assistant Commissioner came in contact with many yeoman farmers of different degrees, and, putting aside one or two exceptional cases of the more substantial men who owned a part of their holdings, or rented one farm and owned another, it seemed to him that almost without exception they lived under constant shadow of the mortgage. Indeed, he states that over a large part of Norfolk mortgages hang like millstones about the neck of owners of all classes, and in many, probably in the large majority of instances, the land if sold now would not pay the mortgage.

Although many of the small holders are feeling the depression as severely as the large farmers, it is pointed out that they live, with their families, mainly on the produce of their holdings, and if they can manage to sell enough to pay rent and taxes, they can struggle on. The fall of prices to them means perhaps some lowering of their modest standard of comfort, but it does not affect the actual sustenance of the family.

In view of what has been said, it is not surprising to find that the number of labourers employed on the land in Norfolk has decreased, and is decreasing, their number having declined from 45,505 in 1871 to 40,937 at the last census. At the time of the Assistant Commissioner's visit the general rate of wages for ordinary labourers was 10s. per week. In a few parishes it was 11s., and in some it had fallen to 9s. The current rate of wages does not, of course, represent the actual earnings of the men. Team-men, stockmen, and shepherds, all get 1s. or 2s. per week more, and frequently a cottage rent free in addition. The ordinary labourer is for a large part of the year engaged on piecework. The harvest is almost invariably paid for in a lump sum which varies from year to year according to agreement. The range is from 6l. to 7l. or a little more, which may be said to represent from 30s. to 35s. per week.

In most parts of the county a considerable increase of allotments is reported to have taken place in recent years, though in

a few districts it appears that there is a diminished demand for them.

That in a county almost entirely devoted, except on its coast line, to agriculture, the effects of the depression must re-act on all classes of the community, is self-evident. One index to this is that in all parts, except those where other industries or residential attractions may have absorbed a part of the natural increase of population, there is stated to have been a positive decrease in the number of persons who find a livelihood in the county.

Summing up shortly the evidence he received on the various matters coming under the head of conditions of tenancy, Mr. Rew is of opinion that there is practically no demand for very drastic alterations in the law of landlord and tenant. What is mainly wanted is better security than is afforded by the present Agricultural Holdings Act, as administered in Norfolk, for capital expended by a good tenant in improving his holding. If an outgoing tenant can be fairly reimbursed for expenditure which has improved the farm he asks no more, and he certainly thinks that he should receive no less. As regards conditions while they are in the farm, many tenants are content in these times with the power of making their own bargains; but some consider that the law should explicitly give them freedom of cultivation and liberty to sell off hay and straw, provided that no injury was done to the land. That the landlord must have some power of veto to prevent injury to the land by an unscrupulous or impecunious tenant, is generally admitted.

A large number of suggestions were made to Mr. Rew on the subject of malting barley and the beer duty, which resolved themselves into a proposal to tax "substitutes" used in brewing and to put a duty on foreign barley used for malting, at the same time reducing the duty on "pure" beer by an equivalent amount.

The recommendations of agriculturists and others in Norfolk for the relief of the depression were generally similar to those already brought under the notice of the Royal Commission in respect of other counties. It was urged that the question of the incidence of rates and taxes should be immediately reconsidered to meet the altered position of agriculture; that the land tax should be applied to the relief of local rates within the area of its collection; that there should be a readjustment of railway rates; that foreign meat should be marked as such when offered for sale in the county; and that the law against adulteration should be more strictly administered, especially with respect to milk. A suggestion was also made that there should be an international conference on the subject of bimetallism.

Royal Commission on Agriculture.—Report by Mr. Wilson Fox, Assistant Commissioner, on the County of Cumberland. [C.—7915.—1.] Price 6d.

In this Report it is stated that the chief characteristics of farming in Cumberland are the grazing and feeding of stock, the breeding of horses, the growth of corn and seed-grass hay for sale. The fall in price of grain has brought about a great decrease in the area of wheat and barley grown in the county, but the acreage under oats is said to have been considerably enlarged, the damp and humid climate in the valleys being very suitable for this crop in the fertile soils. Comparing 1874 with 1894, the acreage of wheat declined from 21,914 acres to 4,510, that of barley from 7,433 acres to 2,573 acres, while the area of oats increased from 68,281 acres to 81,199 acres. The soil and climate of Cumberland are particularly favourable to the growth of pasture, and farmers in the county have not been slow to avail themselves of these natural advantages, for between 1874 and 1894 the area of rotation grasses increased nearly 19 per cent., and the permanent pasture 9½ per cent. In the same period the number of cattle rose from 126,069 to 138,118, while sheep declined from 562,844 to 520,811. The principal breeds of cattle are shorthorns and shorthorn crosses, while of sheep the Herdwick, Scotch black-faced, and Cheviot are the most popular breeds, and there are also some half bred long-wooled sheep of the Leicester type. Mr. Wilson Fox gives some interesting particulars of a custom existing in some of the hill districts known as "heafing," whereby the tenant rents a flock of sheep from the landlord at a rent representing 4 to 4½ per cent. of their value. The tenant before entering the farm has to find two bondmen, who are, severally and jointly, liable with him to return to the landlord, at the expiration of the tenancy, the same number of sheep in the same condition as when first let. This custom of "heafing" is said to be of great benefit to men with but little capital who want to take a hill farm, and to have often enabled a shepherd to rise to a position of a farmer.

Butter-making is carried on to a considerable extent in Cumberland, both on hill and lowland farms; but in many parts the butter, especially that made on small farms, is stated to be of inferior quality, though it appears that the technical instruction provided by the county council has led to an improvement in this respect in some districts.

Mr. Fox states that it is not an easy matter to represent what rents are paid in the county by quoting an average rental, as they vary so much according to the quality of the soil. One authority puts the rents per acre on better class farms at from 18s. to 30s., on poor cold land which has gone back to grass 3s. to 4s. per acre, and on the better part of such land still under plough from 5s. to 10s. per acre.

As regards the position of agriculturists in Cumberland, there are, it appears, comparatively few outward and visible signs of

agricultural depression in the county, but Mr. Fox points out that depression nevertheless exists, though not in so acute a form as in corn-growing counties. Upon owners of land the effect of the depression is said to have manifested itself in a reduction of between 15 and 25 per cent. in their rentals, while the selling value of their land has decreased from between 30 and 35 to 25 years' purchase. Nevertheless, Cumberland landowners must, in Mr. Fox's opinion, be considered fortunate compared with those in other counties, in that they have all their land let, and, generally speaking, no arrears of rent. Tenant farmers in the county are reported to be just holding their own at present prices and rents. They have felt the decline in the price of cereals very little, as they look more to cattle and sheep for their profits, which are frequently augmented by the sale of butter, cheese, poultry, and eggs. Mr. Fox thinks, too, that the character of the Cumberland farmers has contributed towards staving off the evil times which would have fallen upon others less thrifty and resolute. He says:—

"The Cumberland farmer is a working farmer, who takes his full share of the daily toil, and sets his labourers an example in zeal and industry. Hard-headed, hard-working, honest, and thrifty, this splendid race of men, of whom the country may be proud, are well fitted to face and grapple with difficult times. There is no false pride among Cumberland farmers, though, as a class, they are proud and independent. Nearly everyone, whether on a large or a small holding, takes his share in the operations of the farm. He is up with his men at daybreak, not only superintending but participating in their daily work. On a large farm the farmer is usually the working foreman, on a small farm he and his family are the labourers."

The class of yeomen or "statesmen" as they are called in Cumberland, is stated to have been diminishing in numbers for many years, and the position of some of them is apparently now worse than that of tenants, owing chiefly to the charges which they or their ancestors have put upon the land. Speaking of the relative merits of large and small farms, Mr. Fox remarks that the advocates of a rural arcadia composed entirely of small holdings would find a very unsympathetic audience among the hard-headed agriculturists of Cumberland, be they farm servants or farmers; they would find that small farmers in Cumberland look on their farms as the means to an end, their one ambition being to become larger farmers, and to accomplish this they toil, and strive, and save.

In Cumberland the majority of the farm servants are hired by the half year at Whitsuntide and Martinmas, and live and board in the house. These are always unmarried men. Married labourers live in cottages on the farm or in villages and are nominally engaged by the week. Odd men or casual men, of whom there are said to be comparatively few, are called "darrickers," and are engaged by the day. The standard of labour in the county is high, and this, it is thought, may be attributed to a considerable extent to the system of hiring.

Although the farmers in Cumberland have suffered from depression less than those in many other counties, agriculture in the county is stated to be by no means in a satisfactory condition. The low prices ruling for cattle and sheep in certain years since 1886 have entailed much loss of capital, and it is pointed out that the Cumberland farmers are seldom capitalists, and have usually little margin to draw upon. Nevertheless, Mr. Fox holds that if the prices obtained for stock in the current year continue, there is a prospect for the Cumberland farmers to pursue their calling with sufficient success.

Woods and Forests. The Seventy-third Report of the Commissioners of H.M. Woods, Forests, and Land Revenues.
[H.C.—337.] Price 1s. 7½d.

In that portion of the report relating to Crown property in Wales, Mr. E. Stafford Howard remarks that, representations having been made to him in favour of carrying out planting operations on parts of the Crown wastes in Wales, an opportunity was taken during October 1894 of going over those in the neighbourhood of Denbigh, and a meeting was arranged with some of the local farmers, who were interested as having sheep-walks or common rights upon them.

Whilst it seemed quite possible to select places where trees could grow and do well, there are many other considerations which would have to be carefully weighed before any definite proposal of the kind could be made which might give reasonable hope of success. The common rights would have to be extinguished where the plantations were made, and owing to the fact that, though these wastes are unfenced, each owner of common right has in practice his own particular sheep-walk, there would be some difficulty in arranging how the rights of the commoners should be adjusted. To deprive one of these hill farms of its sheep-walk would probably be held to seriously damage the value of the farm as a whole. The accessibility of the ground and the nearness of railway communication are also serious factors in the problem, and the Commissioner is, therefore, taking opportunities of visiting the wastes in other parts of North Wales before attempting to make any definite proposals in connection with any one of them.

A small plantation, mainly for purposes of shelter, has been made on a small Crown farm in Merioneth, adjoining the waste of Maentwrog Mountain. The very severe weather experienced last winter greatly interfered with the work and added to the expense, and the exceptionally dry spring proved very trying to the young trees, most of which, however, were reported to be doing well in June 1895.

Report on Wages and Hours of Labour, Part I. Changes in Rates of Wages and Hours of Labour in the United Kingdom in 1893. [C.—7567.] Price 1s. 3d.

The portion of this Report which deals with agricultural labour is confined to a comparative statement of the rates of hiring at certain hiring fairs for corresponding periods in 1892 and 1893.

Generally speaking, agricultural wages in 1893, up to the autumn, remained at the same level as in the previous year, but in the autumn they declined in certain counties below the rates paid in the autumn of 1892. With reference to this decline, allowance must be made for the effect of the prolonged drought upon the employment of labour. The corn and root crops were so scanty in 1893 that in the winter there was very little threshing or work in connection with the root crops. The hay crop also was so deficient that many farmers sold their cattle at very low prices in the autumn, as they could not afford the expense of buying food for them during the winter, and, in consequence, the employment of those who attend to stock was, in some districts, injuriously affected. Again, the great losses which farmers sustained through the failure of the crops compelled many to economise in their labour bills, and, further, farm work was so forward in the autumn, that less labour than usual was required during the winter.

At the north country hirings (yearly and half yearly), both in England and Scotland, which took place in the spring of 1893, there was not infrequently a slight increase of wages compared with the corresponding period in 1892. But at the autumn hirings there was a downward tendency in England, though generally in Scotland wages remained at the same level.

Thus, at the annual March hirings in Northumberland, at Alnwick, Berwick-on-Tweed, and Wooler, though the rates of weekly wages of hinds, exclusive of perquisites, varied between 15s. and 18s. both in 1892 and 1893, more men were in receipt of 17s. in the latter year than in the former. Again, at the same hirings, the wages of women in 1892 were 1s. 4d. or 1s. 6d. a day in winter and 1s. 6d. a day in summer; whereas in 1893 most women received 1s. 6d. a day all the year round. Also at the Newcastle-on-Tyne yearly hiring more men obtained the higher rates in 1893 than in 1892. But at the half-yearly hiring at Newcastle, the rates of wages for servants who are boarded in the farm-houses, both at the May and November hirings remained the same as in 1892.

At the half-yearly spring hirings in Cumberland, Westmorland, and Lancashire, wages of first-class men were usually the same as in 1892. At Penrith (Cumberland) there was a slight decrease—the wages in 1892 were 16l. to 17l., and in 1893 15l. to 16l. 10s. But at Lancaster they increased from 13l. to 15l. in 1892 to 15l. to 17l. in 1893.

There was a decrease in the wages of second-class men at Penrith (Cumberland) and Kendal (Westmorland), but an increase at Lancaster, the rates in 1892 being 10l. to 11l., and 9l. to 14l. in 1893. The wages of best women were maintained or increased. At Kendal (Westmorland) they were 12l. to 13l. 10s. in 1892 and 1893. At Penrith (Cumberland) they were 11l. to 12l. in 1892, and 11l. to 13l. 10s. in 1893. At Lancaster they were 8l. to 11l. in 1892, and 10l. to 12l. in 1893. There was a slight tendency to decrease in the wages of second-class women at Penrith and Kendal, but at Lancaster they were 5l. to 8l. in 1892, and 6l. to 8l. in 1893.

At the autumn hirings, the wages of best men were maintained as compared with the corresponding period of 1892 at Kendal and Lancaster, but at Penrith they declined from 15l. to 16l. in 1892 to 12l. to 14l. in 1893. The wages of second-class men declined at Penrith from 13l. to 14l. in 1892 to 9l. to 12l. in 1893, and at Kendal from 10l. to 12l. in 1892 to 9l. to 11l. 10s. in 1893, while at Lancaster they were 8l. to 10l. in 1892 and 7l. to 10l. in 1893. Wages of first-class women remained about the same, while those of second-class women generally slightly declined.

At the Durham yearly hirings which took place in the spring of 1893, the wages showed a slightly upward tendency.

In Yorkshire, at the yearly hirings in November, wages generally showed a slight downward tendency. In Derbyshire, Cheshire, Staffordshire, Shropshire, Nottinghamshire, Leicestershire, and Rutland, the rates of wages remained about the same, and there was a downward tendency in parts of Warwickshire and Huntingdonshire. In the home counties and the western counties there was but little change. In the latter district wages declined in certain parts of Wiltshire in the autumn.

But the fall in wages in 1893 was most general in the eastern counties. Thus, in Suffolk wages were usually 12s. in 1892, though in some districts in the west of the county they were 11s. in the winter of 1891–2, and were raised to 12s. at Easter, 1892. In a number of cases wages dropped from 12s. to 11s. in the autumn of 1892. Generally speaking, the rate of weekly wages in 1893 in the county was 11s., but in the autumn of that year they dropped to 10s. in certain districts in West Suffolk. Again, in West Norfolk, South Cambridgeshire, and parts of Essex, wages were frequently 1s. a week less in 1893 than in 1892, though the reduction did not commence in a number of cases until after harvest. In Lincolnshire there was generally no change in wages in 1893 as compared with 1892, until the autumn of 1893. Up to that period wages were 2s. 6d. and 2s. 3d. a day, the higher rates being more generally paid in the northern part of the county. But in November 1893 wages generally dropped to 2s. 3d., and 2s. were not infrequently paid in certain southern districts.

Science and Art Department. Forty-second Report, with Appendices. C.—7693. [Price 1s. 9d.]

This report contains a minute by the Department regarding the administration of funds by County Councils under the Technical Instruction Acts, to the effect that prizes may be awarded at competitions in agricultural processes if such competitions are confined to persons who have been taught by instructors appointed by the County Council. But the offer of prizes for manual dexterity at an agricultural competition, apart from class instruction, would not be a legitimate application of funds under the Technical Instruction Acts.

The report also contains the observations of the examiners in the principles of agriculture. A sound and valuable course of instruction in the elementary stage is, it is stated, being given in this subject, especially when viewed from an agricultural standpoint. The general character of the papers in the advanced stage appeared to indicate a lack of definite teaching, and especially of a quantitative handling of the subjects taught, while in the honours stage it is reported that the character of the instruction was greatly inferior to that which had been observed in previous examinations.

Occupations of the People (England and Wales) enumerated in 1871, 1881, and 1891. [H.C.—468.] Price 3d.

This is a return to an order of the House of Commons showing the numbers of males and females (distinguishing those aged under and over 20 years) enumerated in England and Wales at each of the three censuses in 1871, 1881, and 1891, according to their various occupations as enumerated in the censuses of those years. As the system of classification adopted at these successive censuses differed in some cases, the figures for 1881 and 1871 have been corrected and adjusted so as to make them as nearly as possible comparable with those of 1891. All ascertained changes adopted in the classification of occupations in 1881 and 1891 have been fully noted in the return, even if the change is of such a character as to render correction of the figures for such changes impossible.

It is mentioned in an introductory note that satisfactory comparison, in detail, of the occupation statistics already tabulated in the census reports of the years referred to, is beset with many, often insuperable, difficulties; for not only were many of the occupational headings of the 1871 census changed in 1881 and in 1891, but, in many instances, variations were made in the grouping of individual occupations under the several headings, although the titles of the headings remained unchanged.

In the following summary of the agricultural population, it is pointed out, for instance, that land stewards who were included

under the heading of "farm bailiff" in 1881 and 1891 were classed as "land surveyor, estate agent" in 1871. Again, in 1871, *outdoor* shepherds only were included under the heading of shepherd, the *indoor* shepherds, or those living with the farmer, being referred to the heading agricultural labourer, farm servant. In 1881 and 1891, however, all shepherds were shown in the same category.

AGRICULTURAL POPULATION OF ENGLAND AND WALES.

Classification.	Males.			Females.		
	1891.	1881.	1871.	1891.	1881.	1871.
(1.) <i>In Fields and Pastures:—</i>						
Farmer, grazier	201,913	203,329	225,569	21,692	20,614	24,338
Farmer's, grazier's—son, grand-son, brother, nephew	67,287	73,197	76,466	—	—	—
Farm bailiff	18,205	19,377	16,476	—	—	—
Shepherd	21,573	22,544	23,323	—	—	?
Agricultural labourer, farm servant	709,233					
Horsekeeper, horseman, teamster, carter	25,701	807,608	900,009	24,150	40,346	58,644
Agricultural machine—proprietor, attendant	4,608	4,222	2,152	67	38	?
Others engaged in, or connected with, agriculture	1,788	2,158	1,649	90	75	?
(2.) <i>In Woods:—</i>						
Woodman	9,448	8,151	7,855	—	—	6
(3.) <i>In Gardens:—</i>						
Gardener, nurseryman, seedsman	174,290	145,142	119,651	5,046	3,143	2,622
(4.) <i>About Animals:—</i>						
Cattle, sheep, pig—dealer, salesman	5,313	5,729	5,836	36	25	13
Drover	2,824	2,586	2,950	2	—	—
Gamekeeper	13,814	12,633	12,429	3	—	?
Dog, bird, animal—keeper, dealer	1,800	1,156	517	458	212	79
Knacker, catsmeat—dealer; vermin destroyer	2,082	1,827	1,981	152	89	63

Ireland: Sixty-first Report on National Education for 1894. [C.—7796.] Price 3d.

This report states that 82,595 pupils, of whom 51,531 passed, were examined in the agricultural class books in the ordinary National Schools at the results examinations. Instruction in the *theory* of Agriculture, for which ordinary results fees are payable, is compulsory in all rural schools for boys in the 4th, 5th, and 6th classes, and is optional in the case of girls.

The total number of school farms in connection with ordinary National Schools on the 31st December 1894, was 44, of which 39 were reported on. The boys in the advanced classes in

schools with school farms attached are examined in the practice as well as the theory of Agriculture, and special agricultural fees are paid on the proficiency of the pupils and state of the farms. The total number of pupils examined in Practical Agriculture, by the Agricultural Superintendent, within the results year, was 576, of whom 505 passed.

Thirty schools have school gardens attached. The pupils examined for practical knowledge displayed in the management of these gardens amounted to 543, of whom 443 passed. The Albert Agricultural Institution at Glasnevin has been attended by 128 students. The Munster Institution, Cork, continues to make good progress.

The female Dairy Instructors appointed to visit centres throughout the country for the purpose of giving instruction in improved methods of butter making, were, in 1894, engaged principally in Cork and Kerry. The reports received of the results of their teaching demonstrated the advantage of the system of itinerant dairy instruction. Large numbers of persons of the agricultural classes attended the lectures and practical demonstrations on butter making, and much interest in the subject appears to have been awakened.

The male Dairy Instructor reported upon 100 creameries during the year. The suggestions of the instructor were mainly designed to promote improved methods in respect of the structure and management of the creameries.

A special class for the instruction of creamery managers was held last year at the Munster Agricultural and Dairy School, and was attended by ten persons. These students were examined at the close of the session, and certificates of proficiency were awarded upon their completing six months of successful creamery management after the course of training at the dairy school.

It was also decided to give a course of special dairy instruction to creamery managers at the Albert Institution, Glasnevin; and in future, so long as it may be desirable to do so, a session for these managers will be held at the Institution in each year.

The course of instruction embraces the science of chemistry as applied to dairy practice, the keeping of accounts, the practice of butter and cream making, the testing of milk, and the feeding of farm animals.

During 1894 experiments upon means for protecting the potato from disease by dressing the crop with a preparation of copper sulphate were carried out at the agricultural establishments at Glasnevin and Cork, as well as at certain School farms in the country. The experiments on the farms with this antidote, extended over several years, tend to show that the copper sulphate remedy, if properly applied, is a powerful aid in the prevention of potato disease.

Other experiments of interest to agriculturists have also been carried out at these agricultural establishments.

In 24 schools payments were made to the pupils of industrial classes for working on the small farms or gardens attached, under the direction of the teachers assisted by Agricultural Monitors. It is to be hoped that the number of these schools, with classes duly organized, will be largely increased.

The number of pupils who, on account of their regular attendance at the farm work, and proficiency at the examinations, received payments, was 286; and the number of agricultural monitors who fulfilled the conditions prescribed in their case was 48.

The Annual Local Taxation Returns (England) for the Year 1893-94. Part I. [H.C.—329.] Price 11½d.

This volume consists of two divisions. The first contains the Poor Rate Return for the year ended Lady Day, 1894, while the second consists of a return relating to the valuation of property for the poor rate in 1892 and 1893.

Part I. of the Poor Rate Return gives a summary, as regards each union-county and division, of the amount of the poor rates levied during the year, and the amounts received by boards of guardians from County and Borough Councils under the provisions of the Local Government Act, 1888, and from other sources (except from loans) in aid of such rates; and also the amounts expended therefrom: (1) for the relief of the poor and purposes connected therewith, (2) for purposes unconnected with such relief, and (3) for purposes partly connected and partly unconnected with such relief. It also gives separately the amounts received, expended, and outstanding in respect of loans raised by boards of guardians.

Part II. is a comparative statement of the expenditure on relief to the poor in the years ended Lady Day 1893 and 1894.

Part III. gives details of all the receipts and expenditure shown in Part I., exclusive of loans, with regard to each of the 648 unions and parishes under separate boards of guardians in England and Wales, and the Scilly Isles.

Part IV. of the return is devoted to the loan transactions of boards of guardians. It gives, as regards each board of guardians, the amount raised by means of loans, and the expenditure defrayed out of loans, during the year, together with the amount of the loans owing by guardians at the end of the year.

It appears from the return that the total amount of poor rates raised during the year for all purposes, including the sums contributed by Government in lieu of poor rates, was 17,743,664*l.* This amount was greater than the amount raised during the preceding year by 1,212,258*l.*

A statement has been prepared with the view of showing what was the rate per head on the estimated population of the metropolis and of each union-county, of the receipts from poor rates, and of the gross expenditure on relief to the poor, and the rate in the £ on rateable value of the receipts from poor rates. The union-counties have been arranged according to the amount of the rate per head on estimated population which the gross expenditure on relief represented. It is shown that the relative rates per head on the total receipts from poor rates, and on the gross expenditure for relief, varied greatly in different union-counties, and that in some cases the rate per head for relief was considerably less than half the rate per head of the rates raised, while in Suffolk and Berks the rate per head of relief represented about three-fourths of the rate per head of the rates raised. The highest rate per head of the poor rates raised was in London, where it amounted to 23s. 2½d. per head; the lowest was in Northumberland, where it amounted to only 6s. 6½d. per head. The highest rate per head for expenditure on poor relief was 13s. 5½d. in London, and the lowest 4s. in the West Riding of Yorkshire. The rate in the £ on rateable value of the poor rates raised also varied considerably in different union-counties. In the metropolis and 20 other union-counties it was 2s. or more than 2s. in the £, while in Westmorland it was only 10½d. in the £. There were considerable differences in the several union-counties between the proportions which the rate per head on the estimated population bore to the rate in the £ on the rateable value of the amounts raised from poor rates.

The section of these returns relating to the valuation for the poor rate is divided into two parts, of which Part I. gives the amount of the gross estimated rental and rateable value of the property assessed to the poor rate in each of the union-counties of England and Wales, according to the valuation lists in force in the metropolis on the 6th of April, and in other parts of the country on the 25th of March 1893, and on the corresponding days in 1892, together with the population in 1891 of each county. Part II. gives the same information in detail with respect to each union and each parish under a separate board of guardians.

The total gross estimated rental of the property liable to contribute to the poor rate rose during the year 1892-93 from 188,397,661l. to 190,770,928l., whilst the rateable value increased during the same year from 157,722,913l. to 159,469,468l., or 1·1 per cent.

The Annual Local Taxation Returns (England) for the Financial Year 1893-94. Part II. [H.C.—330.] Price 6½d.

This publication of the Local Government Board contains an abstract of the accounts of County Councils (other than the

London County Council) and joint committees of such Councils, as well as the accounts of pauper lunatic asylums, other than those belonging to the county and city of London.

The accounts show that the receipts of the councils, from sources other than loans, during 1893-94 amounted to 6,559,941l., being a decrease of 269,000l. as compared with the year 1892-93, which was mainly due to a falling off in the sums received from the local taxation account and from other local authorities. On the other hand there was a considerable increase in the amount raised by rates, the total sum raised being 309,000l. more than in the preceding year. The expenditure of the Councils during the year (excluding that defrayed out of loans), viz., 6,782,409l., exceeded the receipts from sources other than loans by 222,468l., and this appears attributable to the fact that there was a considerable balance unexpended which was carried over from the preceding year. The excess of the expenditure over that of the preceding year was due to the increases in the sums expended on roads, on police, and on technical and intermediate education.

The expenditure of the County Councils under the Contagious Diseases (Animals) Act was 29,958l., as compared with 31,368l. in 1892-93.

Agricultural Statistics, Ireland, 1895. General Abstracts showing the Acreage under Crops, also the number and description of Live Stock in each County and Province, 1894-95. [C.—7798.] Price 2½d.

This is the annual abstract return relating to agriculture issued by the Registrar-General in Dublin.

The total extent under crops in Ireland in 1895 is stated to be 4,879,506 acres, being a net decrease on the extent in 1894 of 51,505 acres, or 1·0 per cent. There was a decrease in Ulster of 13,245 acres, or 0·8 per cent.; in Leinster, of 23,675 acres, or 1·8 per cent. in Munster, of 15,398 acres, or 1·2 per cent.; and in Connaught, an increase of 813 acres, or 0·1 per cent.

In 1894 the extent returned under grass was 10,214,096 acres, in 1895 the amount returned is 10,280,706 acres, being an increase of 66,610 acres; the extent returned as fallow in 1894 was 19,568 acres, and in 1895, 18,506 acres; the extent under woods and plantations in 1894 was 309,276 acres, against 308,902 acres in 1895; and the extent returned under "Turf Bog, Marsh, Barren Mountain Land, &c.," in 1894 was 4,859,393 acres, against 4,845,724 acres in 1895, being a decrease of 13,669 acres; of the acreage thus returned in 1895, 1,210,234 acres have been entered by the enumerators as turf bog, 426,545 acres as marsh, and 2,265,413 acres as barren mountain land.

IMPORTS OF AGRICULTURAL PRODUCE.

I.—STATEMENT showing the QUANTITIES of CERTAIN ARTICLES of AGRICULTURAL PRODUCE IMPORTED into the UNITED KINGDOM in the Ten Months ending 31st October 1895, and in the corresponding periods in 1894 and 1893.

(Compiled from the Trade and Navigation Returns.)

Articles.	Ten Months ending 31st Oct. 1895.	Ten Months ending 31st Oct. 1894.	Ten Months ending 31st Oct. 1893.
Horses - - - - - No.	29,628	14,964	12,061
Cattle - - - - - "	343,796	419,110	295,309
Sheep - - - - - "	856,176	386,415	55,261
Bacon - - - - - cwts.	3,351,874	3,182,316	2,668,183
Beef:			
Salted - - - - - "	179,425	198,906	165,446
Fresh - - - - - "	1,799,808	1,771,347	1,512,000
Hams - - - - - "	1,983,987	973,722	857,105
Meat unenumerated:			
Salted or fresh - - - - - "	199,372	154,260	150,286
Preserved, otherwise than by salting - - - - - "	705,706	437,569	485,722
Mutton, fresh - - - - - "	2,199,958	1,907,959	1,679,924
Pork:			
Salted (not Hams) - - - - - "	187,730	193,321	160,737
Fresh - - - - - "	219,152	136,692	139,237
Rabbits - - - - - "	81,154	76,773	60,220
Butter - - - - - "	2,347,312	2,155,135	1,969,817
Margarine - - - - - "	763,490	933,922	1,066,159
Cheese - - - - - "	1,740,718	1,583,165	1,733,861
Milk, condensed or preserved - - - - - "	448,493	449,745	413,614
" and cream, fresh - - - - - gallons	123,465	109,975	—
Eggs - - - - - gt. hundreds	10,487,904	9,893,943	8,981,322
Corn:			
Wheat - - - - - cwts.	70,938,615	69,549,257	55,879,041
Wheat Meal and flour - - - - - "	15,292,870	15,885,255	17,677,117
Barley - - - - - "	18,642,237	25,837,986	15,750,575
Oats - - - - - "	12,722,110	12,131,139	11,467,321
Maize - - - - - "	27,279,770	32,046,484	27,809,392
Fruit:			
Apples - - - - - bushels	2,304,789	3,065,023	2,414,177
Pears - - - - - "	376,102	1,233,655	857,968
Hops - - - - - cwts.	130,491	107,721	132,184
Onions - - - - - bushels	4,676,653	4,372,614	3,811,738
Potatoes - - - - - cwts.	3,613,385	2,332,504	2,735,210
Poultry and game - - - - - value £	327,964	231,942	267,139
Vegetables (unenumerated) - - - - - "	1,147,499	966,623	985,204

IMPORTS OF AGRICULTURAL PRODUCE—continued.

II.—STATEMENT showing the NUMBER of ANIMALS imported into GREAT BRITAIN from IRELAND during the first Ten months of the year 1895, compared with the corresponding periods of 1894 and 1893.

Animals.	Ten Months ended 31st Oct. 1895.	Ten Months ended 31st Oct. 1894.	Ten Months ended 31st Oct. 1893.
Cattle - - - - -	607,740	652,167	534,740
Sheep - - - - -	600,747	870,922	981,325
Swine - - - - -	404,850	431,779	322,837
Goats - - - - -	4,316	6,525	6,191
Horses - - - - -	30,324	30,299	27,666

III.—STATEMENT showing the QUANTITY of HAY imported into the UNITED KINGDOM from the under-mentioned Countries in Ten Months ending 31st Oct. 1895, and in the corresponding periods in 1894 and 1893.

(Furnished by the Board of Customs.)

Countries whence Exported.	Ten Months ended 31st Oct. 1895.	Ten Months ended 31st Oct. 1894.	Ten Months ended 31st Oct. 1893.
	Tons.	Tons.	Tons.
Algeria - - - - -	6,850	2,636	731
Canada - - - - -	15,820	24,519	39,278
France - - - - -	12,468	5,213	1,155
Holland - - - - -	16,177	12,485	21,731
United States - - - - -	34,593	144,058	73,143
Other Countries - - - - -	11,826	48,585	48,670
Total - - - - -	97,738	237,496	184,608

PRICES OF LIVE STOCK AS RETURNED UNDER THE
MARKETS AND FAIRS (WEIGHING OF CATTLE)
ACT, 1891.

Statements have been published in each of the previous numbers of the Journal of the Board of Agriculture showing in tabular form the particulars of returns received weekly by the Board of Agriculture under the Markets and Fairs (Weighing of Cattle) Act, 1891, from the 19 places in England and Scotland scheduled in that Act. These particulars are now continued for the third quarter of 1895, the figures for the corresponding period of 1894 being added for purposes of comparison.

Animals.	3rd Quarter, 1895.	3rd Quarter, 1894.
CATTLE :	No.	No.
Entering markets - - -	270,831	279,586
Weighed - - - - -	22,320	20,611
Prices returned - - -	19,345	18,408
Prices returned with breed and quality distinguished.	13,815	12,216
SHEEP :		
Entering markets - - -	1,444,156	1,502,874
Weighed - - - - -	9,727	9,278
Prices returned with breed and quality distinguished.	7,348	6,526
SWINE :		
Entering markets - - -	48,127	20,676
Weighed - - - - -	1,014	743
Prices returned - - -	453	157
Prices returned with breed and quality distinguished.	2	3

While the total number of cattle and sheep entering the markets in the quarter now under review shows a decline of more than 3 per cent. in each case compared with the corresponding quarter of 1894, it will be observed that the numbers weighed increased in the case of cattle by about 8 per cent., and in that of sheep, where the weighbridge still seems rarely used, by nearly 5 per cent. The per-centage of increase, in the cases where particulars of price were rendered in the prescribed form showed a further improvement—13 per cent. as regards cattle, and 12 per cent. as regards sheep.

The numbers of swine reported as entering the markets show extensive fluctuations, but the details hitherto furnished of weighings and prices of this class of live stock continue to be extremely defective.

The much greater extent to which the help of the weighbridge continues to be called into requisition, in selling cattle, in Scotland than in England, is shown by the following table. In the latter country but little over 3 per cent. of the cattle entering

the 14 places were weighed, although this was better than the 2½ per cent. of the corresponding quarter of 1894. In Scotland, on the contrary, the proportion of cattle weighed in the three months amounted to 26 per cent., though this is a slight decrease below the 28 per cent. of the third quarter of 1894 :—

Cattle at Scheduled Places.	England.		Scotland.	
	3rd Quarter, 1895.	3rd Quarter, 1894.	3rd Quarter, 1895.	3rd Quarter, 1894.
No. entering markets - - -	210,373	227,194	60,458	52,392
No. weighed - - - - -	6,401	5,533	15,919	15,078
Prices returned - - -	3,619	3,419	15,726	14,989
Prices returned with breed and quality distinguished.	3,619	3,419	10,196	8,797

The Metropolitan Cattle Market of London still furnishes more than half the cattle weighed in the 14 scheduled English markets; indeed London and Liverpool together account for four-fifths of the whole. A continued improvement is to be noted in the returns from Glasgow, where the market arrangements have been reorganised, with the result that the Corporation officers are now able to supply a useful record of transactions and prices as ascertained by the weighbridge. On the other hand, it is to be noted that, so far as the past quarter is concerned, Bristol and Lincoln again fail to report a solitary instance of cattle having been weighed in the three months. The authorities of Ashford, Leeds, and Wakefield, while reporting some cases of weighing, are unable to give any information as to the prices of the transactions in those markets, while the reports rendered from Birmingham, Norwich, and York continue very satisfactory.

Out of upwards of a million sheep shown in the English markets, weighing appears to have been practised in only 4,141 cases, and the quotations of prices furnished come almost wholly from London and Liverpool. In Scotland, as in the case of cattle, the reports of the weighing and of the prices of sheep are proportionally more numerous.

Turning to the prices current for cattle in the third quarter of 1895, the wide range of prices reported may be best seen in the several quotations of the detailed tables appended. These prices, however, it will be seen, occasionally represent the average of but few transactions. A more reliable figure, for purposes of comparison, and one in the nature of an average, is obtained by excluding transactions in store stock, and limiting the inquiry to fat cattle only, and dividing the total of the prices obtained in each grade by the total weight of the animals priced in that grade. The results for the third quarter of the current year, obtained in this manner and compared with the

corresponding figures for the same quarter of 1894, are shown in the following table:—

FAT CATTLE—THIRD QUARTER, 1895 and 1894.

Places.	Inferior or Third Quality.		Good or Second Quality.		Prime or First Quality.	
	1895.	1894.	1895.	1894.	1895.	1894.
	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.
ENGLAND:						
Liverpool -	—	—	23 6	20 6	34 8	33 6
London -	29 4	23 0	34 6	33 10	38 0	38 6
Newcastle-on-Tyne.	—	—	34 10	33 8	37 10	36 6
Shrewsbury -	27 2	24 4	30 2	29 2	35 8	31 8
SCOTLAND:						
Aberdeen -	26 3	24 5	34 7	32 10	38 0	36 11
Dundee -	28 2	27 1	34 1	31 9	36 6	34 4
Edinburgh -	—	27 6	36 11	34 0	36 4	36 0
Glasgow -	33 6	—	36 0	—	36 10	—
Perth -	33 8	31 2	35 5	32 4	37 1	34 3

It is practically only in the Scotch cases and the two English markets of Liverpool and London that the basis of these figures for the past quarter is sufficiently large to give a reliable average of prices. But the data for Newcastle and Shrewsbury have been continued on this occasion so to secure continuity in the year's returns.

Treating these statistics, however, as indicating the current values of cattle per live cwt. at the several markets named, the course of prices appears to have stood higher, on the whole, in 1895 than in 1894. The only exception that need be noted is in the class of prime cattle sold in London, where the quotation of 38s. 6d. per live cwt. in the three months ending 30th September 1894 has become 38s. only in the same period of 1895.

The further tables which are appended give, for the various markets, details similar to those which have been furnished on previous occasions—the first of the series indicating the varying extent to which the use of the weighbridge is reported in the scheduled places in Great Britain, and the subsequent tables supplying the quotations for the several breeds and qualities, an indication being also given of the number of cases where the sale reported was a bargain actually made by live weight.

TOTAL NUMBER of Cattle, Sheep, and Swine, entering the MARKETS and MARTS of the under-mentioned Places in ENGLAND and SCOTLAND, with the Number WEIGHED, as received from the Market Authorities in the Third Quarter 1895, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
ENGLAND.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Ashford -	3,054	9	—	34,031	—	—	4,975	—	—
Birmingham -	5,453	18	18	34,972	—	—	—	—	—
Bristol -	15,359	—	—	41,784	—	—	1	—	—
Leicester -	12,428	219	142	28,113	16	16	1,381	—	—
Leeds -	7,629	225	—	29,210	58	—	2,950	557	—
Lincoln -	1,582	—	—	20,224	—	—	3,716	—	—
Liverpool -	18,905	1,516	1,516	170,286	1,120	1,120	—	—	—
London -	20,260	3,663	1,446	208,120	2,939	819	640	—	—
Newcastle-upon-Tyne	23,738	92	92	105,021	—	—	7,595	343	1343
Norwich -	15,170	53	53	78,481	—	—	7,699	—	—
Salford -	31,278	212	212	203,148	8	8	361	—	—
Shrewsbury -	7,178	302	75	29,101	—	—	3,534	—	—
Wakefield -	25,889	26	—	53,294	—	—	4,089	—	—
York -	16,500	66	65	68,689	—	—	542	4	—
SCOTLAND.									
Aberdeen -	14,162	3,288	3,288	74,972	3,525	3,525	4,976	—	—
Dundee -	4,127	2,755	2,740	6,749	255	158	423	2	2
Edinburgh -	14,945	6,739	*2,961	53,521	—	—	1,061	—	—
Glasgow -	12,209	841	702	141,025	160	56	1,615	—	—
Perth -	15,015	2,206	*505	68,415	1,646	1,646	1,970	108	1108
TOTAL for ENGLAND	210,873	6,401	3,619	1,099,474	4,141	1,963	37,482	904	1343
TOTAL for SCOTLAND	69,458	15,919	*10,106	344,682	5,586	5,385	10,645	110	1110
Total -	270,331	22,320	*13,815	1,444,156	9,727	7,348	48,127	1,014	1453

* Prices for 3,739 cattle in addition to the above were quoted from Edinburgh, and for 1,791 cattle from Perth, but without distinguishing breed or quality.

† Prices given but details insufficiently furnished.

‡ The details for 2 swine only were furnished in the form prescribed.

NUMBER and PRICES of Cattle Weighed in the under-mentioned Places in
Third Quarter of 1895, under the Markets and Fairs

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals		Average Price.	Animals		Average Price.	Animals		Average Price.
		Weighed.	Per Stone.		Weighed.	Per Stone.		Weighed.	Per Stone.	
		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
ENGLAND:										
Liverpool	Irish Cross Bred	—	—	—	395	3 6½	28 6	1,121	4 4	34 8
London	Devons	—	—	—	2	4 5	35 4	13	4 9½	38 6
	Herefords	—	—	—	125	4 5	35 4	482	4 9½	38 4
	Herefords*	2	3 10	30 8	2	4 7	36 8	44	4 8½	37 10
	Highland	—	—	—	8	4 2	33 4	—	—	—
	Highland Scots	—	—	—	—	—	—	8	5 0	40 6
	Norfolks	—	—	—	40	4 3½	34 2	63	4 8½	37 10
	Norfolks*	—	—	—	34	4 3	34 0	14	4 7½	37 0
	Polled Scots	—	—	—	25	4 5½	35 8	67	4 9½	38 6
	Runts	6	3 5½	27 6	76	4 3½	34 4	59	4 7½	37 2
	Runts*	—	—	—	8	4 3	34 0	1	4 10	38 8
	Shorthorns	47	3 8½	29 6	177	4 2½	33 10	123	4 7	36 8
	Shorthorns*	—	—	—	11	4 5½	35 6	9	4 9½	38 6
Newcastle-on-Tyne.	Cross Bred	—	—	—	13	4 4½	35 0	21	4 7½	37 0
	Highland Kyloes	—	—	—	6	4 7½	36 10	—	—	—
	Irish	—	—	—	1	3 9	30 0	—	—	—
	Irish*	—	—	—	4	4 3	34 0	—	—	—
	Polled Angus	—	—	—	—	—	—	2	4 5½	35 8
	Shorthorns	—	—	—	11	4 3½	34 2	31	4 9½	38 6
Shrewsbury	Cross Bred	15	3 4½	26 10	8	3 9	30 0	—	—	—
	Herefords	12	3 5½	27 6	22	3 8	29 4	2	4 5½	35 8
	Shorthorns	3	3 5	27 4	6	4 2½	33 10	—	—	—
	Welsh	—	—	—	2	3 8	29 4	—	—	—
	Shorthorns (Stores)	5	3 2½	25 8	—	—	—	—	—	—

* Sold by Live Weight.

ENGLAND and SCOTLAND, as received from the Market Authorities in the
(Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70).

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals		Average Price.	Animals		Average Price.	Animals		Average Price.
		Weighed.	Per Stone.		Weighed.	Per Stone.		Weighed.	Per Stone.	
		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
SCOTLAND:										
Aberdeen	Cross Bred	544	3 2½	25 10	1,363	4 3½	34 2	1,079	4 8½	37 10
	Polled	26	4 1	32 8	29	4 7	36 8	26	4 11½	39 6
	Polled Angus	39	3 8	29 4	123	4 9½	38 4	59	4 11½	39 6
Dundee	Cross Bred Polled	8	3 8½	29 8	270	4 3½	34 2	257	4 7	33 8
	Cross Bred Polled*	1	3 5½	27 6	—	—	—	31	4 7½	37 0
	Cross Bred Short-horns.	56	3 6½	28 6	233	4 3½	34 2	205	4 7	36 8
	Cross Bred Short-horns.*	3	3 9½	30 6	7	4 5½	35 6	31	4 8	37 4
	Highland*	—	—	—	—	—	—	1	4 10½	39 0
	Irish Cross Bred	45	3 4½	26 10	842	4 3	34 0	599	4 6½	36 4
	Irish Cross Bred*	—	—	—	2	3 9	30 0	60	4 6½	36 2
	Polled Angus	4	3 11½	31 10	—	—	—	15	4 7½	33 10
	Polled Angus*	—	—	—	—	—	—	3	4 9	38 0
	West Highland	4	3 10½	31 0	—	—	—	2	4 7½	37 0
	West Highland*	—	—	—	—	—	—	6	4 8½	37 8
	Irish (Stores)	—	—	—	—	—	—	20	4 5	35 4
	Irish (Stores)*	—	—	—	—	—	—	35	4 0½	32 2
Edinburgh	Cross Bred	—	—	—	798	4 7½	37 2	1,828	4 6½	36 4
	Irish Shorthorns*	—	—	—	30	3 9	30 0	—	—	—
	Shorthorns	—	—	—	2	4 0½	32 4	53	4 7½	37 2
	Shorthorns*	—	—	—	—	—	—	51	4 10	38 8
	West Highland	—	—	—	7	4 3	34 0	—	—	—
	West Highland*	—	—	—	—	—	—	6	4 6	36 0
	Irish (Stores)	—	—	—	49	4 1½	33 0	—	—	—
	Irish (Stores)*	—	—	—	8	3 10½	31 0	—	—	—
	Irish Polled (Stores)*	—	—	—	129	4 0	32 0	—	—	—
Glasgow	Ayrshire	—	—	—	2	3 10½	31 2	—	—	—
	Cross Bred	1	4 2½	33 6	312	4 5½	35 6	2	4 6½	36 4
	Highland	—	—	—	7	4 3½	34 6	2	4 9	38 0
	Polled	—	—	—	342	4 6½	36 6	17	4 8½	37 8
	Polled*	—	—	—	14	4 8½	37 6	—	—	—
	Shorthorns	—	—	—	—	—	—	3	4 0½	32 6
Perth	Cross Bred	—	—	—	55	4 6	36 0	60	4 9½	38 8
	Cross Bred Polled	47	4 2½	33 8	144	4 4½	35 2	187	4 7	36 8
	Cross Bred Short-horns.	—	—	—	—	—	—	1	4 10½	39 2
	Polled Angus	—	—	—	—	—	—	11	4 8½	37 8

* Sold by Live Weight.

The number and prices of Sheep reported as weighed under the Markets and Fairs (Weighing of Cattle) Act, 1891, in the under-mentioned places in the Third Quarter of 1895 are shown in the following table:—

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals		Average Price.	Animals		Average Price.	Animals		Average Price.
		Weighed.	Per Stone.		Weighed.	Per Stone.		Weighed.	Per Stone.	
		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
ENGLAND:										
Liverpool	Irish Cross Bred	—	—	—	1,120	5 5½	43 10	—	—	—
London	Canadians	—	—	—	13	3 8	29 4	—	—	—
	Downs	—	—	—	—	—	—	65	5 9½	46 2
	Down Ewes*	4	4 0	32 0	—	—	—	—	—	—
	Half-Bred	—	—	—	146	5 1½	41 0	25	5 6½	44 6
	Half-Bred*	—	—	—	337	4 11½	39 6	229	5 0½	40 2
SCOTLAND:										
Aberdeen	Cross Bred	—	—	—	2,128	4 2½	38 6	1,397	4 8½	37 10
Dundee	Cheviot Ewes	—	—	—	55	3 9½	30 4	15	3 7½	29 2
	Cross Bred Hoggs	—	—	—	34	4 4½	35 0	10	4 8½	37 6
	Highland Ewes	—	—	—	20	3 6½	28 6	—	—	—
	Highland Black Face Ewes.	—	—	—	20	3 1½	25 2	—	—	—
	Highland Black Face Ewes.*	—	—	—	4	3 6	28 0	—	—	—
Glasgow	Down Ewes	—	—	—	—	—	—	10	5 5½	43 10
	Half-Bred Ewes	—	—	—	—	—	—	46	3 7½	29 2
Perth	Black Face Wether Hoggs.	30	3 9½	30 4	—	—	—	—	—	—
	Cross Bred	—	—	—	205	4 10½	38 10	277	5 0½	40 4
	Cross Bred Hoggs	63	4 1½	32 10	256	4 6½	36 4	815	4 8½	37 10

* Sold by Live Weight.

PRODUCE OF HOPS.

PRELIMINARY STATEMENT showing the estimated total production of Hops in the years 1895 and 1894, with the acreage and estimated average yield per statute acre in each county of England in which hops were grown.

COUNTIES.	Estimated Total Produce.		Acreage.		Estimated Average Yield per Acre.	
	1895.	1894.	1895.	1894.	1895.	1894.
BERKS.	Cwts. —	Cwts. 93	Acre. —	Acre. 11	Cwts. —	Cwts. 8'45
GLOUCESTER	353	214	38	30	9'29	5'49
HANTS	33,748	24,581	2,875	2,911	11'74	8'44
HEREFORD	65,002	37,749	7,553	7,525	8'61	5'62
KENT	316,577	424,779	35,018	35,520	9'04	11'96
SALOP	1,307	545	150	140	8'71	3'89
SUFFOLK	58	112	10	17	5'80	6'59
SURREY	19,538	17,595	1,783	1,935	10'96	9'09
SUSSEX	72,724	106,205	7,489	7,589	9'71	13'99
WORCESTER	14,089	24,973	4,024	3,848	10'96	6'49
Total	553,396	636,846	58,940	59,535	9'39	10'79

AGRICULTURAL RETURNS, 1895.

In August last, in accordance with the usual practice, the Board of Agriculture issued a preliminary statement showing in summary form the acreage of the principal crops and the number of live stock in Great Britain on the 4th June 1895, as returned by occupiers of land and owners of live stock.

Further details were published in the *Journal of the Board of Agriculture* for September, showing for each county in Great Britain the area under wheat, potatoes, and hay respectively in 1895, together with the total number of cattle, sheep, and pigs in each county. A separate statement was also issued showing the area under hops in each county of England in which hops were grown.

The following statement extracted from Tables I. and II., which were published in October last, show the extent and distribution of the cultivated land enumerated as under any crop, bare fallow, or grass, together with the number and classes of live stock in Great Britain, Ireland, and the United Kingdom, including the particulars received from the Isle of Man and the Channel Islands.

THE AREA UNDER each KIND OF CROP, BARE FALLOW, and GRASS, as returned upon the 4th June in the Years 1895 and 1894 in Great Britain, with similar particulars for Ireland, and with Total for the United Kingdom.

CROPS.		GREAT BRITAIN.		IRELAND.		UNITED KINGDOM, including ISLE OF MAN and CHANNEL ISLANDS.	
		1895.	1894.	1895.	1894.	1895.	1894.
TOTAL AREA of LAND & WATER (a)		56,771,728	56,771,728	20,706,258	20,706,258	77,671,319	77,671,319
TOTAL ACREAGE under ALL KINDS of CROPS, BARE FALLOW, and GRASS (b)		32,577,531	32,629,855	(d) 15,178,718	(d) 15,161,925	47,883,133	47,919,830
CORN CROPS.	Wheat - - -	1,417,641	1,927,962	36,529	49,842	1,456,200	1,980,228
	Barley or Bere - -	2,166,279	2,095,771	171,785	164,780	2,346,367	2,268,193
	Oats - - -	3,295,905	3,253,401	1,216,370	1,254,813	4,527,741	4,524,167
	Rye - - -	68,713	90,617	11,517	11,921	80,203	102,676
	Beans - - -	212,665	214,180	2,354	2,784	245,128	247,062
	Peas - - -	209,024	213,043	498	491	209,609	213,551
	TOTAL - - -	7,400,227	7,854,974	1,439,063	1,484,041	8,865,338	9,865,877
GREEN CROPS.	Potatoes - - -	541,217	504,454	710,389	717,120	1,262,766	1,232,055
	Turnips and Swedes -	1,915,902	1,956,573	313,284	312,294	2,237,633	2,276,284
	Mangold - - -	333,672	353,598	(e) 5,3026	(e) 52,023	387,252	406,164
	Cabbage, K.-Rabi, & Rape	153,053	177,394	(f) 45,263	(f) 50,673	198,465	228,230
	Vetches or Tares - -	165,804	187,117	4,247	4,657	170,368	192,113
	Other Green Crops - -	116,114	121,633	25,499	27,510	143,423	151,246
	TOTAL - - -	3,225,762	3,300,769	1,161,582	1,163,277	4,399,927	4,486,092
CLOVER, SAIN FOIN, & GRASSES under Rotation.	For Hay -	2,303,431	2,121,904	633,603	641,043	2,932,636	2,776,226
	Not for Hay -	2,426,370	2,381,728	649,754	671,155	3,108,508	3,086,528
	TOTAL -	4,729,801	4,503,632	1,283,357	1,312,198	6,061,139	5,862,754
PERMANENT PASTURE, or GRASS, Not broken up in Rotation. (c)	For Hay -	4,760,889	4,852,442	1,558,060	1,547,067	6,327,228	6,409,260
	Not for Hay -	11,849,674	11,612,627	9,630,932	9,533,952	21,508,880	21,170,140
	TOTAL -	16,610,563	16,465,069	11,189,018	11,081,919	27,836,117	27,579,400
FLAX - - -		2,023	1,760	95,202	100,851	97,247	102,622
HOPS - - -		58,940	59,535	-	-	58,940	59,535
SMALL FRUIT - - -		71,547	68,115	(g) -	(g) -	(g) 74,920	(g) 68,868
BARE FALLOW or Uncropped Arable Land - - -		475,650	373,701	18,506	19,639	494,505	395,682

- (a) Not including tidal water.
 (b) Not including nursery grounds, woods and plantations, or mountain and heath land.
 (c) Exclusive of mountain and heath land.
 (d) Furnished by the Registrar-General for Ireland.
 (e) Including beetroot.
 (f) Cabbage and rape only.
 (g) Not separately returned in Ireland.

From the foregoing returns it will be seen that of the more important crops the area under wheat has declined by 524,028 acres, or 26.5 per cent., while the area under grass of all descriptions has increased. All the "green crops" (except potatoes) show a decrease, and potatoes have decreased in Ireland.

II.—NUMBER of HORSES, CATTLE, SHEEP, and PIGS, as returned upon 4th June in the years 1895 and 1894, in Great Britain, with similar particulars for Ireland, and with total for the United Kingdom.

LIVE STOCK.	GREAT BRITAIN.		IRELAND.		UNITED KINGDOM, including ISLE OF MAN and CHANNEL ISLANDS.	
	1895.	1894.	1895.	1894.	1895.	1894.
Horses used solely for Agriculture -	No. 1,010,833	No. 1,004,231	No. (g) -	No. (g) -	No. (g) -	No. (g) -
Unbroken Horses:—One year & above	330,353	454,095	(g) -	(g) -	(g) -	(g) -
" " Under one year	130,337		(g) -	(g) -	(g) -	(g) -
Mares kept solely for Breeding -	74,205	71,075	(g) -	(g) -	(g) -	(g) -
TOTAL OF HORSES -	1,545,228	1,529,461	557,139	553,091	2,112,207	2,092,290
Cows & Heifers in Milk or in Calf -	2,185,820	2,460,086	1,433,960	1,447,402	3,997,590	3,925,486
Other Cattle:—Two years & above -	1,431,525	1,516,672	995,165	1,079,351	2,431,756	2,592,604
" " One year & under two	1,190,368	1,217,145	911,800	914,287	2,110,824	2,140,592
" " Under one year -	1,246,623	1,153,210	1,017,116	960,154	2,273,144	2,122,114
TOTAL OF CATTLE -	6,354,336	6,347,113	4,358,041	4,392,194	10,763,314	10,780,796
Ewes kept for Breeding - - -	9,663,129	9,668,002	2,350,520	2,492,304	18,384,441	18,541,761
Other Sheep:—One year & above -	6,334,336	6,342,730				
" " Under one year -	9,794,680	9,850,768	1,564,335	1,612,640	11,390,412	11,466,057
TOTAL OF SHEEP -	25,792,195	25,861,500	3,914,855	4,105,250	29,774,853	30,037,818
Sows kept for Breeding - - -	415,210	351,119	(g) -	(g) -	(g) -	(g) -
Other Pigs - - -	2,409,221	2,038,907	(g) -	(g) -	(g) -	(g) -
TOTAL OF PIGS -	2,884,431	2,390,026	1,338,454	1,389,310	4,238,870	3,784,943

(g) Differently classified in Ireland.

PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

I.—PRICES OF MEAT.

AVERAGE PRICES OF DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the Second and Third Quarters of 1895.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	2ND QUARTER, 1895.				3RD QUARTER, 1895.			
	s.	d.	s.	d.	s.	d.	s.	d.
BEEF:—								
Scotch, short sides - -	4	4 to 4	8		4	5 to 4	9	
„ long sides - -	4	0 „	4	2	4	0 „	4	3
English, Prime - -	3	11 „	4	1	3	10 „	4	1
Cows and Bulls - -	2	4 „	3	3	2	3 „	3	1
American, Birkenhead killed -	3	7 „	3	10	3	5 „	3	8
„ Deptford killed -	3	8 „	3	10	3	4 „	3	8
„ Refrig. hind-qrs. -	3	11 „	4	3	3	8 „	4	2
„ „ fore-qrs. -	2	3 „	2	7	1	11 „	2	5
Argentine - -	3	0 „	3	5	2	9 „	3	3
Australian, Refrig. hind-qrs. -	—				2	2 „	2	3
„ „ fore-qrs. -	—				1	7 „	1	8
MUTTON:—								
Scotch, Prime - -	4	9 „	5	2	4	10 „	5	2
English, Prime - -	4	7 „	5	0	4	5 „	4	11
Ewes - -	3	6 „	3	10	3	5 „	3	10
Dutch - -	4	3 „	4	7	4	2 „	4	6
German - -								
New Zealand - -	1	8 „	2	3	2	3 „	2	6
Australian - -	1	7 „	1	9	2	1 „	2	2
River Plate, Frozen - -	1	7 „	1	10	2	1 „	2	1
„ „ Town killed -	3	0 „	3	6	3	3 „	3	7
LAMB:—								
English - -	5	10 „	6	10	5	0 „	5	10
New Zealand - -	2	7 „	3	3	2	9 „	3	1
VEAL:—								
English - -	4	1 „	4	9	3	9 „	4	6
Foreign - -	3	11 „	4	7	3	5 „	4	3
PORK:—								
English, small - -	3	4 „	3	8	3	3 „	3	8
„ medium and large -	2	7 „	3	2	2	6 „	3	0
Foreign - -								

I.—PRICES OF MEAT—continued.

AVERAGE WHOLESALE PRICES of CATTLE AND SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during the under-mentioned Quarters of 1894 and 1895.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
3rd Quarter 1894	2 5	4 0	4 7	3 9	5 3	5 11
4th Quarter „	2 6	3 10	4 5	3 8	5 6	6 1
1st Quarter 1895	2 8	3 11	4 5	4 4	5 9	6 4
2nd Quarter „	2 9	4 2	4 6	4 1	5 2	5 9
3rd Quarter „	2 8	3 11	4 7	3 8	5 1	5 9

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during the under-mentioned Quarters of 1894 and 1895.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
3rd Quarter 1894	2 0 to 3	6	2 8 to 4	8	2 4 to 3	8	3 0 to 4	8
4th Quarter „	1 10 „	3 4	2 8 „	4 8	2 0 „	3 6	3 4 „	4 10
1st Quarter 1895	2 10 „	3 8	3 4 „	5 0	2 8 „	4 2	4 0 „	5 4
2nd Quarter „	2 8 „	3 10	3 8 „	5 2	3 0 „	4 4	3 8 „	5 6
3rd Quarter „	3 2 „	3 10	3 6 „	5 2	2 8 „	4 0	3 4 „	4 8

* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the Liverpool Abattoir, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.

II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1895, 1894, and 1893.

QUARTER ENDED.	PRICES.			QUANTITIES.		
	1895.	1894.	1893.	1895.	1894.	1893.
Wheat.						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - - -	20 1	25 1	25 7	652,874	613,313	708,986
Midsummer - - -	23 1	24 4	26 2	496,615	429,450	674,704
Michaelmas - - -	23 11	22 11	26 4	361,223	313,288	577,112
Christmas - - -	—	19 2	27 2	—	600,773	650,258
Barley.						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - - -	21 6	28 1	25 2	1,035,588	671,620	1,092,467
Midsummer - - -	20 3	25 2	24 0	79,936	40,863	104,155
Michaelmas - - -	21 3	22 1	24 1	141,985	95,121	248,829
Christmas - - -	—	22 7	30 1	—	1,921,744	1,920,615
Oats.						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - - -	13 9	18 1	17 7	250,838	193,922	201,572
Midsummer - - -	15 2	18 7	19 5	111,424	61,862	75,457
Michaelmas - - -	15 1	17 11	19 9	85,312	70,824	99,809
Christmas - - -	—	13 10	18 1	—	239,139	198,504

* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

II.—CORN PRICES :—HARVEST YEAR.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels, computed from the Weekly Averages of Corn Returns from the 196 Returning Markets, together with the QUANTITIES returned as sold at such Markets during each of the Harvest Years ending 31st August 1890 to 1895.

HARVEST YEARS.	PRICES.			QUANTITIES.		
	Wheat.	Barley.	Oats.	Wheat.	Barley.	Oats.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
1889-90 - - -	31 2	28 10	18 0	3,289,806	3,281,141	553,053
1890-91 - - -	35 5	23 0	19 1	3,496,788	3,439,382	602,887
1891-92 - - -	33 4	27 2	20 8	3,267,038	3,260,327	488,830
1892-93 - - -	26 8	24 10	18 9	2,676,227	3,383,004	547,412
1893-94 - - -	25 5	26 5	18 4	2,087,062	2,376,877	542,425
1894-95 - - -	21 5	21 5	14 8	2,180,959	3,136,415	693,121

II.—CORN PRICES :—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1895, and in the Corresponding Weeks in 1894 and 1893.

Weeks ended (in 1895)	Wheat.			Barley.			Oats.		
	1895.	1894.	1893.	1895.	1894.	1893.	1895.	1894.	1893.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Jan. 5 - - -	20 4	26 4	25 10	21 5	28 10	24 9	14 2	17 8	16 8
" 12 - - -	20 8	26 4	26 4	21 3	28 10	25 6	13 9	18 0	16 11
" 19 - - -	20 8	26 3	26 6	21 8	29 2	25 7	14 0	18 0	17 0
" 26 - - -	20 9	26 1	26 4	21 11	29 1	25 6	13 10	18 0	17 3
Feb. 2 - - -	20 6	25 7	26 3	21 5	28 11	25 4	13 10	18 1	17 5
" 9 - - -	19 11	25 3	25 11	21 8	28 8	25 0	13 6	17 10	17 11
" 16 - - -	19 10	24 10	25 7	21 10	28 3	24 11	13 8	18 0	17 10
" 23 - - -	19 10	24 5	25 5	22 2	28 0	25 1	13 9	18 4	18 0
Mar. 2 - - -	19 10	24 3	25 1	21 9	27 5	25 2	11 0	18 5	17 11
" 9 - - -	19 9	24 3	25 0	21 6	27 0	25 2	13 9	18 4	18 1
" 16 - - -	19 9	24 3	24 9	21 7	27 5	25 0	13 8	18 4	18 7
" 23 - - -	20 0	24 4	24 8	20 10	26 11	25 5	13 10	18 1	18 3
" 30 - - -	20 3	24 6	24 9	20 10	27 1	25 11	14 0	18 0	18 4
Apr. 6 - - -	20 4	24 6	24 9	20 11	26 7	25 6	14 5	18 3	17 11
" 13 - - -	20 4	24 7	24 10	21 3	27 10	24 8	13 11	18 2	18 7
" 20 - - -	20 6	24 8	25 5	21 2	28 6	24 5	14 5	18 4	18 8
" 27 - - -	20 9	24 10	25 10	20 8	26 3	24 0	14 2	18 3	19 3
May 4 - - -	21 4	24 10	25 10	20 5	26 1	23 11	14 8	18 7	19 5
" 11 - - -	22 4	24 9	26 4	20 8	24 11	22 7	15 3	18 9	19 4
" 18 - - -	22 10	24 5	27 0	20 6	25 0	23 2	15 3	18 9	19 8
" 25 - - -	23 5	24 1	27 6	20 1	24 0	25 0	15 9	18 10	19 6
June 1 - - -	24 6	23 11	27 5	19 4	23 11	24 2	15 10	18 9	20 4
" 8 - - -	25 9	23 9	27 4	19 0	26 11	22 10	15 10	18 6	20 0
" 15 - - -	26 2	23 10	28 11	19 4	24 11	23 5	16 11	18 9	21 1
" 22 - - -	26 5	23 11	28 9	19 5	22 5	23 3	16 1	18 10	21 3
" 29 - - -	26 1	24 1	28 9	20 3	20 5	20 9	16 7	19 2	21 5
July 6 - - -	25 7	24 6	26 8	19 9	23 7	20 6	16 4	19 6	21 0
" 13 - - -	25 0	24 5	26 8	20 8	21 0	22 3	15 7	19 7	22 3
" 20 - - -	24 4	24 6	26 5	18 6	19 6	20 3	16 6	19 7	21 9
" 27 - - -	24 1	24 8	26 5	19 10	22 5	23 1	16 11	20 6	21 7
Aug. 3 - - -	24 2	24 4	26 2	18 2	21 4	21 8	15 9	19 8	21 5
" 10 - - -	24 3	24 4	26 3	20 0	21 4	21 8	16 5	19 9	20 6
" 17 - - -	24 6	24 5	26 5	19 3	16 5	22 5	16 1	18 9	19 6
" 24 - - -	24 5	24 1	25 11	20 8	22 3	26 9	15 7	17 8	18 6
" 31 - - -	23 10	22 7	25 5	23 5	24 1	26 9	14 5	17 1	18 7
Sept. 7 - - -	23 1	21 7	25 7	23 4	24 11	27 2	14 4	16 6	17 4
" 14 - - -	22 10	20 5	26 0	23 11	23 9	27 8	13 8	15 9	17 6
" 21 - - -	22 7	19 8	26 9	24 2	23 5	27 10	13 3	15 2	17 9
" 28 - - -	23 0	18 9	27 6	24 8	23 5	28 4	13 2	14 3	17 11
Oct. 5 - - -	23 6	18 2	27 10	25 1	23 7	29 0	13 6	14 0	17 10
" 12 - - -	24 3	17 7	27 9	25 7	23 10	29 5	13 4	13 5	18 0
" 19 - - -	24 11	17 6	27 6	25 8	23 11	29 6	13 5	13 6	18 1
" 26 - - -	25 5	17 7	27 6	25 4	23 8	29 6	13 7	13 3	18 2
Nov. 2 - - -	25 11	18 0	27 4	25 6	23 8	29 5	13 10	13 6	18 2
" 9 - - -	26 4	18 4	27 4	25 4	23 0	29 3	14 3	13 7	18 1
" 16 - - -	26 1	19 1	27 4	25 1	22 7	29 2	14 4	13 10	18 2
" 23 - - -	25 7	19 11	27 1	25 1	22 4	28 9	14 4	14 3	18 3
" 30 - - -	25 2	20 7	27 0	24 7	22 0	28 8	14 3	14 3	18 3

II.—CORN PRICES:—IMPORTED WHEAT.
AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the Second and Third Quarters of 1895.

COUNTRIES from which Exported.	Average Value per Imperial Quarter.	
	Second Quarter, 1895.	Third Quarter, 1895.
	s. d.	s. d.
ARGENTINE REPUBLIC - - -	24 1	23 8
CHILE - - - - -	26 6	25 4
ROUMANIA - - - - -	23 7	21 8
RUSSIA - - - - -	22 5	23 3
TURKEY - - - - -	22 10	22 0
UNITED STATES OF AMERICA { Atlantic	25 5	24 11
{ Pacific	24 9	24 10
AUSTRALASIA - - - - -	25 8	24 5
INDIA, BRITISH - - - - -	24 3	22 10
NORTH AMERICA, BRITISH - - -	26 4	25 10

II.—CORN PRICES:—BELGIUM, FRANCE, ENGLAND AND WALES.
AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND AND WALES in the four under-mentioned months of 1895.

Month.	Belgium.	France.	England and Wales.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - - -	25 8½	30 10½	24 9
August - - - - -	—	30 11½	24 3
September - - - - -	—	30 5½	22 10
October - - - - -	—	30 11½	24 6
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - - -	19 8	19 6½	19 8
August - - - - -	—	19 5	20 3
September - - - - -	—	19 3½	24 0
October - - - - -	—	19 5½	25 5
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - - -	16 3¼	18 4¼	16 1
August - - - - -	—	18 5	15 8
September - - - - -	—	18 0¾	13 7
October - - - - -	—	17 7¼	13 5

Note.—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*; the prices of French grain have been compiled from the official weekly prices published in the *Journal d'Agriculture pratique*. The prices of British grain are the official averages based on the weekly returns furnished under the Corn Act, 1882.

II.—CORN PRICES:—LONDON, PARIS, BERLIN.
AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER at the under-mentioned Markets in the four under-mentioned months of 1895.

Month.	London.	Paris.	Berlin.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - - -	25 1	31 1	31 7½
August - - - - -	27 2	30 8½	30 9
September - - - - -	24 2	30 8¼	29 5
October - - - - -	24 6	32 3¼	30 2
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - - -	19 6	18 10¾	19 7½ to 28 11¾
August - - - - -	19 3	18 9	19 5 „ 23 9
September - - - - -	30 2	18 10¾	19 6 „ 22 6½
October - - - - -	31 5	18 10¾	19 10 „ 22 0½
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - - -	No sales.	17 10¼	18 4
August - - - - -	15 11	18 1¾	18 8¼
September - - - - -	14 4	18 1¾	17 0½
October - - - - -	14 10	18 1¾	16 7½

Note.—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.

III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES OF BUTTER, MARGARINE, and CHEESE,
in the month of October, and in the Second and Third
Quarters of 1895.

(Compiled from the *Grocer*.)

DESCRIPTION.	2nd Quarter of 1895.				3rd Quarter of 1895.				Month of October 1895.			
	Per Cwt.		Per Cwt.		Per Cwt.		Per Cwt.		Per Cwt.		Per Cwt.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
BUTTER :												
Clonmel -	—	—	—	—	—	—	—	—	—	—	—	—
Cork, 1sts -	75	10	—	—	84	0	—	—	109	6	—	—
„ 2nds -	67	10	—	—	81	4	—	—	104	0	—	—
„ 3rds -	58	6	—	—	78	8	—	—	100	0	—	—
„ 4ths -	50	6	—	—	71	6	—	—	88	0	—	—
Friesland -	68	11	—	74	4	87	8	—	92	0	108	6
Dutch Factories -	74	11	—	80	9	91	9	—	96	8	112	6
French Baskets -	90	1	—	102	0	101	7	—	104	7	117	6
„ Crocks and Firkins.	76	2	—	86	4	88	10	—	97	0	108	6
„ 2nds and 3rds	68	4	—	72	6	80	2	—	85	3	101	0
Danish and Swedish	86	8	—	91	7	101	0	—	104	9	126	0
Finnish -	72	7	—	82	9	80	9	—	95	0	102	6
Russian -	61	9	—	80	6	76	7	—	87	9	98	0
Australian -	38	10	—	81	2	75	6	—	98	9	116	9
New Zealand -	38	10	—	81	2	75	6	—	98	9	116	9
Fresh Rolls (Foreign) per doz.	9	1½	—	13	6	9	11½	—	13	7½	11	9
MARGARINE :												
Margarine -	32	6	—	51	0	34	0	—	52	2	35	0
Mixtures -	55	6	—	76	6	56	0	—	77	1	61	0
CHEESE :												
Cheddar -	41	4	—	70	4	40	0	—	67	8	36	0
Somerset -	43	10	—	61	3	42	0	—	61	7	40	0
Cheshire -	50	0	—	81	4	31	6	—	72	6	33	0
Wiltshire -	34	9	—	59	10	27	6	—	55	8	30	0
Double Gloucester -	33	9	—	59	1	29	8	—	54	1	34	0
Derby -	36	9	—	47	9	33	0	—	43	6	31	0

PRICES OF VEGETABLES AND FRUIT.

I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the
under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	SEPTEMBER.				OCTOBER.			
	COVENT GARDEN.		FARRINGDON.		COVENT GARDEN.		FARRINGDON.	
	s.	d.	s.	d.	s.	d.	s.	d.
Artichokes, per half bushel -	—	—	—	—	—	—	2	6
Beans, per bushel -	1	0	1	6	1	6	1	4
Beetroot, per bushel -	—	—	—	—	—	—	2	0
„ per dozen bunches -	—	—	3	6	—	—	—	—
Cabbages, per dozen -	—	—	1	0	—	—	—	—
„ per tally -	—	—	4	0	—	—	3	0
Carrots, per bag -	—	—	—	—	—	—	1	9
„ per dozen bunches -	—	—	3	0	—	—	3	0
Cauliflowers, per dozen -	1	0	1	6	1	5	2	0
Celery, per roll -	—	—	—	—	—	—	1	0
Cucumbers, per dozen -	0	11	2	0	1	3	3	0
Horseradish, per bundle -	—	—	1	0	—	—	1	0
Leeks, per dozen bunches -	—	—	—	—	—	—	1	6
Lettuce, per score -	—	—	1	6	—	—	1	0
Marrows, per dozen -	—	—	1	0	—	—	1	0
„ per tally -	1	6	—	—	2	0	—	—
Mint, per bunch -	—	—	0	3	—	—	—	—
Mushrooms, per lb. -	1	0	0	6	0	11	—	—
Onions, per bag -	—	—	2	0	—	—	3	0
„ English, per bushel -	—	—	—	—	2	0	—	—
Parsley, per dozen bunches -	—	—	3	0	—	—	2	0
Potatoes:								
Bruces, per ton -	—	—	70	0	—	—	—	—
Early Regents, per ton -	—	—	55	0	—	—	—	—
Early Rose, per ton -	—	—	60	0	—	—	—	—
Hebrons „ -	—	—	60	0	—	—	65	0
„ Red „ -	—	—	70	0	—	—	—	—
„ White, per ton -	—	—	70	0	—	—	70	0
Imperators, per ton -	—	—	57	6	—	—	46	8
Jeannie Deans „ -	—	—	—	—	—	—	70	0
Magnus „ -	—	—	35	0	—	—	43	9
Main Crop „ -	—	—	—	—	—	—	75	0
Puritans, „ -	—	—	70	0	—	—	52	6
Snowdrops, per ton -	—	—	75	0	—	—	70	0
Sutton's Abundance, per ton -	—	—	—	—	—	—	57	6
Sage, per dozen bunches -	—	—	2	0	—	—	—	—
Spinach, per bushel -	—	—	2	0	—	—	1	6
Sprouts, per half bushel -	—	—	—	—	—	—	2	3
Turnips, per bag -	—	—	—	—	—	—	2	0
„ per dozen bunches -	—	—	2	0	—	—	3	0

PRICES OF VEGETABLES AND FRUIT—*continued.*I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—*continued.*(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	SEPTEMBER.				OCTOBER.			
	BOROUGH AND SPITAL-FIELDS.		STRATFORD.		BOROUGH AND SPITAL-FIELDS.		STRATFORD.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beans, per bag	—	—	2 4 to 3 4	—	1 0 to 1 6	—	1 0 to 1 3	—
Beetroot, per bushel	1 3 to 1 7	—	1 2 " 1 9	—	1 3 " 1 6	—	—	—
Cabbages, per dozen bunches	1 6 " 2 0	—	2 0 " 2 8	—	2 2 " 2 9	—	—	—
Carrots, per bag	3 4 " 4 4	—	1 10 " 4 4	—	2 3 " 3 10	—	2 1 " 4 2	—
" per dozen bunches	1 9 " 3 0	—	1 2 " 1 11	—	—	—	—	—
" household, per ton	—	—	25 4 " 35 0	—	25 9 " 32 10	—	—	—
" cattle feeding, per ton	—	—	20 0 " 22 0	—	21 7 " 27 0	—	—	—
Cauliflowers, per dozen	—	—	0 11 " 1 8	—	0 10 " 1 7	—	—	—
" per tally	—	—	5 0 " 7 6	—	3 0 " 8 3	—	3 9 " 7 6	—
Collards, per tally	2 3 " 3 3	—	—	—	2 6 " 3 3	—	—	—
Cucumbers, per dozen	—	—	1 2 " 2 2	—	0 11 " 2 4	—	—	—
Greens, per dozen bunches	—	—	—	—	1 8 " 2 1	—	1 6 " 2 5	—
Horseradish, per bundle	1 0 " 1 3	—	—	—	1 0 " 1 4	—	1 0 " 1 2	—
Mangolds, per ton	—	—	15 4 " 18 4	—	16 4 " 27 7	—	1 10 " 2 9	—
Marrows, per tally	1 9 " 2 3	—	—	—	1 6 " 2 0	—	—	—
Mint, per dozen bunches	—	—	—	—	2 10 " 4 0	—	—	—
Onions, per bag	3 0 " 4 6	—	1 0 " 1 6	—	1 0 " 1 6	—	—	—
" per dozen bunches	1 9 " 2 6	—	—	—	55 0 " 70 0	—	—	—
" per ton	70 0 " 90 0	—	70 0 " 80 0	—	—	—	1 0 " 1 7	—
Parsley, per dozen bunches	—	—	1 1 " 1 6	—	0 7 " 0 9	—	0 8 " 1 0	—
Parsnips, per score	—	—	—	—	52 6 " 83 9	—	—	—
Potatoes, per ton	55 0 " 90 0	—	—	—	45 0 " 60 0	—	35 0 " 61 3	—
" per ton	45 0 " 55 0	—	—	—	48 4 " 66 0	—	55 0 " 68 9	—
Fidler's Colossal, per ton	—	—	65 0 " 75 0	—	—	—	—	—
Hebrons, per ton	45 0 " 60 0	—	—	—	—	—	—	—
Highland Bruces, per ton	50 0 " 70 0	—	—	—	51 3 " 70 0	—	—	—
" Hebrons "	—	—	—	—	45 0 " 55 0	—	—	—
Imperators, per ton	35 0 " 45 0	—	30 0 " 62 6	—	47 6 " 62 6	—	—	—
Magnums "	—	—	—	—	—	—	—	—
Main Crop "	—	—	—	—	—	—	—	—
Puritans "	90 0 " 70 0	—	—	—	46 8 " 63 4	—	43 9 " 58 9	—
Reading Giants, per ton	45 0 " 60 0	—	50 0 " 70 0	—	51 3 " 67 6	—	52 6 " 70 0	—
Snowdrops "	60 0 " 75 0	—	52 6 " 72 6	—	53 9 " 67 6	—	47 6 " 55 0	—
Sutton's Abundance, per ton	40 0 " 55 0	—	—	—	—	—	—	—
" Regents "	50 0 " 60 0	—	52 6 " 65 0	—	—	—	—	—
Sage, per dozen bunches	1 6 " 2 0	—	—	—	2 0 " 2 6	—	2 6 " 5 1	—
Savoy, per tally	—	—	—	—	4 6 " 6 0	—	0 9 " 1 1	—
Scotch kale, per bushel	—	—	—	—	0 10 " 1 1	—	—	—
" per sieve	—	—	—	—	2 0 " 2 6	—	—	—
Spinach, per bushel	—	—	—	—	2 3 " 2 9	—	—	—
Sprouts, per half sieve	—	—	16 4 " 20 0	—	—	—	19 4 " 24 7	—
Swedes, per ton	2 0 " —	—	—	—	—	—	—	—
Lemon Thyme, per dozen bunches	—	—	—	—	1 9 " 2 0	—	1 4 " 2 0	—
Turnips, per bag	2 4 " 3 0	—	1 9 " 2 6	—	2 0 " 2 6	—	25 0 " 34 9	—
" per dozen bunches	—	—	—	—	—	—	—	—
" per ton	—	—	0 6 " —	—	—	—	—	—
Watercress, per dozen bunches	—	—	—	—	—	—	—	—

PRICES OF VEGETABLES AND FRUIT—*continued.*

II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	August.		September.		October.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
COVENT GARDEN:						
Apples, per bushel	1 6 to 2 0	—	1 0 to 2 0	—	1 2 to 2 7	—
" dessert, per half-sieve	—	—	2 0 " 3 0	—	2 0 " 3 0	—
Colts, per 100 lbs.	40 0 " 45 0	—	40 0 " 45 0	—	35 0 " 38 0	—
Damsons, per half sieve	1 9 " 2 0	—	1 6 " 1 10	—	1 0 " 1 3	—
Figs, per dozen	0 9 " 1 7	—	0 7 " 1 0	—	0 9 " 1 0	—
Filberts, per 100 lbs.	35 0 " 40 0	—	25 0 " 28 0	—	25 0 " —	—
Grapes, 1st quality, black, English, per lb.	1 3 " 1 6	—	1 3 " 1 6	—	1 3 " 1 6	—
" 2nd "	0 9 " 1 0	—	0 6 " 1 0	—	0 6 " 1 0	—
" Guernsey, per lb.	0 8 " 1 1	—	0 6 " 0 9	—	0 6 " 0 9	—
Greengages, per half-sieve	3 9 " 4 6	—	3 6 " 4 0	—	—	—
Melons, each	1 2 " 1 8	—	1 0 " 1 9	—	1 0 " 2 0	—
Peaches, 1st size, per dozen	4 4 " 8 0	—	5 0 " 7 0	—	9 0 " 13 3	—
" 2nd "	1 9 " 3 2	—	2 6 " 3 6	—	3 0 " 4 0	—
" 3rd "	0 10 " 1 3	—	0 10 " 1 3	—	1 0 " 1 6	—
Pears, per bushel	—	—	2 0 " 4 0	—	—	—
" Calabash, per bushel	—	—	8 0 " 9 0	—	5 0 " 6 0	—
" Capimont, per bushel	—	—	9 0 " 10 0	—	—	—
" Marie Louise, per half sieve	—	—	—	—	3 4 " 4 8	—
" Pitmaston Duchess, per half sieve	—	—	—	—	3 8 " 5 4	—
" Williams, per bushel	—	—	4 0 " 10 0	—	—	—
Plums, per half sieve	3 9 " 4 6	—	—	—	—	—
" Pond's seedling, per half sieve	2 6 " 3 0	—	2 6 " 3 0	—	2 6 " 3 0	—
Prunes, per half sieve	—	—	5 0 " 6 0	—	5 0 " 6 0	—
Tomatoes, homegrown, smooth, per dozen lbs.	—	—	—	—	2 0 " —	—
" homegrown, ordinary, per dozen lbs.	2 6 " 4 0	—	2 9 " 3 3	—	4 0 " 4 9	—
Tomatoes, Guernsey, per dozen lbs.	2 7 " 3 2	—	2 0 " 2 6	—	2 9 " 3 6	—
Walnuts, best English, shelled, per bushel	1 6 " 3 0	—	1 4 " 1 10	—	2 2 " 2 8	—
	—	—	—	—	10 0 " 12 0	—
FARRINGTON:						
Apples, cooking, per bushel	3 0 " 4 0	—	2 6 " 3 0	—	3 6 " —	—
" Canadian Gravenstein, per barrel	—	—	—	—	11 0 " 14 0	—
" Ingestre, per bushel	5 6 " —	—	5 6 " 6 0	—	—	—
" Keswick Codlins, per bushel	4 0 " —	—	—	—	—	—
" Quarrenden, per bushel	5 6 " 6 0	—	—	—	—	—
Chestnuts, per bag	—	—	—	—	13 0 " —	—
Damsons, per bushel	—	—	2 6 " 4 0	—	2 0 " —	—
Grapes, per lb.	1 0 " 1 3	—	—	—	1 0 " 1 3	—
Greengages, per bushel	9 6 " 12 0	—	12 0 " —	—	—	—
Melons, per dozen	3 6 " 4 0	—	—	—	—	—
Peaches, per case	—	—	6 0 " —	—	—	—
Pears, per bushel	—	—	—	—	—	—
" per barrel	7 6 " —	—	—	—	—	—
" Calabash, per half bushel	—	—	—	—	7 0 " —	—
" Marie Louise, per bushel	—	—	—	—	6 0 " —	—
Pineapples, each	2 0 " —	—	—	—	—	—
Plums, per half bushel	4 0 " 6 0	—	2 6 " 4 6	—	2 0 " 2 6	—
Prunes, per half bushel	—	—	—	—	2 6 " —	—
Tomatoes, per dozen lbs.	3 6 " 4 6	—	3 0 " —	—	3 9 " 6 0	—
Walnuts, per bag	—	—	—	—	13 0 " 14 0	—
" Grenoble, per bag (35 lbs.)	—	—	—	—	4 0 " 5 6	—

PRICES OF VEGETABLES AND FRUIT—continued.

II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS—continued.

(Compiled from the *Gardeners' Chronicle*.)

Description.	August.		September.		October.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
BOROUGH and SPITALFIELDS:						
Apples, per bushel	2 6	to 4 0	1 6	to 4 0	2 3	„ 4 6
„ Keswick Codlins, per bushel	1 9	„ 2 1	1 9	„ 2 3	—	—
Chestnuts, per basket	—	—	—	—	6 0	„ 8 0
Damsons, per half bushel	—	—	2 0	„	—	—
„ per half sieve	—	—	—	—	1 6	„ 2 1
Pears, per bushel	—	—	1 0	„ 2 4	3 0	„ 7 0
„ Calabash, per half sieve	—	—	—	—	3 0	„ 3 6
„ Dutch Bergamotte, per bushel	—	—	—	—	3 0	„ 3 6
Plums, per bushel	—	—	—	—	2 0	„ 2 6
„ per sieve	—	—	3 0	„ 4 2	—	—
Walnuts, per bag	—	—	—	—	4 6	„ 8 0
STRATFORD:						
Apples, English, per bushel	2 3	„ 5 6	—	—	—	—
„ „ cookers, per bushel	—	—	1 4	„ 2 10	2 1	„ 3 9
„ „ dessert, per bushel	—	—	2 0	„ 4 0	2 6	„ 4 6
Damsons, per half sieve	—	—	1 7	„ 2 1	1 7	„ 2 4
Filberts, Kent, per half sieve	4 0	„ 5 0	—	—	—	—
Greengages, per half sieve	3 9	„ 4 9	3 9	„ 4 6	—	—
Pears, per bushel	3 6	„ 6 0	—	—	2 0	„ 5 0
„ per flat	—	—	—	—	2 8	„ 5 4
„ per half sieve	1 4	„ 2 6	—	—	—	—
Plums, per half sieve	2 2	„ 3 3	1 5	„ 2 3	1 5	„ 1 10
„ per bushel	4 0	„ 5 6	—	—	—	—
Tomatoes, English, per dozen lbs.	3 0	„ 4 0	—	—	3 0	„ 3 6
„ „ per peck	—	—	2 0	„ 3 0	2 5	„ 3 1

PRICES OF WOOL.

AVERAGE PRICES OF ENGLISH WOOL, per Pack of 240 lbs., in the months of September and October 1895.

(Compiled from the *Economist*.)

DESCRIPTION.	SEPTEMBER.		OCTOBER.	
	£ s. d.	£ s. d.	£ s.	£ s.
Fleeces, South Down hogs -	10 5 0	to 12 2 6	10 10	to 12 10
Half-bred hogs -	10 5 0	„ 11 15 0	10 10	„ 12 10
Half-bred wethers -	9 17 6	„ 11 2 6	10 0	„ 11 10
Kent fleeces -	9 15 0	„ 11 12 6	10 0	„ 12 0
South Down ewes and wethers -	9 17 6	„ 12 2 6	10 0	„ 12 10
Leicester „ „ -	10 2 6	„ 11 12 6	10 10	„ 12 0

DISEASES OF ANIMALS.

I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER of CATTLE returned as SLAUGHTERED, by order of the Board of Agriculture, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having DIED from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro-Pneumonia.	SWINE that Died of Swine-Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine-Fever.
June 1894 -	No. 8	No. 303	No. 16	No. 2,186	No. 22,306	No. 374
September 1894	7	88	7	1,971	12,311	435
December 1894	—	—	5	1,212	7,622	290
March 1895 -	—	43	2	1,914	9,584	190
June 1895 -	—	—	8	2,812	15,096	570
September 1895	—	—	3	2,449	18,293	540

NUMBER of PLACES upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.
	OUT- BREAKS.	ANIMALS ATTACKED.	OUT- BREAKS.	ANIMALS ATTACKED.	DISEASED ANIMALS KILLED or DIED.
	No.	No.	No.	No.	No.
June 1894 -	113	251	230	351	60
September 1894	91	220	230	372	49
December 1894	106	162	212	332	111
March 1895 -	128	284	238	427	212
June 1895 -	110	266	251	360	228
September 1895	86	178	284	449	139

II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of CATTLE returned as SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having DIED from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro- Pneumonia.	SWINE that Died of Swine- Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine- Fever.
	No.	No.	No.	No.	No.	No.
June 1894 -	—	—	5	932	12,060	71
September 1894	—	—	1	902	9,446	651
December 1894	—	—	—	562	6,146	947
March 1895 -	—	—	—	504	3,462	675
June 1895 -	—	—	—	556	1,491	220
September 1895	—	—	—	481	1,240	330

NUMBER of PLACES in Ireland upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.
	OUTBREAKS.	ANIMALS ATTACKED.	OUTBREAKS.	ANIMALS ATTACKED.	DISEASED ANIMALS KILLED or DIED.
	No.	No.	No.	No.	No.
June 1894 -	—	—	4	9	213
September 1894	1	1	6	19	242
December 1894	1	2	2	3	244
March 1895 -	1	1	5	5	171
June 1895 -	2	2	—	—	235
September 1895	1	1	—	—	241

POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

ADVANTAGES OFFERED FOR OLD AGE PENSIONS.

Provision for old age can be made by buying Savings Bank Deferred Annuities from 1*l*. to 100*l*. to begin at any age selected.

RETURN OF PURCHASE MONEY. The Premiums for Deferred Annuities can be returned on application, or on Death before the Annuity begins, if the Contract is taken out on these conditions.

IMMEDIATE PENSIONS. Annuities to begin at once, of any amount from 1*l*. to 100*l*. a year, can be bought through the Post Office Savings Bank. The Purchase Money is payable in a lump sum which is not returnable, and the Pensions are payable half-yearly.

Savings Banks' Annuities are payable by half-yearly instalments on the 5th January and the 5th July, or the 5th April and 10th October, according to the date of purchase.

PROCEDURE. A simple form of Proposal, and a form for statement of age, can be obtained at any Post Office Savings Bank. When filled up the forms will be forwarded by the local Postmaster to the Chief Office, London, and a Contract will be issued when the first premium has been paid. Annuity Premiums are payable in the same way as Insurance Premiums, namely, by transfers from Savings Bank accounts.

The following Table shows the cost of an Immediate Life Annuity of £1, and the annual or single premium for which a Deferred Life Annuity of £1 will be granted.

POST OFFICE SAVINGS BANKS.

OLD AGE PENSIONS.—IMMEDIATE LIFE ANNUITIES.

This Table shows the cost of an Immediate Life Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below.

AGE			Males.	Females.	AGE			Males.	Females.
at time of Purchase.			Cost of an Immediate Annuity of £1.	Cost of an Immediate Annuity of £1.	at time of Purchase.			Cost of an Immediate Annuity of £1.	Cost of an Immediate Annuity of £1.
			£ s. d.	£ s. d.				£ s. d.	£ s. d.
5 and under	6		25 19 0	27 12 6	44 and under	45		16 15 8	18 13 3
6	"	7	25 15 1	27 9 1	45	"	46	16 9 11	18 6 9
7	"	8	25 11 1	27 5 8					
8	"	9	25 7 0	27 2 2	46	"	47	16 4 2	18 0 0
9	"	10	25 2 11	26 18 8	47	"	48	15 18 3	17 13 2
10	"	11	24 18 10	26 15 1	48	"	49	15 12 3	17 6 1
					49	"	50	15 6 1	16 18 11
11	"	12	24 14 9	26 11 6	50	"	51	14 19 11	16 11 9
12	"	13	24 10 6	26 7 10					
13	"	14	24 6 4	26 4 1	51	"	52	14 13 6	16 4 7
14	"	15	24 2 1	26 0 4	52	"	53	14 7 1	15 17 4
15	"	16	23 17 10	25 16 6	53	"	54	14 0 5	15 9 11
					54	"	55	13 13 8	15 2 4
16	"	17	23 13 6	25 12 7	55	"	56	13 6 9	14 14 9
17	"	18	23 9 1	25 8 8					
18	"	19	23 4 9	25 4 8	56	"	57	12 19 8	14 6 11
19	"	20	23 0 4	25 0 8	57	"	58	12 12 5	13 19 0
20	"	21	22 15 10	24 16 6	58	"	59	12 4 11	13 11 1
					59	"	60	11 17 4	13 3 1
21	"	22	22 11 4	24 12 4	60	"	61	11 9 8	12 15 1
22	"	23	22 6 9	24 8 1					
23	"	24	22 2 3	24 3 10	61	"	62	11 2 2	12 7 0
24	"	25	21 17 7	23 19 5	62	"	63	10 14 11	11 19 0
25	"	26	21 12 11	23 15 0	63	"	64	10 7 8	11 11 0
					64	"	65	10 0 6	11 2 11
26	"	27	21 8 3	23 10 6	65	"	66	9 13 4	10 14 7
27	"	28	21 3 6	23 5 11					
28	"	29	20 18 9	23 1 3	66	"	67	9 6 4	10 6 4
29	"	30	20 13 11	22 16 6	67	"	68	8 19 7	9 18 1
30	"	31	20 9 1	22 11 8	68	"	69	8 12 10	9 9 10
					69	"	70	8 6 2	9 1 10
31	"	32	20 4 2	22 6 9	70	"	71	7 19 5	8 14 2
32	"	33	19 19 2	22 1 9					
33	"	34	19 14 2	21 16 7	71	"	72	7 12 10	8 6 10
34	"	35	19 9 2	21 11 5	72	"	73	7 6 4	7 19 10
35	"	36	19 4 1	21 6 2	73	"	74	7 0 1	7 13 0
					74	"	75	6 14 1	7 6 4
36	"	37	18 18 11	21 0 9	75	"	76	6 8 4	6 19 10
37	"	38	18 13 9	20 15 3					
38	"	39	18 8 6	20 9 7	76	"	77	6 2 8	6 13 7
39	"	40	18 3 2	20 3 11	77	"	78	5 17 4	6 7 5
40	"	41	17 17 10	19 18 0	78	"	79	5 12 3	6 1 6
					79	"	80	5 7 2	5 15 9
41	"	42	17 12 4	19 12 1	80 or any greater age.				5 10 3
42	"	43	17 6 10	19 5 11					
43	"	44	17 1 4	18 19 8					

POST OFFICE SAVINGS BANKS.

OLD AGE PENSIONS.—DEFERRED LIFE ANNUITIES.

The Annuity Tables below give the cost of an Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below. In this class of Annuities the Purchase Money will be returned on application, or on the Death of the Nominee, if an instalment of the Annuity shall not have become due. These Pensions can be Deferred any number of years from 10 to 50, and any cost not given below will be furnished on application to the Controller, Post Office Savings Bank, London.

Purchase Money Returnable Scale.

Age at time of Purchase.	Cost of an Annuity of £1 payable after the expiration of 10 YEARS.				Cost of an Annuity of £1 payable after the expiration of 20 YEARS.			
	Males.		Females.		Males.		Females.	
	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.
21 and under 22	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
22 " 23	1 12 5	15 15 9	1 15 10	17 9 0	0 13 0	10 15 1	0 14 6	11 19 3
23 " 24	1 12 0	15 11 10	1 15 5	17 5 1	0 12 10	10 11 8	0 14 3	11 15 6
24 " 25	1 11 7	15 7 11	1 15 0	17 1 1	0 12 7	10 8 4	0 14 0	11 11 9
25 " 26	1 11 3	15 4 0	1 14 7	16 17 0	0 12 5	10 4 10	0 13 9	11 7 10
26 " 27	1 10 10	15 0 0	1 14 2	16 12 11	0 12 2	10 1 4	0 13 6	11 3 10
27 " 28	1 10 5	14 16 0	1 13 9	16 8 8	0 12 0	9 17 10	0 13 3	10 19 9
28 " 29	1 10 0	14 11 11	1 13 4	16 4 4	0 11 9	9 14 3	0 13 0	10 15 6
29 " 30	1 9 7	14 7 10	1 12 10	16 0 0	0 11 6	9 10 7	0 12 9	10 11 3
30 " 31	1 9 2	14 3 9	1 12 5	15 15 6	0 11 4	9 6 10	0 12 6	10 6 10
31 " 32	1 8 8	13 19 6	1 11 11	15 10 11	0 11 1	9 3 1	0 12 3	10 2 6
32 " 33	1 8 3	13 15 3	1 11 5	15 6 3	0 10 10	8 19 2	0 12 0	9 18 1
33 " 34	1 7 10	13 11 0	1 10 11	15 1 6	0 10 7	8 15 2	0 11 9	9 13 8
34 " 35	1 7 5	13 6 8	1 10 5	14 16 7	0 10 4	8 11 2	0 11 5	9 9 2
35 " 36	1 6 11	13 2 3	1 9 11	14 11 7	0 10 1	8 7 0	0 11 2	9 4 6
36 " 37	1 6 6	12 17 9	1 9 5	14 6 6	0 9 10	8 2 10	0 10 11	8 19 11
37 " 38	1 6 0	12 13 3	1 8 11	14 1 3	0 9 7	7 18 6	0 10 7	8 15 2
38 " 39	1 5 6	12 8 7	1 8 4	13 15 10	0 9 4	7 14 1	0 10 4	8 10 4
39 " 40	1 5 1	12 3 11	1 7 9	13 10 4	0 9 1	7 9 6	0 10 0	8 5 5
40 " 41	1 4 7	11 19 2	1 7 2	13 4 10	0 8 9	7 4 10	0 9 9	8 0 7
41 " 42	1 4 1	11 14 4	1 6 7	12 19 2	0 8 6	7 0 2	0 9 5	7 15 8
42 " 43	1 3 7	11 9 4	1 6 0	12 13 7	0 8 3	6 15 7	0 9 2	7 10 9
43 " 44	1 3 0	11 4 3	1 5 6	12 7 11	0 7 11	6 11 2	0 8 10	7 5 10
44 " 45	1 2 6	10 19 1	1 4 10	12 2 1	0 7 8	6 6 9	0 8 6	7 1 0
45 " 46	1 2 0	10 13 9	1 4 3	11 16 3	0 7 5	6 2 4	0 8 3	6 16 0
46 " 47	1 1 5	10 8 4	1 3 8	11 10 3	0 7 2	5 18 0	0 7 11	6 11 0

Purchase Money Not Returnable Scale.

21 and under 22	1 10 3	14 2 4	1 14 0	16 1 5	0 11 0	8 5 11	0 12 11	9 19 2
22 " 23	1 9 10	13 18 1	1 13 7	15 17 3	0 10 10	8 2 2	0 12 8	9 15 4
23 " 24	1 9 5	13 13 8	1 13 2	15 13 1	0 10 7	7 18 5	0 12 5	9 11 5
24 " 25	1 8 11	13 9 4	1 12 9	15 8 10	0 10 4	7 14 7	0 12 2	9 7 6
25 " 26	1 8 6	13 4 10	1 12 4	15 4 6	0 10 2	7 10 9	0 11 11	9 3 6
26 " 27	1 8 1	13 0 5	1 11 10	15 0 1	0 9 11	7 6 11	0 11 8	8 19 5
27 " 28	1 7 8	12 15 11	1 11 5	14 15 7	0 9 8	7 3 1	0 11 5	8 15 3
28 " 29	1 7 2	12 11 5	1 10 11	14 11 1	0 9 5	6 19 2	0 11 2	8 11 0
29 " 30	1 6 9	12 6 10	1 10 6	14 6 5	0 9 3	6 15 4	0 10 11	8 6 9
30 " 31	1 6 3	12 2 3	1 10 0	14 1 9	0 9 0	6 11 4	0 10 8	8 2 5
31 " 32	1 5 10	11 17 8	1 9 6	13 10 11	0 8 9	6 7 5	0 10 5	7 17 11
32 " 33	1 5 4	11 13 0	1 9 0	13 12 1	0 8 6	6 3 6	0 10 1	7 13 5
33 " 34	1 4 11	11 8 3	1 8 6	13 7 2	0 8 3	5 19 6	0 9 10	7 8 10
34 " 35	1 4 5	11 3 6	1 8 0	13 2 1	0 8 0	5 15 6	0 9 6	7 4 2
35 " 36	1 3 11	10 18 9	1 7 6	12 16 11	0 7 9	5 11 6	0 9 3	6 19 5
36 " 37	1 3 5	10 13 11	1 6 11	12 11 8	0 7 6	5 7 5	0 8 11	6 14 8
37 " 38	1 3 0	10 9 1	1 6 5	12 6 4	0 7 3	5 3 4	0 8 8	6 9 10
38 " 39	1 2 6	10 4 2	1 5 10	12 0 10	0 7 0	4 19 2	0 8 4	6 4 11
39 " 40	1 2 0	9 19 2	1 5 3	11 15 3	0 6 9	4 15 1	0 8 0	6 0 0
40 " 41	1 1 6	9 14 2	1 4 8	11 9 7	0 6 6	4 10 10	0 7 9	5 14 11
41 " 42	1 0 11	9 9 1	1 4 1	11 3 9	0 6 2	4 6 8	0 7 5	5 9 10
42 " 43	1 0 5	9 4 0	1 3 5	10 17 9	0 5 11	4 2 5	0 7 1	5 4 9
43 " 44	0 19 11	8 18 10	1 2 10	10 11 9	0 5 8	3 18 1	0 6 9	4 19 7
44 " 45	0 19 4	8 13 7	1 2 2	10 5 6	0 5 4	3 13 9	0 6 5	4 14 4
45 " 46	0 18 10	8 8 3	1 1 6	9 19 3	0 5 1	3 9 5	0 6 1	4 9 1

LIST OF LEAFLETS ISSUED BY THE BOARD OF AGRICULTURE.

Number.	Title.
A 3.—1893 I.	Cultivation of Osiers.
A 5.— „ I.	The Mangel Wurzel Fly.
A 6.— „ I.	The Field Vole.
A 7.— „ I.	Autumn Catch Crops and Fodder Supply.
A 8.— „ I.	Farmers and Assessments to Local Rates.
A 9.— „ I.	Ensilage.
A 10.— „ I.	The Ribbon Footed Corn-Fly.
A 12.— „ I.	The Gooseberry Saw-Fly.
A 13.— „ I.	Acorn Poisoning.
A 14.— „ I.	The Raspberry Moth.
A 15.— „ I.	The Apple Blossom Weevil.
A 16.— „ I.	The Apple Sucker.
A 17.— „ I.	Preservation of Commons.
A 18.— „ I.	Fertilisers and Feeding Stuffs Act, 1893.
A 1.—1894 I.	Mites on Currant and Nut Trees.
A 2.— „ I.	Vine and Raspberry Weevils.
A 3.— „ I.	The Diamond Back Moth.
A 4.— „ I.	The Daddy Longlegs.
A 5.— „ I.	Potato Disease.
A 6.— „ I.	The Warble Fly.
A 7.— „ I.	Farmers and the Income Tax.
A 9.— „ I.	Remission of Tithe Rentcharge.
A 10.— „ I.	Wireworms.
A 1.—1895 I.	Anthrax.
A 2.— „ I.	Pea and Bean Weevil.
A 3.— „ I.	The Turnip Fly or Flea.
A 4.— „ I.	Caterpillars on Fruit Trees.
A 5.— „ I.	The Magpie Moth.

Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.

The Journal

OF THE

Board of Agriculture.

Vol. II.]

March 1896.

[No. 4.]

THE GRAIN, POTATO, AND HAY CROPS OF 1895.

A preliminary statement of the estimated total produce and yield per acre of the Wheat, Barley, and Oat crops of Great Britain in 1895 was issued by the Board of Agriculture on 15th December last. Estimates may now be added for the yield of the Potato and Hay crops, pending the publication of the complete returns of produce which will appear, in accordance with the procedure now adopted, in the complete volume of Agricultural Returns for the year.

The estimate of Wheat in 1895, grown as that cereal was on a largely reduced acreage, compares very unfavourably in bulk with that of the immediately preceding year. The yield per acre in each of the last two years, and also the mean of the 10 official estimates of the yield of each harvest from 1885 to 1894 inclusive, may be shown as under:—

WHEAT.	Estimated Total Produce.		Estimated Yield.		Average Yield, 1885-94.
	1895.	1894.	1895.	1894.	
	Bushels.	Bushels.	Bushels per Acre.	Bushels per Acre.	Bushels per Acre.
England - - - -	35,120,000	56,088,000	26·2	30·7	29·3
Wales - - - -	952,000	1,420,000	21·6	25·1	23·3
Scotland - - - -	1,104,000	1,668,000	32·8	37·1	35·3
GREAT BRITAIN -	37,176,000	59,176,000	26·2	30·7	29·3

Arranging similarly the estimates for Barley, the comparison of the official estimates of yield for 1895 with those for 1894,

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400 THE GRAIN, POTATO, AND HAY CROPS OF 1895. [March 1896.]

and with the mean for the whole period 1885-94, the variation is also downwards, and the figures will be found to be as follows:—

BARLEY.	Estimated Total Produce.		Estimated Yield.		Average Yield, 1885-94.
	1895.	1894.	1895.	1894.	
	Bushels.	Bushels.	Bushels per Acre.	Bushels per Acre.	Bushels per Acre.
England - - -	58,002,000	61,194,000	31·6	34·6	33·1
Wales - - -	2,097,000	3,348,000	26·8	30·0	28·0
Scotland - - -	7,502,000	7,753,000	34·9	35·5	35·3
GREAT BRITAIN -	68,651,000	72,295,000	31·7	34·5	33·0

The estimates for the Oat crop show a diminished yield per acre of some 14 per cent. in England and Wales compared with 1894, when the crop was an over average one; but the reduction is under 5 per cent. in Scotland:—

OATS.	Estimated Total Produce.		Estimated Yield.		Average Yield, 1885-94.
	1895.	1894.	1895.	1894.	
	Bushels.	Bushels.	Bushels per Acre.	Bushels per Acre.	Bushels per Acre.
England - - -	78,045,000	88,280,000	38·4	44·6	40·6
Wales - - -	7,054,000	9,013,000	31·6	35·9	32·6
Scotland - - -	36,850,000	38,161,000	35·5	37·3	35·6
GREAT BRITAIN -	122,149,000	135,463,000	37·1	41·6	38·2

Turning to the crops for which the estimates have not hitherto been published, it will be found that Potatoes compare very favourably indeed with the yield of 1894, the total production of the year 1895 in Great Britain being higher than in any year since the returns have been collected. The acreage, as already shown in the published agricultural returns, was more than 7 per cent. above that of 1894, and larger than in any year of the last five, while the yield per acre throughout Great Britain was even higher than in 1893.

POTATOES.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1885-94.
	1895.	1894.	1895.	1894.	
	Tons.	Tons.	Tons.	Tons.	Tons.
England - - -	2,519,000	1,975,000	6·7	5·8	5·9
Wales - - -	227,000	186,000	6·7	5·5	5·6
Scotland - - -	817,000	628,000	6·3	4·8	5·6
GREAT BRITAIN -	3,593,000	2,789,000	6·6	5·5	5·8

More uncertainty has prevailed as to the effect of the season of 1895 on the Hay crops of the year. The figures published in the subjoined tables show that the estimated yield per acre of hay made from clover and rotation grasses was in England

considerably under that of the 1894 crop, although but slightly under the average of the past years for which returns exist. It was inferior in Wales, and still more so in Scotland. The comparisons for this class of hay stand as under:—

Hay from Clover and Rotation Grasses.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1885-94.
	1895.	1894.	1895.	1894.	
	Tons.	Tons.	Cwts.	Cwts.	Cwts.
England - - -	2,423,000	2,521,000	27·9	32·4	28·1
Wales - - -	188,000	233,000	21·1	27·4	23·1
Scotland - - -	592,000	691,000	26·0	35·1	30·7
GREAT BRITAIN -	3,117,000	3,448,000	27·1	32·5	28·2

The case of hay from permanent grass would appear to be materially different from that shown for clover hay in the above table, the results indicating a very greatly reduced bulk. In Scotland, the total crop was below that harvested in 1893; and although in England there was, on the whole, no approach to such scarcity as prevailed in that remarkable season the estimated production of hay from permanent grass represent less than two thirds of the large crop of 1894.

Hay from Permanent Grass.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1885-94.
	1895.	1894.	1895.	1894.	
	Tons.	Tons.	Cwts.	Cwts.	Cwts.
England - - -	3,950,000	6,121,000	19·4	29·3	24·3
Wales - - -	412,000	569,000	16·3	22·3	18·2
Scotland - - -	197,000	252,000	22·6	31·0	28·9
GREAT BRITAIN -	4,559,000	6,942,000	19·2	28·6	23·9

Putting together the two series of estimates, it would seem that the Hay crop of all descriptions secured in 1895, in Great Britain, did not exceed 7,680,000 tons, compared with 10,390,000 tons in the previous season.

THE FRUIT CROP OF 1895.

The fruit crop of 1895 was unusually abundant in respect of some kinds of fruit, and upon the whole it may be said to have been of excellent quality. The heat and drought appeared to suit plums fairly well, and damsons and apples extremely well, although rather too intense for the later strawberries and for raspberries (the yield of which was not very large by reason of the dry weather), red currants, and black currants on some soils. Pears, as a rule, were not a good crop. The unusually hot weather in March forced out the blossoms, which were nipped by the frosts and cold wind in April.

Gooseberries were generally plentiful, but the quantity of red currants was not nearly so great as in 1894, when the bushes were literally covered with fruit. Black currants were not more than an average crop except on the best soils.

Throughout Kent, the premier cherry county, and in other places where cherries are grown, the crop was large and of first rate flavour. It was thought that the very dry weather in May and June would make the cherries fall before they ripened, but comparatively few did so, and the heat of the sun gave them unusual quality and size.

In the famous orchards of East Kent, the cherry trees were perfect pictures during the time of blossom in May, as well as in the summer, when they were literally covered with red and white clusters of fruit.

Plums, though plentiful in places, were not generally a full yield. Some varieties were short in parts of Kent, Cambridge, and other counties, but in Worcestershire, especially in the famous Evesham district, there was a very large crop of most varieties, notably of Rivers Prolific, early and late Orleans, Czars, and Victorias.

Damsons were abundant in quantity throughout the country, and many thousand bushels did not pay the expenses of picking, carriage, and commission, while some were not picked at all.

The produce of cob-nut and filbert trees was so large in 1894 that it was considered probable there would be a great falling-off in 1895, as the trees would be materially weakened, but in spite of this, their yield was more than an average amount.

In every part of the country, and, it may be said, in every orchard and garden, there was an abundance of apples of all varieties. Growers had great difficulty in disposing of much of the fruit at prices that gave any profit, especially the early sorts, which do not keep, and later sorts of common quality. Thousands of bushels were not picked, but knocked off the trees with sticks, and packed in sacks for smashing, cider-making, and other uses, at ridiculously cheap prices.

Strawberries sold well at rates ranging between 2d. and 6d. per lb., and cherries made capital prices at from 3s. 6d. to 7s. 6d. per 24 lbs. They began at the lower rate, but very soon improved in price, as it was seen that the imports of foreign cherries were much less than usual, and the hot weather was favourable for their consumption. The importation of cherries during May, June, and July 1895, amounted to 193,499 bushels, against 310,263 bushels and 341,527 bushels, respectively, in the corresponding months of 1894 and 1893.

Gooseberries sold at from 1s. 3d. to 4s. per half sieve of 28 lbs. A good many were sold at rates which left but small profit to the producer. Red currants brought from 1s. 6d. to 4s. 3d. per 24 lbs., and black currants sold better at from 3s. 3d. to 7s. per 24 lbs.

Foreign competition does not interfere much with raspberries, for which there is always a strong demand for jams, jellies, and culinary purposes. This fruit, of which there was only an average crop, made good prices—from 25s. to 40s. per cwt. Fine raspberries, packed in punnets for dessert, brought 6d. per lb. without much trouble.

Plums had a wide range of values. Some early sorts made specially good prices because of the smaller imports from abroad particularly in the first part of the season. For instance, in July 1895, the importation of plums was only 59,040 bushels, compared with 165,134 bushels and 355,725 bushels respectively in July 1894 and 1893. The total importation of plums during 1895 only amounted to 401,080 bushels, contrasted with 777,411 bushels and 777,142 bushels respectively in 1894 and 1893.

Prices for plums varied between 2s. 6d. to 7s. per 28 lbs., the mean price being about 3s. 9d. per 28 lbs.

Prices for damsons were between 1s. and 3s. per 28 lbs., and much of this fruit was sold at a loss. Picking, railway rates, tolls, and commission more than balanced the prices made for many consignments, though damsons were retailed in very many towns at the rate of 3s. 6d. to 6s. per 28 lbs.

Equally unsatisfactory prices prevailed for apples. Early sorts, such as Lord Suffields, Keswick Codlins, and others that do not keep, made only from 1s. to 2s. 3d. per sieve, or bushel, of from 42 lbs. to 46 lbs. Many of these apples were wasted. Prices for apples during the season ranged from 1s. to 5s. per sieve or bushel; only fine dessert apples making the latter price. Exceptionally choice Cox's Orange Pippins, Margils, Ribstons, and other famed varieties made a shilling or two more per sieve. It was rather the heavy crop at home, and not the importation of apples from abroad, that made prices so very low, for it will be seen from the Trade Returns that the quantity of apples imported in 1895 was 3,292,562 bushels, while, in 1894, 4,968,669 bushels were imported, and 3,459,984 bushels in 1893. It may be that the reports of the heavy British crop prevented importation to some extent.

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Pears, being scarce, made high prices—from 6s. to 16s. per sieve or bushel, and even more for very fine specimens. This fruit was also scarce throughout all pear-exporting countries, as only 407,146 bushels were imported into the United Kingdom in 1895, against 1,310,074 bushels in 1894, and 915,212 bushels in 1893.

Cob-nuts and filberts sold well at between 3½d. and 5d. per lb., giving a good profit to the growers, and compensating them somewhat for the bad prices of 1893 and 1894. Taking the plantations throughout, the crop is estimated to have averaged between seven and eight hundredweights per acre.

On the whole, the past season would appear to have been a profitable one for fruit growers, at all events for those who grow various kinds of fruit.

The question of a more economical method of distribution of home-grown fruit is now receiving a good deal of attention. To get the full advantage of reduced railway rates, growers will probably find it necessary to alter the shape of their fruit packages so as to economise space. The round sieves and half sieves, though admirable in other respects, take up unnecessary room. Foreign fruit packages are, for the most part, square or oblong baskets and boxes, which fit into corners; and these packages go, in most cases, direct to the retailers, all the fruit being graded, sorted, and packed so that it can be depended upon by purchasers. British fruit consigned to markets also reaches the retailers in its original package, which is charged for if not returned, and it would be well if at least the best fruit, or even some of it, were graded, sorted, and placed in special packages, not returnable, in quantities to suit the convenience of customers.

The sieves, or their square or oblong substitutes, required by the railway companies, would be used for the main consignments as at the present time.

THE HOP CROP OF 1895.

The preliminary statement showing the estimate of the acreage and total production of hops in England in 1895 compared with 1894 was published in the last number of this Journal. On reference to that statement, it will be seen that, while the acreage of the past year was slightly below that of 1894, the yield was, like that of the previous season, remarkably large, although not reaching the high figure then estimated. Considerable local inequalities of yield were apparent, and the reduction in the total produce was due mainly to a largely diminished yield per acre in the two counties of Kent and Sussex, where the average production was estimated in 1895 at 9.04 cwt. and 9.71 cwt. respectively, as compared with 11.96 cwt. and 13.99 cwt. in the previous year. There was, however, an increased yield per acre in Hants, Hereford, Surrey, and Worcester.

The following statement shows the acreage of hops since 1881, in the six counties already named, which are the districts where hops are mainly grown:—

YEARS.	Kent.	Sussex.	Hereford.	Hants.	Worcester.	Surrey.	Other Counties.	Total for England.
	Acre.	Acre.	Acre.	Acre.	Acre.	Acre.	Acre.	Acre.
1881	41,476	9,269	5,930	2,063	2,008	2,352	246	64,943
1882	41,636	9,501	6,087	2,088	2,767	2,439	251	65,619
1883	42,737	10,167	6,416	3,073	2,877	2,480	266	68,916
1884	43,164	10,382	6,602	3,197	2,873	2,493	247	69,258
1885	44,834	10,722	6,703	3,303	2,910	2,627	228	71,327
1886	43,924	10,391	6,776	3,339	2,951	2,547	199	70,127
1887	40,037	8,729	6,478	3,062	2,828	2,384	188	63,706
1888	36,448	7,403	6,559	2,972	2,764	2,173	175	58,494
1889	35,487	7,282	6,850	2,905	2,830	2,101	160	57,724
1890	33,525	6,787	6,077	2,614	2,925	1,874	159	53,961
1891	31,266	7,150	6,560	2,749	3,280	1,955	182	56,142
1892	31,058	7,124	6,797	2,775	3,369	1,938	198	56,260
1893	31,815	7,326	7,079	2,795	3,516	1,845	188	57,564
1894	33,520	7,589	7,525	2,911	3,848	1,936	207	59,535
1895	35,018	7,489	7,553	2,875	4,024	1,783	198	58,940

From the foregoing it will be seen that in the first five years there was a steady increase of the acreage, followed in the next quinquennium by a decline, which, however, received a check in 1891, since when there has been, until last year, an upward tendency.

In all the principal hop-producing countries of the world an over average crop of hops is believed to have been grown in

THE BELGIAN POULTRY INDUSTRY.

The Foreign Markets section of the United States Department of Agriculture has recently issued a bulletin relating to the kingdom of Belgium, where the poultry industry occupies a prominent place among the minor branches of rural activity of that country.

It is but natural, the bulletin states, that in a land characterised by small holdings (*petite culture*), diversified industries, and the densest population in Europe, every means should be utilised for increasing the income of the rural labourer. Large numbers of Leghorn fowls are imported from Italy. French and English breeds of fowls are also raised, but the two distinctively Belgian breeds are the Malines and the Campine, each named after the locality where it predominates. The Malines fowl stands in high repute among the Belgian poultry raisers, and it is not difficult to explain why this breed is considered of great value and its type well fixed. It attains a very large size, as large as any table fowl, the quality of its meat is excellent, and although the hen is not an extraordinary layer, she lays a fair number of eggs during the year and is a good mother. The chickens are very hardy and mature rapidly. As is the case in many poultry districts in Belgium, as well as in France and England, there are in the vicinity of the capital, at Beyghem, Wemmel, Humbeck, Cappelle-aux-Bois, Muysen, and other places, poultry breeders who confine their labours to the hatching of chicks, and to selling the young birds alive on the market of Malines to specialists whose care is to fatten them for table use. It is these specialists that every traveller in Brussels has seen arrive in the morning with their little carts drawn by dogs carrying their stock of fine fattened poultry, the "cuckoos of Malines." Brussels is an excellent market for fine table poultry. Its inhabitants have long been noted as being fond of this species of food, and ever since the year 1370 they have been facetiously termed "*kieke-fretters*," that is chicken-eaters.

The other breed possessing a popularity in Belgium almost equal to the Malines is the Campine. As the former is raised for its excellence as a table fowl, the latter owes its popularity to its laying powers. Although the meat of this fowl is fine and delicate, there is not enough of it, the breed being quite small. The Campine is nearly allied to the well-known Hamburgs. It is a wide ranger, lively, alert, and is both an excellent layer and a good mother. The popular name of this variety in its home is "*pond tous les jours*" (every-day layer). The number of eggs obtained per hen under favourable conditions is from 180 to 220 per annum.

The Belgian *Annuaire* shows the average annual number of poultry in the kingdom during the period 1871-1880 to have been 3,967,000, whose annual production in eggs was estimated at 840,000,000, valued at 1,400,000*l.* and in table poultry at 2,631,000 head, valued at 200,000*l.* It is believed that at present the total number of poultry is at least 6,000,000, and the value of the annual product of eggs and table poultry not far from 2,400,000*l.* Still, Belgium does not produce enough eggs for her own consumption, as will be seen by a comparison of the figures of imports and exports (special commerce), the former largely exceeding the latter.

The following tables, compiled from the Belgian trade returns, show the imports and exports of eggs for the years 1892, 1893, and 1894.

It should be observed that as regards the imports, the figures in the column headed "Special Commerce" represent the number of eggs imported for consumption into Belgium, while those in the column headed "General Commerce" show the total importation of eggs into the country, nearly two-thirds of which is composed of eggs in transit to other countries. In the case of the exports, the figures in the column "Special Commerce" show the exportation of Belgian eggs, while the total exportation of eggs from Belgium, including eggs of foreign origin in transit through the country, is shown in the column of "General Commerce."

Importation of Eggs into Belgium.

Countries of Supply.	1892.		1893.		1894.	
	General Commerce.	Special Commerce.	General Commerce.	Special Commerce.	General Commerce.	Special Commerce.
	No.	No.	No.	No.	No.	No.
Germany -	25,569,016	17,540,297	29,310,322	14,207,526	36,117,150	17,974,613
England -	1,899,200	1,579,100	3,265,616	3,262,616	1,134,396	844,956
Austria -	157,984,260	8,926,100	138,476,330	2,705,000	181,357,630	1,269,410
Denmark -	200,000	200,000	—	—	144,000	144,000
France -	1,798,236	1,700,964	1,064,134	1,061,052	434,442	395,532
Luxembourg -	256,503	256,503	195,585	195,585	153,968	153,968
Hamburg -	867,580	867,580	201,600	201,600	—	—
Italy -	127,318,540	63,643,298	186,113,130	76,036,524	222,724,096	71,513,856
Netherlands -	3,134,688	2,930,830	3,291,078	3,273,950	3,981,067	3,926,818
Roumania -	—	—	383,040	383,040	—	—
Russia -	2,552,700	2,552,700	2,406,200	2,269,460	15,668,630	13,189,560
Turkey -	—	—	160,000	160,000	—	—
Switzerland -	—	—	—	—	370,000	30,000
Other Countries -	22,500	22,500	136,355	50	609,143	158,808
Total -	351,608,283	100,219,932	365,003,909	103,756,403	462,695,122	169,301,521

Exportation of Eggs from Belgium.

Countries supplied.	1892.		1893.		1894.	
	General Commerce.	Special Commerce.	General Commerce.	Special Commerce.	General Commerce.	Special Commerce.
Germany -	No. 1,943,600	No. 617,500	No. 1,915,029	No. 1,915,029	No. 19,528,164	No. 9,413,804
England -	282,243,463	37,350,369	274,736,007	28,079,266	363,629,211	30,048,215
France -	32,608,515	27,985,639	44,065,568	30,811,895	56,519,323	37,821,388
Netherlands -	3,985,025	1,643,753	2,239,476	934,591	549,227	549,167
Other Countries -	252,170	252,170	233,720	211,020	196,775	106,725
Total -	319,232,773	67,849,422	322,290,391	61,022,795	431,332,700	77,939,099

The tables of imports and exports (general commerce), given above, show that enormous quantities of eggs pass through Belgium in transit, chiefly for England. Since the opening of the St. Gothard tunnel, Italy has become the chief source of this supply. Since this route was opened from Switzerland to Italy the traffic in eggs has been something remarkable. The competition of routes led to a great reduction of rates, and eggs are sent from northern Italy through Belgium to London for much less than used to be charged from northern France.

It is estimated that Belgium imports each year for her own consumption over 100,000,000 eggs, of which 63,000,000 to 76,000,000 are supplied by Italy; and from 14,000,000 to 17,500,000 by Germany.

Eggs are sold in Belgium by weight, and the price varies a great deal, according to the season, the best times being in the spring and autumn. The eggs are packed in long cases, which contain 1,440 eggs, and they are imported into Belgium free of duty.

In this connection, the following article on Belgium poultry farms is translated from the *Chasse et Pêche* :—

Belgian Poultry Farms.

During the last year or two a new industry has sprung up in many of the large farms in Belgium. Up to that time farmers had never succeeded in keeping more than 100 to 150 laying hens. Now many farms possess 500, and some even double this number. The young pullets are imported from Italy, and their eggs are collected during two seasons, after which the birds have attained their maximum weight and are sold again as table poultry, bringing a higher price than they cost as pullets, and are then replaced by others newly imported.

The principle is new, and it is based on the division of labour. The pullets are raised in Italy and prepared for market in Belgium, while their eggs are sent to England under the most favourable conditions.

Some little time after the opening of the St. Gothard tunnel the Italian fowl was introduced into Belgium. A former attempt had been made to make this race of excellent laying hens popular on the Flemish farms, but no attention was paid to them. In 1885, a firm at Verviers, foreseeing the profit to be realised, began to import these fowls on a large scale. Thousands of francs were spent in teaching farmers the advantages to be derived from these incomparable layers and in organising a system of regular, rapid, and cheap transportation. The pullets arrive in truck loads, and can be sent to all parts of Belgium, freight paid, in cages of 25, 50, or 100 pullets, at from 1s. to 1s. 8d. each, according to their age. Taken by the 500 there is a further reduction of about a penny each. It is impossible to raise pullets in Belgium at such prices.

Until the Italian fowl is acclimatised it can endure neither damp weather nor the north winds. Therefore, the importation is stopped from October until April. The best time is from May until August.

The Italian fowl is distinguished by yellow feet, and the hen has a large drooping comb. They are of all colours, but the partridge coloured, called brown Leghorns, are most admired and predominate in number.

After laying for two years, the hens are fattened and then sold on the market at 1s. 3d. to 2s. each. They are much esteemed on account of their delicate flesh.

On the poultry farms the fowls are lodged in large stables. In these, the ground is dug up to a considerable distance and then covered with a thick bed of peat moss. All the perches are movable and placed at the same height. The run is usually the large orchard adjoining the buildings. The hedge around it is kept so that no fowl can pass through, and is also made more secure by a wire netting being placed round the lower part.

Some farmers introduce two or three cocks among the hens to serve as guides. The proportion is 7 to 1,000 hens. However, the eggs that are not fertilised are the most delicate and keep fresh the longest.

It is rather curious that Italian fowls which have been imported and acclimatised in Belgium lay more and larger eggs than they do at home. Thus, the Belgian eggs that are shipped to England weigh on the average 139 to 141 lbs. per 1,000, while the eggs from Italy weigh only from 128 to 130 lbs. per 1,000. The eggs arrive in London fresh, and the expense of sending them is not great. Besides, the cost of transport is often covered by the sale of the boxes, the eggs being packed in long boxes of a certain size, which are afterwards used in England for various purposes.

The poultry farmers make direct contracts with the exporters. The average price of eggs is about one halfpenny each.

The best food for the fowls is maize, wheat, barley, and a little oats. Five hundred hens require 35 kilograms (77 lbs.) of grain per day. As a cheaper kind of food, the residue from starch factories is also used.

Positive data as to the number of eggs laid each year have not yet been obtained, as this industry has not been established long enough. Sellers say that during the two seasons a hen will lay from 180 to 200 eggs annually. The Italian hen is a good layer, even in winter when eggs are dearest.

In the Hesbaie and Brabant Walloon, farms of 500 and 1,000 hens have greatly multiplied this year, and many small farmers in the

neighbourhood have built hen-houses for the accommodation of from 50 to 100 Italian hens.

The same principle of division of labour has been applied to raising fowls for the table in the neighbourhood of Brussels. Farmers there do no more than raise the fowls of the Malines and Coucou breed, and then sell them in the markets of Malines and Merchtem to others who make a business of fattening them for the table.

TRANSPORTATION OF WHEAT IN ARGENTINA.

In an earlier number of this Journal* some information was given relating to the conditions under which wheat is grown in the Argentine Republic, particularly with reference to the cost of production. It was shown that in the fertility of his soil and in his comparatively small outlay for labour the Argentine wheat-grower possessed advantages which had contributed in no small degree to the successful development of the export trade in wheat from the River Plate. Hitherto, one striking feature of this trade has been its rapid development, but its further extension is, in the opinion of experts and others resident in the country, dependent to some extent upon the provision of better facilities for transport and storage.

Mr. Peel,† in a report dated May 1895, pointed out that want of capital was felt in the hindrance to the development of railways, and in the absence of good roads facilitating access to centres of production. He also quoted a statement by Mr. Gastrell to the effect that it was a well-known fact that the traffic in grain on many railways in the Republic had taxed their capacity to the utmost, and that, for want of rolling stock as well as storage room, bags of grain were often lying on the open ground insufficiently protected from the weather.

But, apart from the question of the further development of railways, Mr. Gastrell ‡ is of opinion that better facilities and a better management in the utilisation of railway stock, on the perfect grain traffic system of the United States, would do much to prevent congestion on the existing lines of rail in the busiest season.

It would seem that a serious drawback with which the Argentine grain producers have to contend is the want of a sufficient number of warehouses or elevators for the general storage of grain. The production of wheat for export has come to the front so recently and so suddenly that the warehouses or *galpones* along the line of railway, which previously were equal to the calls upon them, are, in the wheat season insufficient to meet the calls for grain awaiting the cars. When rolling stock is not ready, and there is storage room, the railway companies agree to receive and take care of the grain for a limited number of days without charge, but in some seasons considerable quantities of wheat are stated to have been ruined by exposure at the railway stations.

* See Vol. I., No. 2, p. 165.

† Report on the Agricultural and Pastoral Condition and Prospects of the Argentine Republic. Foreign Office Miscellaneous Series, No. 369.

‡ Report for 1894 on the General and Financial Condition of the Argentine Republic. Foreign Office Annual Series, No. 1495.

But while the railway facilities for getting wheat from the place of production to the port of export leave room for much development, it must be borne in mind that the great centres of wheat cultivation are now situated in the provinces of Buenos Ayres, Santa Fé, and Entre Rios, all three bordering on watercourses which are navigable for ordinary-sized ocean craft; the distances from the principal ports of export in no instance probably exceed 150 miles, so that what may be lacking in interior transportation facilities is more than made good by the short distances for which such transportation is needed.

So far as the cost of transportation from the farm to the railway station is concerned, this is represented by Mr. Baker,* U.S. Consul at Buenos Ayres, to amount to little more than the interest on the cost of sufficient teams and waggons, when these are owned by the farmers, and the outlay for any extra hands which may be required. The expense of keeping the teams is merely nominal, as they for the most part live on the grasses which grow spontaneously throughout the pampas. As regards the cost of labour in moving grain, it is estimated that in spite of the increased acreage in grain crops the rate of wages has decreased 50 per cent. since 1885. The low wages ordinarily prevent the increase of surplus hands ready for emergencies, and thus, when the harvest demands them, the farmer is saddled with an increased expense for harvesting. Owing to this fact, many Italians are now in the habit of going to the River Plate to work during the harvest at a higher rate of wages, returning to Italy when the harvest is over. But even so, the wages of farm hands in Argentina are stated to be much less than they are in the United States, and the cost of moving grain from the farms to the railway stations is apparently a very small item of expenditure.

As to the cost of transportation from the station to the port of export, each railway has its own tariff, graded according to the distance or the competition it has with other railways. The principal shipping ports are Rosario and Buenos Ayres, but all along the Paraná and Uruguay rivers there are points whence grain is exported directly in ocean-going vessels. From 19 to 21 feet of water can generally be counted on in the Paraná River, though a bar at Martín García Island, in the La Plata, sometimes causes a delay to vessels trying to get out. The lesser ports, where cargoes of wheat are put on board, are Colastine, near the city of Santa Fé; Diamante, in Entre Rios, just below the city of Paraná; and Villa Constitución, San Nicolás, San Pedro, Zarate, and Compana, on the River Paraná de los Palmos; and Concepción, on the Uruguay River. On the La Plata River is the city of La Plata and the Ensenada Mole; and on the Atlantic coast the port of Bahía Blanca. The largest

portion of the wheat product, however, is shipped from Rosario, that being the most convenient port for nearly all the wheat-growing regions of the province of Santa Fé; and Buenos Ayres comes next.

The principal grain-carrying railways of the province of Buenos Ayres are the Buenos Ayres Southern Railway and the Buenos Ayres Western Railway. In order to ascertain the average charge for the conveyance of a ton of wheat on each of these railways, Mr. Baker has divided the sum of the rates by the number of stations. In this way he obtains 9s. as the average rate on a ton of wheat on the Western road, and 13s. 2d. as the average rate on the Southern road, from the station to the port of Buenos Ayres, and the average of these two rates would be about 11s. This includes all the expenses of discharge, with six days' free storage on the Western road and twelve days' free storage on the Southern road.

Mr. William Goodwin, an authorised grain inspector of the River Plate, taking the average of the railway carriage of wheat to Rosario, estimates the cost of transporting a ton of wheat from the farm, not including warehouse charges, at 7 dollars per ton Argentine paper currency, equal to about 8s. 2d. He says: "There is considerable competition among the railways in Santa Fé, and the rates charged are not much higher than in the United States, but, in any case, railway freight is a very small proportion of the cost of the wheat exported, because the average distance from station to seaboard is about 100 miles, as compared with at least 1,000 miles in the United States."*

It appears that there are no structures in the Argentine Republic similar to what are known as elevators in the United States. The Southern Railway Company has some such building at the "Boca port," but it does not possess the facilities for receiving and delivering grain which are considered so essential in the United States. The wheat deposits are simply warehouses, called *borracas* or *galpones*, without any mechanical appliances. The railways, at many of their stations in the interior, in order to meet the increasing crops, have built cheap warehouses, which have considerable capacity, and both at Buenos Ayres and at Rosario there are *galpones* which will store large quantities.

The most important structure for the storage of the produce of the country is the Central Market of Buenos Ayres. Mr. Baker believes this to be one of the largest covered buildings in the world. It is located on the south bank of the Riachulo, a little river which has been dredged and walled with wharves, and forms what is called the "Boca port." The main building consists of nine structures, covering 12 acres of ground, while mule roads, railway approaches, and receiving and discharging

* Consular Reports No. 183, Bureau of Statistics, State Department, Washington, U.S.A.

* Wheat Growing in the Argentine Republic, by Wm. Goodwin. The Northern Publishing Co., Lim., Liverpool.

platforms cover about as much more. The building is three stories in height. There are 112,000 square metres of flooring, with a storage capacity for 24,000 tons, storing only to one half the height of the respective floors. The roof is built of glass and galvanised iron. There are eight entrances, four for carts and four for railway cars, each of the latter having three lines of rail capable of receiving nearly 300 cars at a time. The hydraulic machinery consists of four compound hydraulic pumping engines, with four tubular boilers and four accumulators, with a pressure of 740 lbs. to the square inch. This machinery works 65 cranes, besides giving movement to 16 traversers and 50 capstans. The great advantage which the Central Market offers to produce dealers is that all the produce brought into Buenos Ayres can be concentrated there, thus saving to buyers and sellers alike the time heretofore wasted in hunting up lots of grain in different parts of the city.

Putting together the average costs of transport on a ton of wheat from the farm to the hold of the ship at Buenos Ayres, it would seem that the total expenses per ton, in gold, are, according to Mr. Baker's report, about as follows: average cost from the farm to the station, 2s. 8d.; average cost from station to port, 11s. 2d.; average cost of passing through deposits, 2s.; thus making the total expense of transportation about 16s.

SWINE-FEVER.*

The Board of Agriculture desire to call the attention of farmers and pig owners generally to the fact that successful results from the measures now being carried on in their interest cannot be anticipated unless all connected with the trade are prepared to give active and vigorous assistance towards checking the spread of swine-fever.

Owners are urged to refrain from selling any part of their stock unless they are satisfied that no disease exists on the premises from which the animals are to be moved.

Purchasers of swine should invariably keep newly-acquired animals separate for at least a fortnight before permitting them to be brought into association with the home herd.

There seems reason to believe that the disease is not infrequently introduced by means of persons who have been in contact with diseased animals. Pig owners, therefore, are advised to prevent strangers from at any time approaching their pigs, and should the admission to the premises of spayers or castrators be necessary, those persons should be required, before approaching the animals, to thoroughly wash their hands with soap and water, and to wash and disinfect their boots with a solution of carbolic acid and water or some other suitable disinfectant. Such persons might also with advantage be required to wear, while operating, a waterproof apron, which should be washed and disinfected before the wearer is permitted to approach the animals to be operated on.

The cleanliness of the sties, and the feeding of swine on suitable food, are measures which, although not directly calculated to protect the animals against swine-fever, are nevertheless very desirable with a view of keeping them in a healthy condition, and of giving them power to resist infection.

The Board would also call attention to the importance of the prompt notification of the appearance of any symptoms of the disease, should it unfortunately be suspected to exist. Every person having in his possession or under his charge a pig affected with or suspected of swine-fever, is required by law to give notice of the fact with all practicable speed to a police constable, and there can be no doubt that the success of the measures taken to prevent the spread of the disease will greatly depend upon the promptitude with which its existence is notified.

* Reprinted from a leaflet (A. 1—1896) issued by the Board of Agriculture in January last, copies of which can be obtained on application to the Secretary, Board of Agriculture, 4, Whitehall Place, S.W.

THE FERTILISERS AND FEEDING STUFFS ACT, 1893.

According to the reports received by the Board of Agriculture the Fertilisers and Feeding Stuffs Act, 1893, was put into operation, in 1895, in twenty-seven counties and one borough in England, in five counties in Wales, and in twenty-one counties in Scotland.

The total number of samples analysed under the Act in Great Britain during the year was 615, of which 411 were samples of fertilisers, and 204 of feeding stuffs. The number of samples analysed in England, Wales, and Scotland, respectively, may be seen in the following table:—

	Number of Counties reporting Analyses.	Number of Samples analysed.		
		Fertilisers.	Feeding Stuffs.	Total.
England, counties	27	138	97	235
„ boroughs	1	19	16	35
Wales, counties	5	15	8	23
Scotland „	21	239	83	322
GREAT BRITAIN	54	411	204	615

The number of samples analysed during each of the four quarters of the year was as follows:—

	Fertilisers.				Feeding Stuffs.			
	Quarter.				Quarter.			
	1st.	2nd.	3rd.	4th.	1st.	2nd.	3rd.	4th.
England, counties	27	80	14	17	34	19	14	30
„ boroughs	2	11	4	2	7	3	2	4
Wales, counties	6	—	—	9	2	—	1	5
Scotland „	57	170	6	6	21	59	12	21
GREAT BRITAIN	92	261	24	34	64	81	27	60

It has not been considered desirable to institute a comparison between the results for 1895 and those for the preceding year, as many of the district analysts were not appointed until the spring of 1894, and consequently the Act was not put into operation in a number of counties until the latter half of that year. It may be observed, however, that the total number of samples analysed under the Fertilisers and Feeding Stuffs Act in 1894 in Great Britain was 444, comprising 317 of fertilisers and 127 of feeding stuffs.

The following table shows the number of samples analysed in each county in which analyses were made:—

Counties.	Number of Samples analysed.		
	Fertilisers.	Feeding Stuffs.	Total.
ENGLAND:—	No.	No.	No.
Bedford	—	1	1
Chester	3	3	6
Cornwall	1	—	1
Derby	1	—	1
Devon	3	6	9
Dorset	2	1	3
Durham	9	3	12
Essex	5	1	6
Gloucester	1	—	1
Kent	12	3	15
Leicester	1	3	4
Lincoln, parts of Holland	3	—	3
„ Kesteven	1	1	2
„ Lindsey	—	1	1
Monmouth	14	20	34
Northumberland	—	1	1
Oxford	1	2	3
Salop	27	17	44
Somerset	24	5	26
Stafford	2	1	3
Suffolk, Eastern Division	—	7	7
Sussex	—	1	1
Westmorland	16	13	29
Wilts	3	1	4
Worcester	9	3	12
York, East Riding	—	3	3
Soke of Peterborough	3	—	3
County Borough:—			
Newport, Mon.	19	16	35
Total England	157	113	270
WALES:—			
Brecon	—	2	2
Cardigan	3	2	5
Cardiff	3	—	3
Montgomery	7	4	11
Pembroke	2	—	2
Total Wales	15	8	23
SCOTLAND:—			
Aberdeen	38	4	42
Ayr	26	2	28
Banff	4	—	4
Berwick	5	4	9
Bute	3	—	3
Dumbarton	3	—	3
Dumfries	10	4	14
Forfar	1	9	10
Kincardine	4	—	4
Kinross	1	2	3
Kirkcudbright	14	11	25
Lanark	19	—	19
Linlithgow	13	1	14
Midlothian	8	17	25
Peebles	—	1	1
Perth	53	16	69
Renfrew	7	4	11
Ross and Cromarty	12	3	15
Roxburgh	4	—	4
Selkirk	2	3	5
Wigtown	7	2	9
Total Scotland	230	83	322
Total GREAT BRITAIN	411	204	615

PARASITES OF POULTRY.

(Insects and Mites.)

The parasitic infestation of poultry causes far more loss than most breeders imagine. Birds are rarely examined, and the cause of their poor condition is not ascertained or even considered. The evil is allowed to spread unmolested, in many instances it spreads with great rapidity, and a general weak and unhealthy condition results.

These parasites are most injurious to young chicks and "brood" hens. The persistent loss of chicks, and the failure of hens to bring off their young, are often due to the irritation caused by the presence of parasites upon their bodies—enemies that are frequently unsuspected. These pests weaken the constitution and predispose to other maladies, such as diphtheritic roup and "gapes"; in many cases they have been the forerunner of these worse epizootic diseases. Parasites on the young birds stunt their growth. What is termed "Scaly-leg" is due to a parasite—a mite. Another species of mite at the root of the quills causes birds to pluck their feathers.

THREE FORMS OF PESTS.—There are three distinct groups of pests upon the fowls, namely:—(1.) Fleas (*Pulicidæ*); (2.) Lice (*Mallophaga*); and (3.) Mites (*Acarina*). The two former only are true insects, having the six insect legs; the *Acarina* have four pairs of legs and are quite distinct from true insects. The fleas and some of the worst mites are armed with a piercing and sucking mouth; the bird lice have biting mouths, and thus differ from ticks found on animals. The pests with piercing mouths weaken the birds not only by causing irritation but by actual robbing of blood. The biting lice on the other hand only cause severe irritation and pruritis, which keep the birds in constant unrest. Most birds have distinct parasites upon them, each species of louse only flourishing on a particular species of bird; duck lice, for instance, cannot live permanently upon fowls, and *vice versa*.

Different species also seem partial to particular parts of the bird's body. The favourite positions seem to be the head, neck, rump, and under the wings. Some of these parasites live permanently on their hosts (lice and some mites), whilst others (fleas and some mites) go to and fro. Some *Acaræ* live entirely upon, and even under, the skin, deep amongst the feathers and at their roots; others live like "ticks," with their heads against the skin and their bodies erect; whilst a single genus (*Lipeurus*) (Fig. 4) lives between the barbs of the feathers. All these parasites are encouraged by dirt.

(1.) **FLEAS** (*Pulicidæ*).—The fleas, which are true insects, belong to the order of flies (*Diptera*). They live upon the blood of animals. One species only lives upon the fowl, namely, the bird flea (*Pulex gallinæ* or *avium*), which attacks also most other birds. The hen flea, as it is generally called, is abundant in dirty fowl runs, and especially in the nests where straw is used. The adult flea is dark in colour, and, as in all fleas, is devoid of wings. The fleas are provided with very sharp piercing mouths, their food consisting almost entirely of blood. They are not often seen on the fowls, hence little notice is taken of them. They are what are termed "partial parasites"—parasites that only go to their hosts to feed. The fleas are not noticed on the birds because they generally attack them at night; then, however, they do much harm, causing constant irritation and loss of blood, and depriving them of rest.

Life-history of Hen Flea.—The female flea lays her eggs (nits) chiefly in the nests amongst dust and dirt and in the crevices of the walls and floor. These nits give rise to pearly white maggots, with brown horny heads, which can often be found in the bottom of the nests amongst the dust (Fig. 1).

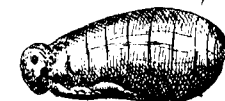
FIG. 1.



Larva of hen flea (greatly enlarged).

These larvæ are mature in two or three weeks, when they reach about one-sixth of an inch in length. In warm weather they may be full fed in even ten days. They then spin a pale cocoon amongst the dirt, in which they pupate. The pupa

FIG. 2.



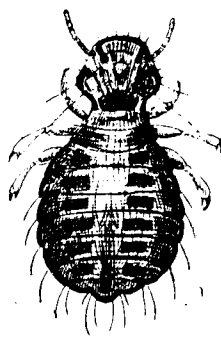
Pupa of hen flea (greatly enlarged).

(Fig. 2) is at first pale brown, then dark chestnut brown. In this condition the flea remains ten to twenty-one days, when the pupa hatches into the adult. They breed all the year round, but chiefly in warm weather. It is well to remember that, whenever there are dark and dirty hen roosts, there are sure to be numbers of *Pulex gallinæ*.

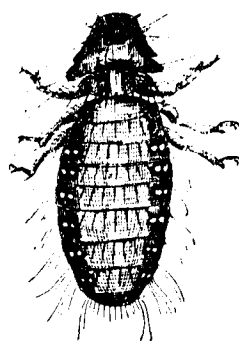
(2.) LICE (*Mallophaga*) (Figs. 3 and 4).—The bird lice belong to the group *Mallophaga*, quite distinct from human lice (*Pediculidae*) and from mammalian lice (*Haematopinus*, &c.), the so-called “ticks.” These *Mallophaga* have not a piercing mouth

FIG. 3.

Two Genera of Fowl Lice.



Fowl louse (*Goniocotes hologaster*)
(greatly enlarged).

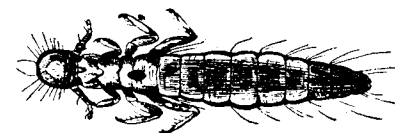


Fowl louse (*Menopon pallidum*)
(greatly enlarged).

their mouth is simply used for biting. They subsist upon the productions of the skin and fragments of feathers. They cause violent itching, and bite sharply, and must produce considerable pain when present in large numbers, as is too often the case. The feathers, especially the saddle-hackle, generally show notched edges with lice infestation. Eight distinct species of lice attack fowls. These are described in the Journal of the S.E. Agricultural College (No. 3). The presence of these lice (*Phthiriasis*) is generally ascribed to too uniform or insufficient nutrition, or else to damp, dark, and dirty runs, especially those badly ventilated. Food, either when uniform or insufficient, has no effect upon their presence. Dark, damp places, however, when dirty, are sure to harbour all these pests, especially when badly ventilated. It is also said that breed affects their presence, but observation tends to show that all breeds are more or less subjected to infestation. In every case they set up severe irritation and inflammation of the skin and pruritis, which often lead to stunted growth, cachectic conditions, and even death.

Life-history of Lice.—All the lice breed fairly rapidly. The eggs or nits are laid upon the down feathers, as a rule; they are often beautifully sculptured objects, oval in form. In about six to ten days they hatch into small, pale, active lice, which at once commence to irritate the birds. They are occasionally found in the nests. Some species are found copulating in the nests, others always on the birds. They live a considerable time. *Menopon pallidum* (Fig. 3) has been kept alive for

FIG. 4.

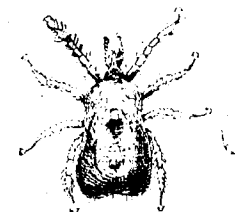


Fowl louse (*Lipeurus variabilis*) (greatly enlarged).

nine months upon fresh feathers, the quill epidermis being especially eaten. Before reaching the full-grown state as many as ten to twelve moults apparently take place, there being little difference in each stage, except the gradual darkening of the markings.

(3.) MITES (*Acari*, *Acariases*, *Dermanysses*).—Mites are very minute creatures, and are not true insects, having four pairs of legs. Some are partial parasites, living on the birds at night, as *Dermanyssus gallinae* (Fig. 5), the commonest fowl mite;

FIG. 5.



Dermanyssus gallinae and ovum (greatly enlarged).

others are permanent parasites, as *Sarcoptes*, living at the base of the feathers, and popularly called “Depluming scabies” (Fig. 6). Others, again, live under the skin, forming scabby growths, such as are seen on fowls’ legs (*Sarcoptes mutans*). These are armed with a pricking mouth, with which they torment the birds, especially at night, causing loss of condition, hindering setting, and creating loss in other ways.

The most injurious form is the red or common fowl mite.

The Fowl Mite (Dermanyssus avium or gallinae).—This very minute creature is yellowish white to dark red in colour, according to the amount of blood it contains, drawn from the birds. They are found in abundance in pigeon-houses, poultry-runs, and roosts. Both sexes are armed with a sharp rostrum; the female is most bloodthirsty. They feed upon the birds only at night, and hide away in cracks and crevices in the nests, perches, floors, walls, and ceilings during the day. Numerous colonies can be found in the nests free and coupled together, with countless eggs and quantities of exuviae and young forms, especially in straw nests. They are most prolific, and can remain for months without any food; hence the removal of the birds from the runs is useless as a remedy. The ova hatch rapidly.

The young are at first silvery white, with six legs like a true insect. They moult their skin a number of times, the exuviae or cast skins forming a whitish or silvery powder often seen on the perches. As the mites grow older they become darker in colour. Light and air are distasteful to them; damp, dark, and badly-ventilated roosts are where they flourish best. Breeding is especially rapid in spring and summer. This mite is often unobserved, owing to its strict nocturnal habits, and hence the cause of the fowls keeping backward, and even dying, is not understood. Birds should, when looking dejected and emaciated, be examined at night, and if mites are found treatment should be at once resorted to. Transmission to man and other animals is not unusual, but, although the mites for a time cause severe irritation, they will not remain for any length of time, and readily yield to treatment. Hens should not roost in stables and sheds where other animals are kept, as it is said that fowl lice as well as mites may attack various animals.

PREVENTION AND TREATMENT OF FLEAS, LICE, AND MITES.

—Infestation is always worst in dirty and neglected runs and roosts, and such are a standing danger to more cleanly neighbours. Cleanliness and freedom will always put these pests under a disadvantage, not only cleanliness of the nests, walls, and floor, but also of the ceilings and perches. To suppress these pests the houses should be cleaned down at least twice a year with a wash made of hot lime, sulphur and soft soap, the ceilings, walls, and nests having a good coating. The wash should be fairly liquid so as to run into every crack and crevice. Early spring and autumn are the times for these applications. The perches are best treated with boiling water and soft soap, or with an emulsion of kerosene or creosote. This latter insecticide is most beneficial, especially in regard to mites.

Special attention should be paid to the nests; they should be frequently cleansed and changed to keep off fleas and other parasites. Neither nest boxes nor perches should be fixed, relays of each should be at hand, so that they can be changed to ensure complete disinfection. The nest boxes should be now and then cleaned out, and dressed with hot lime and sulphur, or with a solution of corrosive sublimate. Either dusting the prepared nests with Persian insect powder, or putting a little sawdust or sand soaked in naphthaline at the bottom, will keep off these depredators. Wood-shavings, or wood-wool, in the nests instead of straw is most beneficial. No lice or fleas will live in it, owing to the aromatic odour given off from the wood. Care, of course, must be taken that the remedies employed do not affect the eggs in the nest.

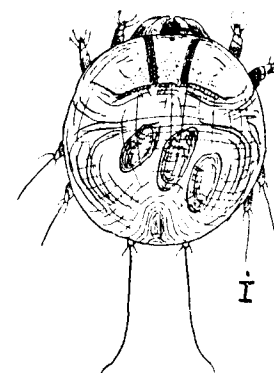
Schneider's suggestion of fumigating the roosts with sulphuret of carbon, put in small phials in the corners of the houses, &c., where they cannot be upset, is very successful so far as killing the pests goes, but this method is not quite safe to recommend.

Regarding the infestation of the birds themselves white precipitate seldom fails. The heads and necks of young chicks should be early dressed very sparingly, and repeated when necessary. White precipitate is a strong irritant poison, and needs the greatest care in its use, especially in young chicks. It is best obtained as an ointment from the chemists. Hens selected for sitting should have a small quantity of this ointment rubbed in under the vent, head, and sides, and then well dusted with insect powder. Sitting hens are greatly tortured by parasites, and their young are often lost by neglect of these simple precautions. The skin should be first moistened with soft soap and water prior to dusting the birds with the insect powder (*pyrethrum*). Some breeders prefer flower of sulphur. Dust-baths are the natural remedy for lice and mites, and fowls should never be kept without them. Sand mixed with a small quantity of creosote will generally keep the birds free from vermin. Finely divided gypsum, mixed with a small quantity of paraffin or carbolic, is still more successful for these dust-baths, quickly getting rid of any lingering pests that the birds cannot reach.

The supposed connection between "Gapes" and "Lice."—It has been stated that there is a connection between the nematode worm, *Syngamus bifurcatus* (the "red-worm" of gamekeepers), that produces "gapes" in fowls and pheasants, and lice. The one is thought to give rise to the other in some mysterious way: needless to say there is no connection whatever. The life-history of that destructive scourge, the gape-worm, has been clearly traced, and we now know that no intermediate host is required for its development.

FEATHER-EATING OR DEPLUMING SCABIES.—Feather-eating in poultry is due to a minute parasitic mite (*Sarcoptes laevis*)

FIG. 6.



Sarcoptes laevis. Egg-bearing female (greatly enlarged).

at the roots of the feathers. It is generally supposed to be due to a "vicious habit;" numerous absurd theories, such as idleness and thirst, having been put forward to account for it. There

are two kinds of feather-eating, viz., "self-feather-eating" and the eating of other birds' feathers. The former is entirely due to the mites living upon and irritating the roots of the quills, and so far as is known the latter is caused by the same *acarus*. The form on the fowl makes its appearance about April, and is most prevalent in spring and summer. The mites can be easily found amongst the white powdery matter at the base of quill. The minute young are transmitted during copulation. The fowls pluck out the feathers to destroy the irritation caused by the mites at their base.

Prevention and Remedies.—As the disease is contagious, isolation of the affected bird is the first step, especially if it be a cock. The mites readily yield to treatment with oil of cloves rubbed into the infected area. One part of creosote to 30 of lard or vaseline is still more successful.

SCALY LEG or LEG ROT.—This well-known disease is again due to a mite (*Sarcoptes mutans*). This complaint is a serious matter and very prevalent. The scales of the leg and feet become raised and separated, and a chalk-like excretion accumulates between and over them. Rough lumpy crusts are formed, and under these and the scales the mites live and breed. The disease is contagious.

Prevention and Remedies.—Isolation of diseased birds is most essential. Removal of the crusts without causing bleeding, and then the application of creosote (one part) and lard (20 parts), will be found sufficient. Oil of turpentine has still more definite results. A mixture of equal parts of flower of sulphur and vaseline rubbed into the limb also cures this complaint. In every case the limb some days after treatment should be well cleaned with hot water and soft soap. If exhibits of poultry infested with parasites were prohibited by poultry-show committees, it would force attention to the subject in a way that could not fail to greatly reduce parasitic infestation.

FRED. V. THEOBALD, M.A., F.E.S.

REPORTS ON FOREIGN CROPS.

UNITED STATES HARVEST OF 1895.

The report of the Statistician of the Department of Agriculture of the United States for December, 1895, contains the final estimate of the acreage and yield of the principal crops of 1895.

The total area and production of the cereals, potatoes, and hay are given below, the quantities being shown in Winchester bushels.

Crop.	Area.		Production.	
	1895.	1894.	1895.	1894.
	Acres.	Acres.	Winchester Bushels.	Winchester Bushels.
Maize - - -	82,075,830	62,582,269	2,151,139,000	1,212,770,052
Wheat - - -	34,047,332	34,882,436	467,103,000	460,267,416
Oats - - -	27,878,406	27,023,553	824,444,000	662,036,928
Rye - - -	1,890,345	1,944,780	27,210,000	26,727,615
Barley - - -	3,299,373	3,170,602	87,073,000	61,400,465
Buckwheat - -	763,277	789,232	15,341,000	12,668,200
Potatoes - - -	2,954,952	2,737,973	297,237,000	170,737,338
			Tons.	Tons.
Hay - - -	44,206,453	48,321,272	47,078,541	54,874,408

The total area of wheat harvested shows a reduction of 835,000 acres as compared with last year, and is 2,766,700 acres less than the average of the previous five years. The acreage in 1895 shows a reduction of 4,500,000 acres as compared with the area harvested in 1892, when a total of 38,554,000 acres was reached. The average yield, however, is higher than that of recent years, being 13·7 bushels as compared with 13·2 bushels in 1894, and 12·9 bushels during the five years 1890-94. The average farm price is estimated at 2s. 1½d. per bushel, or ⅓d. more than last year, but lower than in any year prior to 1894. It may be noticed that wheat is the only crop which has shown any tendency to rise, all the other crops referred to above having decreased in price in 1895 as compared with 1894.

The average yield of maize was 26·2 bushels against 19·4 in 1894. The average value per bushel, however, is stated to have decreased from 1s. 11d. per bushel to 1s. 1¼d., which is the lowest price on record, being 7¼d. less than the average of the five years 1890-94.

The crop of potatoes is estimated at 100·6 bushels per acre in 1895 compared with 62·3 bushels in 1894. The total value of the outturn is, however, considered to be much less than that of 1894, owing to the fall in price, which decreased from 2s. 2½d. in 1894 to 1s. 1½d. per bushel in 1895.

INDIAN WHEAT CROP OF 1895-96.

The first general memorandum on the Indian wheat crop of the season 1895-96 was issued from the Statistical Bureau of the Government of India on the 31st December 1895.

The memorandum stated that the area sown in the Punjab was estimated at a little over 6½ million acres, or 17·7 per cent. less than the area finally returned last year, which was more than 3 per cent. below the very extensive area sown in the year preceding.

In the North-Western Provinces, the autumn rains ceased early, leaving the soil very dry at the time of sowing, and germination suffered in most districts from want of sufficient moisture. Where irrigated, the crop was flourishing, but where irrigation is not available, the crop suffered, and the want of rain was keenly felt. The total area in these Provinces is 25 per cent. less than last year.

In the Central Provinces, very little rain fell after the end of August. Seed was difficult to obtain owing to past bad seasons, and some of the land was too hard to plough: a considerable decline in the area under wheat being the result. Germination of the seed sown in the lighter soils had been very poor, and in the richer lands defective: much wheat withered during the abnormal heat of November, and the outlook generally was unsatisfactory.

In Berar, insufficient rain at sowing time and the early cessation of the monsoon had caused a decrease in the area sown, which was 14 per cent. below the figures of last year. The crop was not in a good condition at the date of the memorandum.

For the Bombay Presidency the information was incomplete; such as had been received showed the area under wheat in Gujarat, the Deccan, and the Karnatak to be 27, 30, and 21 per cent. respectively, and in Sind 34 per cent. below the average.

AUSTRO-HUNGARIAN HARVEST.

The preliminary official estimates of the harvest of 1895 in Austria-Hungary have been published by the respective Departments of Agriculture of the two countries.

The yield of the various grain crops is stated to have been as follows:—

Crops.	Austria.	Hungary.
	Bushels.	Bushels.
Wheat - - - - -	40,000,000	152,500,000
Rye - - - - -	60,500,000	42,000,000
Barley - - - - -	58,500,000	53,500,000
Oats - - - - -	102,500,000	62,000,000

The Austrian wheat and rye crops of 1895 were inferior to those of the preceding five years, excepting 1891; whilst the barley and oat crops exceeded the quinquennial average.

In Hungary, the crops were better in 1895 than in 1894. The area devoted to temporary pastures is tending to increase in this country from year to year, as is also the cultivation of sugar beet.

BELGIAN HARVEST IN 1895.

The approximate results of the Belgian harvest in 1895 were given in a recent number of the *Moniteur Belge*. The following table shows the estimated average yield per acre of the principal cereal crops in 1895 compared with the estimates of the four preceding years:—

Crops.	1891.	1892.	1893.	1894.	1895.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Wheat - - - - -	23·4	29·7	25·6	28·9	28·5
Rye - - - - -	22·3	31·4	28·9	32·3	29·3
Barley - - - - -	33·4	42·0	32·3	37·9	39·5
Oats - - - - -	46·8	42·3	31·2	44·5	41·2

Taking the acreage of wheat and rye on the basis of the last agricultural census (1880) at about 1,358,500 acres, the total production of these cereals in 1895 would amount to 39,325,000 bushels, or about 1,925,000 bushels less than last year. Without allowing for the returns from mixed corn and from buckwheat, and leaving out of consideration the requirements for seeds, the approximate deficit in 1895 is estimated at 11,000,000 bushels.

Potatoes proved to be a very fair crop, the quality being generally satisfactory, and in some districts very good. The returns per acre during the past four years have been 8 tons 2 cwt. in 1892; 7 tons 6 cwt. in 1893; 4 tons 17 cwt. in 1894; 6½ tons in 1895.

The first crop of hay gave a return of nearly two tons per acre. The second crop, however, was not nearly so good.

All roots except turnips were good. Beetroot for fodder was an average crop, but the out-turn of sugar-beet was much below that of the previous year, though the roots were richer in saccharine matter. There was an abundant crop of carrots. Flax was good in quality, but the yield per acre was below the average.

CROP PROSPECTS IN FRANCE.

A report on the state of the growing crops of wheat and rye in France, at the end of January, 1896, was published in the *Journal Officiel* early in February last.

For purposes of comparison, the figure 100 is taken to represent the area under the same crop in the preceding year; and as regards the state of the young crops, 100 implies "very good"; 80, "good"; 60, "rather good"; 50, "passable"; 30, "middling"; 20, "bad."

The following table gives the figures as regards wheat only, and the mean for groups of departments:—

Divisions.	Area under Wheat in 1896 compared with that in 1895.	Condition of Crop at the End of January, 1896.
North-west region - - - -	99	94
North region - - - - -	100	94
North-east region - - - -	99	87
West region - - - - -	99	91
Central region - - - - -	101	89
Eastern region - - - - -	99	87
South-west region - - - -	100	88
Southern region - - - - -	98	91
South-east region - - - -	99	89
Corsica - - - - -	100	80

An analysis of the figures for each department shows that there has been an increase of wheat acreage, compared with the year 1894-5, in the following departments:—an increase of 10 per cent. in Gard; of 5 per cent. in Côtes-du-Nord, Eure, Marne, Puy-de-Dôme, Vaucluse, and Bouches-du-Rhône; of 4 per cent. in Pas de Calais; of 2 per cent. in Indre, Basses-Pyrénées, Ardèche, and Drôme; and of 1 per cent. in Nord and Indre-et-Loire. In 52 departments, the acreage under wheat is the same as in the previous year, and there has been a diminution of from 1 to 5 per cent. in 14 departments. The decrease has been 6 per cent. in the Vosges; 8 per cent. in Manche and Isère; 10 per cent. in Hérault and Haut-Rhin; and 15 per cent. in Var.

As regards the condition of the crops at the end of January, the index number 100 was applied to 35 departments: 47 departments ranged from 99 to 80; and the crops of the remaining five departments were classed as follows:—Vosges, 75; Jura, 70; Haute-Saône and Lot-et-Garonne, 60; and Aveyron, 55.

HARVEST IN MANITOBA IN 1895.

According to the final official reports of the results of the harvest in Manitoba, the actual outturn of grain from the machine shows a general increase in the yield per acre of wheat over the large estimates given in the August report. The following tables give a summary of the yields of the principal crops of the Province:—

Crops.	Acreage.		Production.	
	1895.	1894.	1895.	1894.
	Aeres.	Aeres.	Bushels.	Bushels.
Wheat - - - - -	1,140,276	1,010,186	31,775,038	17,172,883
Oats - - - - -	482,658	413,686	22,555,733	11,907,854
Barley - - - - -	153,839	119,528	5,645,036	2,981,716
Potatoes - - - - -	16,716	13,300	4,042,562	2,035,336

The wheat crop, which exceeds that of the previous year by over 80 per cent., is said to have enabled farmers to sell sufficient grain to pay off pressing liabilities, while still holding the greater part of the crop. The oat crop is stated to have been fully matured and very heavy. In past years, it is observed, farmers have invariably sold short of wheat and even of coarse grains, not having enough on hand during the following summer to feed hogs and poultry properly. The surplus of wheat and coarse grains this year will materially change conditions in the coming season, when the proceeds of the grain fields will be marketed as food products in the form of cattle, hogs, poultry, and dairy produce. Owing to the protracted harvest, caused by the heavy work entailed, the amount of land prepared for next year's wheat crop is much below the average.

HARVEST AND LIVE STOCK IN ONTARIO IN 1895.

The official estimates of the yield of crops in Ontario in 1895, which were quoted in the last number of this Journal, are now stated to have been generally confirmed, the grain being well up

to the average. The yield of winter wheat was 19 bushels per acre, which is a little under the average. The yield of oats exceeded the estimate and amounted to 35.7 bushels per acre, which on the estimated area sown would give a return of \$4,697.566 bushels. The hay crop was 1,700,000 tons less than in 1894, and this deficiency is stated to represent a loss greater than the value of the entire wheat crop of the Province.

The number of cattle in the Province in 1895 according to returns received from farmers was 2,150,103, of which number 888,000 were milch cows. There were 2,020,000 sheep and lambs and 1,300,000 swine.

THE AUSTRALIAN WHEAT HARVEST.

According to statements which have appeared in the *Town and Country Journal* and other Australian papers, the drought has hit the agricultural industry in Australia quite as hard as the pastoral; and there has been a serious falling off in the wheat harvest. In New South Wales, the wheat harvest is estimated to have fallen short of that of last year. South Australia, which, until quite recently, was expected to have a surplus of at least 200,000 tons of wheat available for export, will, it is feared, not have a quarter of that quantity to spare, many of the later crops being a comparative failure. In Victoria, the reverse that has overtaken the unfortunate wheat-growers is reported to be little short of a national disaster. Here the effects of the drought have been felt far more seriously than in either New South Wales or South Australia. In most of the finest agricultural districts the wheat crops have been a complete failure, and this year Victoria, instead of being an exporter of wheat, will have to be a large importer. While this reverse will fall with especial severity upon Victoria, coming, as it does, at a time when hopes of returning prosperity were beginning to be entertained, it will also touch all the colonies. Already shiploads of American wheat are reported to be on the way to meet demands from New South Wales and Queensland in anticipation of the shortage in the Australian harvests, and the inevitable rise in price. New South Wales has not yet been able to supply her own requirements of breadstuffs, but hitherto her deficiency has been more than covered by the surplus of Victoria and South Australia. It is thought, however, that had the present season not been so disastrously dry New South Wales would, for the first time, have been in a position of independence of outside sources for her supply of breadstuffs.

The harvest prospects in Victoria are commented upon in the *Melbourne Weekly Times* as follows:—

The question as to whether Victoria will have to import wheat is one that has got to be faced. To arrive at something like an answer figures

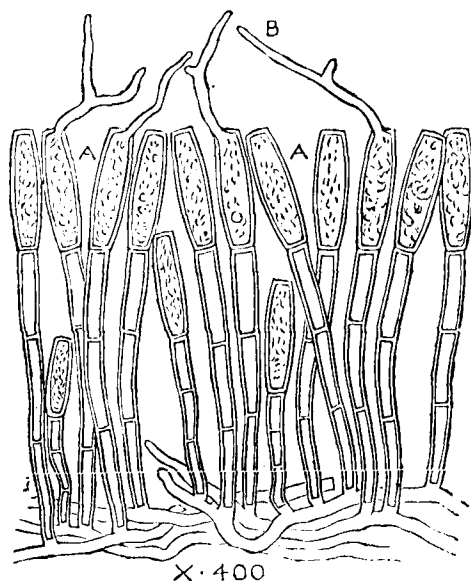
have to be brought into requisition. It will be fair to assume that wheat will be harvested from 1,200,000 acres. Say the average will be about 5 bushels per acre. This gives 6,000,000 bushels as our total yield. For seed purposes next year the same area at one bushel per acre will mean that 1,200,000 bushels will be required for seed. Now for the quantity required for food purposes. When people are in flourishing circumstances it is estimated that nearly 6 bushels per head per annum are consumed. An estimate of, say, $5\frac{1}{2}$ bushels will be a fair one to go upon for Victoria. A population of 1,000,000 people at $5\frac{1}{2}$ bushels per head will require 5,500,000 bushels for food purposes. Taking what will be required for food and seed together our home requirements of wheat will not fall short of 6,700,000 bushels, which means that local production will fall short by 700,000 bushels of local consumption. Against this, however, there is the old wheat in stock to be taken into consideration. What quantity is in stock is hard to determine, but after allowing for a liberal estimate things are beginning to look as if Victoria will have to import wheat this year. Our estimate of 5 bushels per acre as the average yield may appear low. Those who think so should visit some of the wheat-growing centres and see for themselves.

The position in Victoria is regarded as a serious one both for consumers and producers in the colony. There has been an entire absence of the usual winter and spring rains, while, during the winter, harsh, dry, northerly winds prevailed for a considerable period, consequently the crops of wheat, barley, and oats have generally failed.

INJURIOUS INSECTS AND FUNGI.

THE TURNIP MILDEW (*Oidium balsamii*, Mont.).

FIG. 1.



The figure shows a mass of spores upon the surface of a leaf, A A.

B. A spore germinating.

Turnip mildew was so very prevalent last summer upon swedes and other plants that it has been thought desirable to give a further description of it, accompanied by an illustration of this troublesome fungus, which covers the leaves of swedes with thick congeries of white threads, and injures the plants by stopping or checking their assimilation of plant food from the air, hindering transpiration, and stopping their growth. Sometimes the upper and lower surfaces of the leaves are as white as snow from innumerable dust-like spores, which adhere to the clothes of sportsmen and others walking through the swedes. Mildew is usually more prevalent in hot seasons, or in those that, after having been hot and dry for a long period, are followed by thunderstorms and heavy showers. Early sown swedes that have been checked by drought are especially liable to be attacked by *Oidium balsamii* which must not be confused with another turnip mildew, *Peronospora parasitica*, frequently found on swedes, other kinds of turnips, and cabbages. The latter, although resembling *Oidium balsamii* upon casual examination, is quite different in its habits and action upon the plants, inas-

much as, like the potato fungus, belonging to the same genus, it forms a mycelium within the tissues, and lives upon its host plant.

When swedes are thickly covered with *Oidium balsamii* their growth is arrested, and they make very little progress afterwards. Generally speaking, the attack begins about the last week of July, and by the third week of August, in favourable conditions for its development and progress, the leaves are white. Instead of the rapid root-growth usual in the latter part of August and throughout September, the plants come to a standstill, and there is no further gain of weight. Some persons go so far as to say that mildewed swede leaves are injurious to sheep folded on them, causing them to scour; but this has never been verified, though it is extremely likely.

Cucumber plants and marrows, both in the open air and in frames, are subject to this species of *Oidium*.

Several complaints of injury caused by this fungus to cucumbers were made during the last summer by market gardeners who grow them on a very large scale in the open air. Vegetable marrow growers also complained of the "white powder" upon the leaves of these plants. It seemed to them that the unusual heat, and drought accompanying it, made the plants unhealthy and caused this affection.

Description and Life History.

Oidium balsamii is, like some other species of fungi, and particularly *Oidium Tuckeri*, which is destructive to vines, an imperfect fungus whose life history is not fully known. Frank defines *Oidium* as a genus whose perithecia have not yet been distinguished, and the species of *Oidium* here described does not develop perithecia. It is not known whence the spores come that first infect the swedes, nor in what form the fungus passes the winter. De Bary says "it was supposed that in *Erysiphe* the conidiophores were a species of the genus *Oidium*, and that only the perithecia were assigned to *Erysiphe*," and he adds, "The researches of Tulasne have led to an understanding of the real condition of things to which he gave the name of pleomorphism, and to him we are chiefly indebted for the distinguishing and naming of the possible forms in the development of a species."*

At first, the fungus appears as white dust on the lower, as well as the upper, surfaces of the swede leaves. The microscope shows this white dust to be composed of innumerable threads thickly interwoven upon the leaf surfaces. From these mycelial threads sporophores arise vertically, having thickened ends shaped like long narrow barrels (A.). These are conidia, or spores, and if put upon a glass slide damped with water they will germinate

* *Comparative Morphology and Biology of the Fungi, Mycetoza, and Bacteria*, by A. De Bary.

in a few hours in a temperature of 65 Fahr., in the manner shown at B. As noticed before, the mycelium does not enter the leaf but merely spreads over it and chokes the stomata, preventing the absorption and exhalation of gases and the exhalation of watery vapours. An unhealthy state consequently occurs, and the plant-growth is seriously affected.

Methods of Prevention and Remedies.

Good tillage, a good season, to start with, and plenty of horse-hoeing prevent mildew. Well-manured plants are not so liable to mildew as those which are starved and unable to grow in droughty weather.

This fungus is found upon charlock and other cruciferous weeds, as well as on some of the spiraeas, notably *Spiraea almaria* (meadow sweet), and upon burnet and other weeds. Charlock should be kept down as harbouring many insects and fungi injurious to crops.

When swedes are infected and apparently standing still, 2 cwt. of guano or 1½ cwt. of nitrate of soda would help them materially.

In attacks of this fungus the plants should be sprayed with *bouillie bordelaise* of a strength of 12 to 15 lbs. of pure sulphate of copper and the same quantity of lime to 100 gallons of water, put on with a horse potato sprayer arranged so as to spray the upper and under surfaces of the leaves.

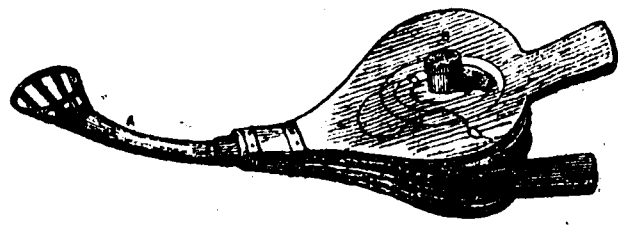
This spraying with sulphate of copper and lime destroys the fungus and gives relief to the plants.

For cucumbers and vegetable marrows, a *bouillie bordelaise* of 10 lbs. of sulphate of copper and 10 lbs. of lime to 100 gallons of water should be used, applied by means of a knapsack machine, directed under and upon the leaves.

This spraying must be carefully done, or it may affect the delicate blossoms of cucumbers and marrows, and these must not be sprayed when the fruit is approaching to ripeness.

In houses or frames, cucumbers and marrows may be treated with powdered sulphur, put on with a soufflet (figured below). The heat of the houses and frames causes considerable volatilisation of the sulphur, forming sulphurous acid gas, which destroys the fungus.

FIG. 2.



A DISEASE OF POTATOES.

In October last, the Board received reports of a peculiar affection of stored potatoes in Surrey and Kent, which was afterwards found to be present in other counties. Upon examination of affected potatoes, it was seen that they were all supertuberated, and that at the elongated end decay was beginning at the tip, and extending downwards. In some cases, the rotting part was as much as an inch long, in others, it had only commenced. Many ends of supertuberated potatoes, which were apparently sound, on being sliced off showed a faint mark all round the tuber, just inside it and close to the skin. On cutting off slices, the mark was visible, in some tubers throughout the supertuberated part, in others only for a short distance. Upon examination of this mark with a microscope, the mycelium of a fungus and its branching filaments could be discerned. In the potatoes where disease had further advanced, the fungus was more plainly apparent, with its peculiar septate mycelium, varying curiously in its diameter, which is characteristic of the fungus known as *Rhizoctonia violacea*, Tulasne. There is no doubt that the fungus was present in all the diseased tubers, but whether it was the sole cause of this disorder is not clear. It was supposed at first that the disorder was occasioned by a bacillus. Bacteriological investigations of the infected tubers have shown that there is a bacillus present, but it has not yet been ascertained whether it is the cause of any injury to the potatoes. These bacteriological inquiries are being continued, and the results will be published later.

It is, however, quite clear that *Rhizoctonia* was present in the diseased tubers, and it has been clearly demonstrated first by Tulasne,* and since by Berkeley,† Prillieux, and others, that a fungus of this species destroys the roots and bulbs of plants, e.g., lucerne, clover, asparagus, beetroot, the crocus, and saffron. Kühn describes another species of *Rhizoctonia* as *R. solani*, which infects potatoes and injures them in the manner described above, and another species, *Rhizoctonia allii*, is noted in "Grevillia" as attacking onions.‡

The skin of the end of the super-tuber affected is dark in colour, much wrinkled, and soft to the touch. On taking a section of a diseased part it is found to be a brown, mottled, pulpy mass, which gradually extends as the disorder advances, and when dry looks like cork.

* *Fungi Hypogæi.*

† Berkeley remarks in a communication to the *Gardeners' Chronicle* in 1879, "I suspect the roots of the asparagus are attacked by *Rhizoctonia*. It attacks also mint, potatoes, and is known by gardeners under the name of 'Copper web.'"

‡ The species known as *Rhizoctonia medicaginis* causes serious injury to lucerne in France, especially in the south. It is called *mort de la lucerne*.

The following figures, drawn by Mr. Worthington Smith, illustrate *Rhizoctonia violacea*.

FIG. 1.

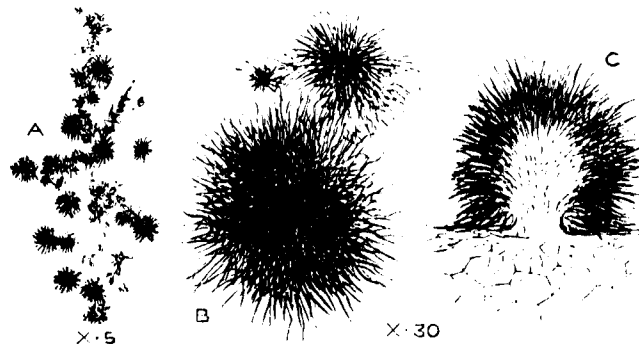


Piece of outside of potato with patches of *Rhizoctonia violacea*, Tul. Natural size.

The above figure shows a piece of the outside of a potato with the fungus upon it in patches. Very frequently these patches are close to an "eye," through which the mycelium enters, as well as through the skin. These patches consist of tiny perithecia with fringes, or "webs," so that the fungus is sometimes called the "copper web."

These perithecia are shown enlarged and in section below.

FIG. 2.



Rhizoctonia violacea, Tul.

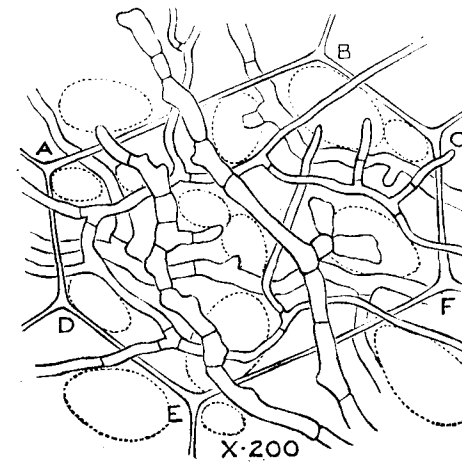
- A.—Enlarged 5 diameters.
B.—Enlarged 30 diameters.
C.—Section through peridium.

The functions of these perithecia and their relation to the mycelium are not clear. Tulasne is not very definite concerning them, and terms them *corps miliars*. Prillieux believes that

these are not perithecia, nor *corps miliars*, but special organs to enable the filaments of the fungus to penetrate into its host.

The mycelium is at first upon the outer surface of the potato, but after a time it penetrates into the interior of the tuber, and then spreads rapidly.

FIG. 3.



A, B, C, D, E, F, the six angles of a single cell showing mycelium of *Rhizoctonia*.
Dotted lines, starch grains.

The mycelium is shown in the above figure. Its peculiar variation in size and its broad inflated joints, with here and there filaments of a much smaller size, will be noticed. The mycelium is colourless in its broader parts, but the smaller threads or filaments have a slightly brown hue.

It was observed that there were black spots throughout many infected tubers, though the actual rotting had been arrested.

Infection was discovered to be communicable by infected tubers to sound ones near them in clamps or stores. A dozen sound tubers were placed close to one infected, and, in three weeks, eight were similarly infected. Further experiments are being made in this direction.

Where potatoes show signs of infection by this fungus the store or clamp should be closely picked over, and all infected tubers taken out and destroyed at once. Great care must be taken not to plant infected potatoes. So far as can be ascertained supertuberated potatoes solely, or at least mainly, have been attacked, and supertuberated seed should not, under any circumstances, be planted if sound strong plants are desired.

In France lime has been found valuable in checking the spread of the allied fungus which attacks lucerne.

WASHES FOR FRUIT TREES.

Washes composed of arsenites are gradually being adopted against insect attacks, but there is still much prejudice against them, and this is increased by the carelessness shown in mixing and applying them. Some instances have been reported to the Board of the foliage of fruit trees having been burnt by solutions not sufficiently diluted, and by irregular and fitful application of the liquid mixtures. In one case, the leaves of apple trees were made quite rusty coloured by a too strong solution of Paris-green.

It is confessed that it is difficult to frame a hard-and-fast rule for the application of Paris-green, as so much depends upon the kind of leaves and their age, as well as upon the state of the weather. The quantity of Paris-green should not exceed 1 lb. to 275 gallons of water in any circumstances. A safe solution is 5 ozs. of Paris-green to 100 gallons of water. But all Paris-green solutions must be evenly and carefully mixed and distributed, and must also be constantly stirred, so that the liquid is kept of uniform strength. Paris-green can be obtained in the form of paste, and is better in this than in powdery form, in which it can be blown about by the wind.

Emulsion made with paraffin or kerosene oil and soft soap is a valuable wash for the *Bryobias*, wrongly termed "red spiders," which infest gooseberry, damson, plums, and other fruit trees; also for the real red spiders and other sucking insects.

The formula for the emulsion is 6 pints of paraffin, or kerosene oil, 4 pints of water, and three and a quarter pounds of soft soap. These must be thoroughly well mixed together, literally churned for some minutes, and then diluted with 25 gallons of water. The paraffin and soap should be mixed at first with very hot water, and then distributed in a very fine spray.

The horse-distributing machines have been found very useful for spreading insectifuges and insecticides in small quantities in liquid or powder form. Knapsack machines have also been largely employed with much advantage on fruit land, small holdings, and gardens.

It is most important that fruit trees should be kept free from mosses and lichens, which seriously hinder transpiration and respiration, and serve as hiding places and refuges for insects, and for the deposition of their eggs. In clearing away these growths, the caustic soda and potash solution, used extensively in America, has been found very effective. This is composed of 5 lbs. of caustic soda, 5 lbs. of commercial potash to 50 gallons of water. It should be heated to 120 degrees Fahr. and syringed all over the trees in the autumn or winter. Sulphate of iron at the rate of 1 lb. to 1 gallon of water put

on warm is also destructive to mossy and lichenous growths, and hot lime thrown all over the trees in damp weather is very efficacious if the lime is caustic and put on properly.

"FIREBLAST" OF HOPS.

In the season of 1895 hops were largely affected by a disorder known colloquially as "fireblast," occasioned presumably by the long continued drought. The leaves of the hop-plant affected with "fireblast" become bronzed in colour, and in some cases are covered with blotches of a dark brown colour, evidently resulting from the tissues being dead. After a time the leaves dry up and fall off. It was noticed last season that "Fuggles" were more subject to this disorder than other varieties, especially upon gravelly and "pinnocky" soils, and on those "near to the rock." The results were something like those occurring from red spider attacks, but no red spiders were discovered upon the leaves examined. One form of this "fireblast" was certainly due to a fungus, at present undetermined. There were other forms of fireblast in which the leaves were marbled, or variegated, in colour, due, as it appeared, to lack of moisture. Professor Percival gave much attention to fireblast last autumn, and holds that a fungus is responsible for one at least of the forms. He considers this fungus to be *Heterosporium minutulum* (Cooke and Massee). But he remarks, "By far the greater number of cases of fireblast are brought about by other causes than red spider, or attacks of fungi. In more than 70 per cent. of the cases of the most virulent type—that is, where the disease is most pronounced and damaging to the plants—no insect or parasitic fungus can be detected. . . . There is no doubt that this form of disease is the one most commonly met with, and may be called fireblast proper. Its cause is also without doubt connected with the soil. Practically every example of this trouble examined this year was met with where the soil or subsoil was gravelly in nature or very varied in character. I have never seen it on deep uniform soils."

This experience of Professor Percival tallies with the results of observations made last season.

After the heavy showers in August the disorder was arrested.

It was noticed that the application of sulphur had no effect upon fireblast, and that cultivation and manuring did not check its progress.

GENERAL AGRICULTURAL NOTES.

EXPERIMENTS IN HATCHING EGGS.

The French Ministry of Agriculture has given publicity to an interesting article by Madame Dieudonné relating to the effects of cold upon the incubation of eggs.

A large number of fowls, some of which were kept in confinement and others allowed to run free, were kept under observation day and night for a considerable period, and it was noticed that the fowls, which were all good sitting hens, hatched large and strong broods during the months of February, March, and April; but that during the warm months of June, July, and August, the hatchings were not so successful, although no change had been made either in the treatment and housing of the hens or in their food. It was also found that the eggs laid by hens in confinement, and collected every day and carefully stored, gave less satisfactory results than the eggs of fowls which were at liberty. Madame Dieudonné inferred that these differences might be attributed to some extent to the period of comparative cold which eggs generally undergo prior to setting, and, as the result of further investigations and experiments, she is of opinion that two conditions are necessary for the successful artificial incubation of eggs, viz.: they must first be cooled and then gradually warmed.

This is indeed only an adaptation of what takes place in nature, for fowls on the farm hatch their eggs, and with remarkable success, in hedges and out-of-the-way places where the eggs, both before and during the period of incubation, are exposed to considerable fluctuations of temperature, which not infrequently falls below freezing point, and it is well known that partridges almost invariably rear large broods in the early spring, unless the eggs have been subjected to unduly bad weather. Cases are also known of interrupted but successful hatchings when the hens had left the nest even for several consecutive days.

Moreover, Mme. Dieudonné has confirmed her opinion by experimental proof, and has always obtained excellent results with eggs which had been placed in the open air during several nights preceding the period of incubation, and artificially cooled in the course of incubation, while when, on the contrary, this process of cooling the eggs was neglected, good results were never obtained. Her experiments showed that the eggs, after having been completely cooled, slowly regained their normal temperature, occupying seven or eight hours in the process; the chicks were strong and of rapid growth, but if the eggs regained their normal temperature too quickly the chicks either died in the shell, or they were born weak and anæmic and died within a

few days. It may be mentioned in this connection that when a hen, of necessity, leaves her nest each day, the eggs are naturally subjected to a temporary refrigeration.

In an experiment with the incubator, the eggs were cooled by exposing them to the air daily for an hour and a half during the whole course of incubation. This exposure retarded the period of incubation for three days. The eggs which were thus exposed became quite cold, and it required about 12 hours to bring them back to 40° C. (104° F.), the temperature necessary for incubation. In this experiment 13 out of 16 eggs were hatched and produced vigorous chicks. The incubator had previously been employed for over a year without success.

A second experiment, begun at 6 p.m. on the 17th of June, is referred to by Madame Dieudonné as demonstrating that the gradual heating of the eggs is no less essential than the process of cooling, 25 eggs which had been laid on the two preceding and very warm days were placed in the incubator and then exposed to the air, as in the preceding case, but the weather was much warmer, the thermometer registering 20° to 25° C. (68° to 77° F.). When replaced in the incubator the eggs regained the necessary temperature of 40° C. (104° F.) in about two or three hours. This temperature was maintained until the 10th of July, when the brood was hatched; but although the chicks pierced the shell, they were so weak that they died before leaving the egg.

It is interesting to note that the eggs on which a fowl is sitting are not all at the same temperature, those which lie on the outside being less warmed than the others. In this connection, Mme. Dieudonné has observed a difference which sometimes exceeds 6° C. (10·8° F.), and it is doubtless owing to this cause that the hen instinctively changes the position of her eggs, moving them from without inwards, and *vice versa*.

With respect to these observations of Mme. Dieudonné, M. Fouquet states, in a recent number of the *Journal des Economistes*, that something analogous was published by M. Duclaux, more than 25 years ago, regarding the egg of the silkworm, whose life history may be divided into two periods which are separated from each other by an interval of cold. M. Duclaux indeed showed that the action of cold was not only necessary for the successful incubation of the egg, but that it could be artificially employed so as to rear silkworms at a season in which it would otherwise be impracticable to do so. The action of cold having been shown to be necessary to induce the development of the embryo within the egg, M. Duclaux further proved that the eggs which are cooled artificially gave more healthy products than those which are treated naturally, and in this respect the action of cold would appear to have a beneficial effect upon the incubation of the eggs.

EXPERIMENTS IN FEEDING SWINE.

The *Deutsche Landwirtschaftliche Presse* has published an account of various experiments in feeding swine carried out at the Dairy Institute of Proskau during the summer of 1894. Four pairs of pigs, of about seven weeks old, were selected. The objects of the experiments were to determine whether feeding with whole grain barley was deleterious when given in large quantities; to compare the feeding properties of barley and maize, both given in conjunction with skim-milk; and to determine more exactly the nourishing value of whey. During the earlier portion of these trials (April 21—June 24) the first pair were given whole barley, the second crushed barley, the third crushed maize, and the fourth crushed maize with whey. Numbers 1, 2, and 3 were also given equal quantities of potatoes; and the weight of whey given to the fourth pair was about three times the weight of potatoes given to the third pair, equal amounts of maize being given. The same quantity of skim-milk was throughout given to all four pairs.

Until the 24th June (nine weeks) the process ran perfectly smoothly with all the pigs. After this date, several variations in the quantity and kind of food given were at different times introduced; the weights of the animals being throughout carefully noted. By about the beginning of August it had been established that the crushed barley had produced better results than the whole grain; also that up to this point, the crushed barley had proved superior to the crushed maize.

The experiments were interfered with so far as concerned the pigs receiving the maize, by these refusing their food at the same time as they were attacked with *bone-stiffness* (*Knochensteifheit*). This may very possibly have been due to the feeding of such young pigs with too much maize. The effect of increasing the daily rations of whole grain barley on the first pair was also deleterious, for they also refused their food simultaneously with the advent of a severe attack of *bone-stiffness*. The period during which the animals were in ill-health has been rejected in instituting comparisons of the different feeding stuffs.

The general result of the experiments led to the conclusion that giving barley in whole rough grains is harmful, not only dietetically, but also from the point of view of complete assimilation of the food, and that it is not advisable, with young pigs up to about four months old, to give them a concentrated feed of maize, but that later, if it is merely a question of aiming solely at the more rapid fattening of the animals at the same outlay, the maize should have the preference over the barley. The quality of the meat has not been taken into consideration. The comparison of the whey with the potatoes led to no result, as one of the fourth pair suddenly refused its food, and thus invalidated the experiment.

LIVE STOCK AND DAIRYING IN MANITOBA.

In the official report of the Department of Agriculture at Winnipeg, the export of beef cattle from Manitoba is stated to have made wonderful strides during 1895, the actual number shipped from the Province being 22,000 as compared with 11,000 in 1894. The average live weight price is said to be 1½d. per lb. There are estimated to be 192,525 head of cattle, 35,766 sheep, and 59,457 swine in the Province.

Dairying in Manitoba has developed into an industry of no small importance; there were 52 cheese factories and 19 creameries in operation in 1895. The output of farm dairy butter is estimated at 1,233,400 lbs. Over half a million pounds of creamery butter were disposed of at about 8d. per lb., and 1,550,000 lbs. of factory cheese were sold at an average price of nearly 3½d. per lb. in the course of last year.

AGRICULTURE IN BUENOS AYRES.

The *Buenos Ayres Standard* has recently published the official results of the Agricultural Census which has been taken in the province of Buenos Ayres during the past year. In the following table these figures are compared with those obtained from the Agricultural Census of 1888.

Crop.					1895.	1888.
					Acres.	Acres.
Wheat	-	-	-	-	1,015,454	609,566
Maize	-	-	-	-	1,844,137	1,259,863
Barley	-	-	-	-	73,445	23,927
Alfalfa hay	-	-	-	-	572,126	231,538

The total cultivated area is now stated to be 3,775,701 acres, as compared with 2,303,500 acres, which was the area returned as under crops of all kinds in 1888. Of this area about 50 per cent. is devoted to maize, 27 per cent. to wheat, and 15 per cent. to alfalfa. Of these crops, alfalfa shows the greatest proportionate increase, the acreage cropped being two and a half times as much as in 1888, and the per-centage of the total area having increased from 10 to 15 per cent. The greatest actual extension of area has, however, been in the corn crops.

The number of cattle in this province is returned as less than at the previous census; the numbers being 7,194,766 head as compared with 8,482,483 head in 1888. The number of sheep has not materially altered, being 52,206,672 in 1895 against 51,557,750 head in 1888. An analysis of the distribution of live stock in the province tends to show, however, that the

cattle-rearing industry is now located in the south, the attention given to wheat and maize growing having driven live stock from the northern districts; but although there is no actual increase in the number of live stock, yet there is no doubt that their value has considerably advanced, owing to the great strides made in improving the breeds both of sheep and cattle.

EXPORTS OF APPLES FROM THE UNITED STATES.

In the report for 1895 of the United States Secretary for Agriculture it is stated that the economic value of apples for export is becoming more generally known to the horticulturists and farmers of the United States. Each year their exportation to Europe increases in quantity, quality, and value. Good winter apples carefully selected and properly packed always meet with a favourable reception and command good prices in Great Britain and on the Continent. It is remarked that the best known American apples in Great Britain and continental countries are Baldwins, King of Tompkins County, Ribston Pippins, Northern Spy, and various Russets; but there is no doubt that the Winesap, Jonathan, Greening, Ben Davis, Vandever Pippin, and other well-known varieties grown in United States orchards would be very acceptable, and always secure for their shippers fair prices and profits.

Apples are shipped in barrels holding about three bushels, weighing about 112 lbs. The freight of these barrels from New York to European ports is less than 4s. per barrel, or 1s. 4d. per bushel.

Export shipments of apples from any of the States east of the Rocky Mountains can be made remunerative, according to this report, and the variety which has sold for the highest price in British markets is the Albemarle Pippin, which is successfully grown to its greatest perfection in the State of Virginia. This variety has sometimes netted the growers 9s. 4d. a bushel in the orchards.

NEW ZEALAND HORSES.

The *Auckland Weekly News* states that the Government have received information through the Agent-General that the Clydesdale horse bred in New Zealand has grown in estimation in England for draught purposes and fetches very high prices in the open market. The average price for the Clydesdale

horse in the Colony is about 40 guineas. The Government, in consequence of the information so received, have come to a resolution to encourage in every possible way the export of this class of horses to London, and they are prepared to assist a shipment at an early date. Attention has also been drawn to the enormous prices given in India for carriage horses (in pairs). It appears that the rajahs and nabobs give large sums of money for high action horses of this class (in pairs). Cavalry chargers were also in request. The Agricultural and Lands Departments of New Zealand will, it is reported, make all the necessary inquiries upon the subject.

THE RUSSIAN BUDGET OF 1896.

In the report of the Russian Minister of Finance on the Budget of 1896, which was published in a recent number of the *Journal de St. Pétersbourg*, the provision for the work of the Ministry of Agriculture and Domains amounted to 3,396,798*l.* Of this sum, the cost of administration is put down at 1,024,726*l.*, the amount devoted to the central administration being 140,356*l.*, and to the local administration 884,370*l.* The item for constructional works, cost of material, labour, &c., amounts to 1,391,397*l.* The provincial land taxes and communal shares in connection with the State lands and forests are allowed for to the extent of 368,177*l.* The provision for schools, and for model farms and model establishments for agriculture, forestry, and mines amounted to 183,063*l.*, and the sum devoted to endowments was 187,016*l.* The sum set aside for loans for agricultural improvements was 52,777*l.* Various expenses and an appropriation for the immediate necessities of 1897, amounted to 189,640*l.*

The above amounts have been converted into English currency on the assumption that 1.50 paper roubles are equal to a gold rouble of the value of 3s. 2d.

AN INDIAN AGRICULTURAL CONFERENCE.

The Lieutenant-Governor of Bengal has appointed a committee to meet Sir Edward Buck, Secretary to the Government of India, now on special duty, for the discussion of the subjects with which his mission is concerned. According to the *Calcutta Englishman*, these include the various questions dealt with in the report submitted to the Government of India by Dr. Voelcker the special commissioner sent out to India to advise the Government on agricultural matters. Dr. Voelcker's report was considered two years ago by a conference at which all local

governments were represented, and made recommendations which have now to be finally disposed of. Not the least important of these refer to the introduction into the educational system of a more practical connection with agriculture. Another question of interest which, it is presumed, will come under discussion, is the connection between the Land Record and Registration Departments. The issues arising from Dr. Voelcker's report are understood to be mainly concerned with the system of inquiry into agricultural conditions and practices, and with the policy to be pursued in ascertaining what, if any, improvements in them can be effected.

INTERNATIONAL AGRICULTURAL MACHINE MARKET AT VIENNA, 1896.

The Board of Agriculture have been requested to draw the attention of the manufacturers of agricultural machines and implements to an international agricultural machine market to be held at Vienna from 9th to 14th May, 1896. This exhibition has been organised by the Imperial and Royal Agricultural Society of Vienna, and the exhibits of machines and implements are to be arranged in the following sections:—(1.) Agriculture; (2.) Agricultural manufactures; (3.) Forestry; (4.) Manufactures of wood pulp and other industries; (5.) Cultivation of fruit and the manufacture of wine; (6.) Machines and utensils used in cattle rearing; (7.) Machines and utensils for the dairy; (8.) Fishing; (9.) Veterinary science and horse-shoeing; (10.) Electricity in the service of agriculture and forestry.

Applications for space must be addressed to the committee of the exhibition at I Herrengasse 13, Vienna, and must be sent in not later than March 16th, 1896.

Forms of entry and copies of the programme and general regulations of the exhibition may be obtained on application, either personally or by letter, from the Secretary, Board of Agriculture, 4, Whitehall Place, S.W.

IMPORTATION OF NEAT CATTLE AND HIDES INTO THE UNITED STATES.

The following is a copy of a notice which was issued to the Press on the 12th December last:—

The Board of Agriculture have received through the Foreign Office copies of a proclamation issued by the President of the United States on November 8, 1895, suspending the prohibition of the importation of neat cattle from Great Britain, Ireland, the Channel Islands, Norway, Sweden, Holland, and the countries of North, Central, and South America, including Mexico, and of the hides of neat cattle from all parts of the world. All importations of neat cattle are to be made under the sanitary regulations prescribed by the Secretary of Agriculture, and all

importations of hides are to take place under proper regulations prescribed by the Secretary of the United States Treasury.

Since the publication of the above information, the Board have received through the Foreign Office a copy of a further circular issued by the United States Treasury Department on the 22nd November last, which contains revised regulations for the disinfection of hides of neat cattle, and states that the following procedure, which is intended solely for the protection of cattle in the United States, and is recommended by the Department of Agriculture of that country, will be required in all cases of shipments of such hides, when not dry-salted or arsenic-cured, from the countries of Europe, Asia, Africa, Australia, and South America, viz.:—

“Dry hides which have been salted or arsenic-cured may be accepted as having been disinfected by the process of curing, and need not be submitted to any further treatment. Dry hides which have not been salted or arsenic-cured should be disinfected. Disinfection with sulphur dioxide may be accepted in case a room is provided which can be tightly closed, and also in case the bundles of hides are undone and each hide suspended separately from the ceiling in such a manner that there may be free circulation of the sulphur fumes, and that all parts of the surface may be acted upon. There should be at least 4 lbs. of sulphur burned to each 1,000 cubic feet of air space, and the room should be kept closed and the hides subjected to the sulphur dioxide for six hours; or the dry hides may be immersed in a 4 per cent. solution of carbolic acid, or a 1 per 1,000 solution of bichloride of mercury, until they are thoroughly wet with the disinfectant. Fresh or moist hides, whether salted or not, should be disinfected by immersion in a 5 per cent. solution of carbolic acid, or a 1 per 1,000 solution of bichloride of mercury.

“It is further directed that hides of neat cattle, other than dry-salted or arsenic-cured, the product of the countries above named, will require disinfection as above whenever they shall be shipped *via* the ports of any other country; and that hides, other than dry-salted or arsenic-cured, the product of any country not named above, if transhipped and actually landed at ports in any of the countries named, will require disinfection.”

It should be understood that these regulations do not in any way modify or affect any regulations concerning disinfection issued under the quarantine laws of the United States.

IMPORTS OF FRESH MILK AND CREAM INTO THE UNITED KINGDOM.

In the course of last year attention was directed by the “*Ugeskrift for Landmaend*” to a process of freezing milk which has been patented by M. Casse, a Danish engineer. The process consisted in placing the milk into suitable receptacles and refrigerating it until a floating layer of frozen milk had formed on the surface. It was found that milk treated in this way would

keep fresh for a considerable period, and that even at the hottest period of the year it could be sent easily from Denmark to England and be sold as fresh milk in London a fortnight after it had been drawn from the cows.

In the autumn of 1893 a company was formed, with branches in Denmark and Sweden, for the exportation, principally to England, of milk frozen by M. Casse's process. The bulk of the frozen milk received in this country during 1894-95 came from Sweden. The method in which the trade was conducted has been described in the "*Ugeskrift*" as follows:—

"The milk leaves Gothenburg on Thursday and arrives at London on Saturday. On the Monday morning it is delivered from the ship and is taken to an establishment, four miles off, where it is distributed for sale. Every day in the week one-seventh of the number of barrels are emptied. Over each barrel is placed a melting apparatus into which the frozen milk, then about one-sixth of the whole bulk, is packed and melted by means of hot water, so that the milk when thawed runs down into the barrel. The milk is then well stirred before the tapping takes place. The empty barrels are returned to Gothenburg by the next steamer. They are cleaned by hot lime-water, and also with steam, in a special manner.

"In the cold weather, the barrels of milk are sent to Gothenburg in open railway cars covered with a tarpaulin. In autumn and spring, there is a cover of sawdust under and over the barrels, while in both winter and summer, when conveyed by sea they are placed on sawdust, and also surrounded by it and covered with tarpaulins on which sawdust is spread.

The following statement shows the quantities and values of fresh milk and cream imported into the United Kingdom in each month from January 1894 to December 1895, and the totals for each half year of 1894 and 1895:—

Months.	Quantity.		Value.	
	1894.	1895.	1894.	1895.
	Gallons.	Gallons.	£	£
January - - -	43,263	45,007	1,912	6,224
February - - -	15,107	41,246	766	5,699
March - - -	8,090	21,686	565	3,888
April - - -	1,409	5,749	421	1,369
May - - -	940	2,771	122	542
June - - -	231	894	25	168
July - - -	3,569	2,585	896	705
August - - -	7,801	1,433	1,864	296
September - - -	11,257	1,000	2,691	222
October - - -	18,308	1,094	3,839	213
November - - -	20,460	1,450	3,834	206
December - - -	31,198	2,080	4,436	439
Half years:—				
January to June - -	69,040	117,353	3,811	17,910
July to December - -	92,593	9,642	17,560	2,081
The year - - -	161,633	126,995	21,371	19,991

Practically, the whole of these imports came from Sweden and Holland; the larger quantities in January—February 1894, came from the latter country, but since that date Holland, except in December 1894—February 1895, has never sent 1,000 gallons in any single month. The large quantities received here last winter were all from Sweden, and these do not seem to have been repeated. The considerable imports during the autumn and winter of 1894-95, which attracted so much attention, appear to have been only temporary.

The extreme fluctuations in the value are to be attributed to the varying proportions of cream, which is not separately distinguished.

AGRICULTURAL LABOUR IN JANUARY.

In the *Labour Gazette* for February the agricultural correspondent to the Labour Department of the Board of Trade, reported, on the basis of returns from 180 correspondents in different parts of the country, and from one agricultural labourers' union, that, generally speaking, employment in agricultural districts in England was fairly regular during the month of January, and more regular than in the previous month of December. Districts where employment was less favourable in January than in December were exceptional. In Essex this was the case in two unions, owing, it is said, to lack of threshing, consequent on the decrease in the acreage of corn. In four unions in Kent the state of employment in January is said to have compared unfavourably with that of December. An improvement in the state of employment in January took place in Suffolk, which was the county in the month of December where it was the most unfavourable. With but few exceptions the state of employment in January 1896 is reported to have compared favourably with that of 1895. But in the latter period field work was greatly interfered with by snow and frost, whereas the month of January last was conspicuous for mild and dry weather.

FARM ANIMALS IN THE UNITED STATES.

According to the figures lately issued by the Statistician to the United States Department of Agriculture, the estimated numbers of live stock in the United States in January 1896 exhibited a general decrease as compared with the estimates made at the same period in 1895. The following comparative

statement shows the changes that have occurred in the five years, 1892-1896:—

	1896.	1895.	1894.	1893.	1892.
	No.	No.	No.	No.	No.
Horses - - -	15,124,057	15,893,318	16,091,139	16,206,802	15,498,140
Milk cows - - -	16,137,586	16,594,622	16,187,400	16,424,087	16,416,351
Oxen and other cattle - -	32,085,400	31,364,216	30,608,168	35,954,196	37,651,239
Sheep - - -	38,298,783	42,294,064	45,948,017	47,273,553	44,938,365
Pigs - - -	42,842,759	44,165,716	45,206,408	46,084,807	52,398,019

If these annual estimates are correct—the later figures are taken from telegraphic summaries—horses in the United States have decreased in number by 374,000 since 1892; cows by 279,000; other cattle by 5,600,000; sheep by nearly 7,000,000; and swine by over 9,500,000.

ADULTERATION OF MILK AND BUTTER.

In the Twenty-Fourth Annual Report of the Local Government Board, 1894-95 [C.—7867], it is observed that, in 1890, 6,419 samples of butter were examined in England and Wales under the Sale of Food and Drugs Act, 1875, of which 667 were found to be adulterated, so that the per-centage of adulterated samples of butter, which was 13·7 in 1893, fell to 10·4 in 1894. This point was also reached in 1888, and is the lowest since the passing of the Act of 1875. A large number of samples of margarine were also taken, most of them proving infringements of the Margarine Act of 1887. Legal proceedings were taken in respect of 694 samples of butter and margarine, 619 penalties being imposed, amounting in all to 1,209*l.* 2*s.* 6*d.* Only 20 penalties were of 10*l.* or over, the highest being four fines of 20*l.* each.

Of 16,305 samples of milk examined in 1894, 1,868, or 11·5 per cent., were found to be adulterated. In the previous year the proportion of adulterated samples of milk was 14·9 per cent of those examined.

EXTRACTS FROM FOREIGN OFFICE REPORTS.

FRUIT-PRESERVING IN THE CRIMEA.

In his report for the year 1895 on the district of the Taurida, Mr. Murray, Her Majesty's Vice-Consul at Sevastopol, states that fruit preservation is quite a new industry in the Crimea, but that notwithstanding the very short time it has existed, it has increased so rapidly as to render it probable that it will not only do away entirely with the imported article, but may itself become an article of export, as, with the exception of oranges and lemons, the Crimea produces every sort of fruit required, and is capable of producing any quantity for which there may be a demand.

As early as 1840 attempts were made by the Government to introduce the fruit-preserving industry, but until the railway was opened in 1874, connecting the Crimea with the rest of Russia, the cost of transport prevented fruit preserved in the Crimea from competing favourably with that imported, whilst it was out of the question to export fresh fruit for eating, so that little was thought of fruit cultivation.

As soon as the railway was completed, Moscow merchants bought up large quantities of fruit, which they sent to Moscow, partly for eating and partly for preserving; but the difficulty of transporting some of the more perishable sorts of fruit led them to try preserving on the spot, and the attempt was such a success that hardly any fresh fruit, except that for consumption as such, is now sent away.

The first trial was made in 1877 at Simferopol, by a well-known Russian firm. For three years the fruit was preserved without special machinery; but in 1880 the business had grown so much that the firm sent to France for a skilled manager, by whose advice steam apparatus for boiling, drying, &c., was put up. In 1879, another well-known Moscow firm set up a factory at Simferopol, also under foreign superintendence; and in 1884, a factory was set up more especially for the so-called *purée* of tomatoes, which has now become a Crimean speciality. Since then several smaller factories have been started at Kertch, Simferopol, and other places, which every year increase their output.

At first, the price of fruit was very low, but it soon rose, and although large gardens and orchards are continually being laid out, the demand increases as fast as the supply, so that the price is maintained, and there are gardens where 200*l.* to 250*l.* is paid for the apricot crop alone. The fruit is sold on the trees before it ripens and as soon as the amount can be estimated, so that the purchaser takes all risks.

Competition is not felt by the factories, as the demand is equal to the supply, and both grow continually.

The factories turn out fruits, bottled and tinned, in syrup and crystallised; jams, jellies, and *purée*, which is a sort of stewed fruit. The kinds used are apricots, peaches, pears, apples, quinces, figs, plums, cherries, sweet and water melons, walnuts, tomatoes, oranges, and lemons; the last two being the only imported fruit, all the rest being grown in the Crimea. The quantities bought up in 1894 by the three principal factories alone amounted to 1,600 tons, valued at 14,100*l*.

Each year about 10,000 tons of fresh fruit, valued at 140,000*l*., are sent to the north of Russia for eating.

From the above figures it may be seen that the cultivation of fruit has now attained very large proportions in the Crimea, and particularly noticeable is the quantity of tomatoes taken up by the factories. Until these were started, the tomato was very little grown, as it would not stand transport, and the local demand was small, but now it is largely cultivated as a most profitable crop. The products of the factories, especially the crystallised fruits, compare very favourably with those prepared in France.

The fruit harvest of 1895 was a total failure, and sufficient fruit could not be obtained in the Crimea, so that large quantities have been imported from Bessarabia.

[*Foreign Office Report, Annual Series, No. 1656, Price 1½*l*.*]

GERMAN EXPERIMENT IN FRUIT DRYING.

In a supplementary report on the trade of the Consular District of Stettin, Mr. Powell, H.M. Consul at that port, mentions a novel experiment which has been made in the drying of fruit by the use of "mull," which is the dust obtained from dry "moss litter" whilst passing through the machine for tearing up the moss for litter. The manager of a Government peat moor, near Stettin, had some apples and pears packed in this mull or dust, enclosing the whole in a wooden case, and pressing the mull well down round each apple and pear, taking care that the fruits did not touch each other. The case was left unopened for about three months, when it was found that they were perfectly dried and as sound as those prepared for commerce. Some of them were placed in warm water, when they began to take up the water and swell to their former proportions. It appears, therefore, that if—on further experiment being made—the fruit is found to be properly dried and fit for commercial purposes, there is a possible future in the process.

Mull is exceedingly cheap, selling in Germany at about 1*s.* 3*d.* per cwt. As it is very light, 1 cwt. would dry a large quantity

of fruit; and, moreover, it can be used many times: it has no smell, nor does it convey any taste to the fruit, but merely absorbs the moisture which the fruit contains, at the same time hermetically protecting it from the air.

[*Foreign Office Report, Annual Series, No. 1652. Price 1½*l*.*]

WHEAT GROWING IN SOUTH RUSSIA.

Mr. Woodhouse, Her Majesty's Vice-Consul at Nicolaiev, in his report for the year 1895, states that the soil of his district is so fertile that by merely scratching its surface in the most primitive fashion, and sowing it with almost anything, it yields remarkably well. But, notwithstanding the advantages afforded by this fertility, he is of opinion that the price of grain, f.o.b., at Kherson, must be still further reduced in order to meet successfully the competition of other wheat-exporting countries.

To attain this end, it is necessary, in his view, to construct more branch lines of railways and to lower the existing tariffs. As an example of the high rates now obtaining, he mentions that the freight on grain for about 100 miles on the Nicolaiev line is as high as 7*s.* per ton, and 2*s.* more for loading and discharging; and, furthermore, it is often next to impossible to forward the grain for want of waggons at the stations. He adds that during last autumn, 9*s.* was the rate of freight for steamers bound from Nicolaiev to the United Kingdom or Continent.

Mr. Woodhouse points out also that the country roads sadly need improving, as they are still mere tracks, and a few showers turn them into impassable barriers of mud, so that during the late autumn and early spring, when draft animals are free and could be employed in carting produce to the depôts, they are often kept in forced idleness by the bad condition of the highways.

It seems that the rules relating to the advances of money on grain made by the Government have been considerably modified, and a proprietor can now obtain loans by virtue of his status, and a peasant can hypothecate his produce on the condition that all the members of his village or commune make themselves responsible (1) for the alleged quantity of grain, and (2) for his not illicitly selling it to third parties. Dealers are also accommodated with ready money, and a certain amount of speculation is the consequence.

Hitherto there has been no rule for fixing the per-centage of other grain which a buyer is bound to accept mixed with wheat or rye, but it is customary to allow 3 per cent. with barley and 5 per cent. with linseed. The English standard is 3 per cent. for wheat, rye, and barley, and 4 per cent. for linseed. This question will shortly be settled, however, as the Minister of

Finance has appointed a Commissioner to visit the district and thoroughly investigate the matter.

A table is given in Mr. Woodhouse's report showing the average yield of grain in lbs. per acre in the six districts of the province of Kherson. This statement shows a considerable difference in favour of the proprietor between the results obtained by the landed proprietors and the peasants, and, although the yield of one district and that of another may be influenced by weather, &c., the contrast between the produce of the two fields lying side by side is invariably the result of distinct modes of cultivation.

[*Foreign Office Report, Annual Series, No. 1656. Price 1½d.*]

AGRICULTURE IN TRANS-CAUCASIA.

In a report on the agricultural condition of Trans-Caucasia during the year 1895, prepared for the Foreign Office by Mr. P. Stevens, Her Majesty's Consul at Batoum, it is stated that there is little doubt that since the visit of the Minister of Imperial Domains and Agriculture to the Trans-Caucasus in the year 1894 the Government have adopted a very active policy with respect to the introduction of measures calculated to remedy the deplorable state of affairs which still prevails in that portion of the Russian Empire, and that a series of important projects are under discussion at the Russian capital, which, if put into practice, will, it is expected, result in improving and raising the social condition of the peasantry, and be the means of generally diffusing amongst them a wider knowledge of improved methods of cultivating the soil, more in keeping with the requirements of the present age.

It seems that schools in which instruction is given in the various branches of agriculture are annually becoming more numerous; while persons experienced in the scientific cultivation of the soil are continually being despatched from St. Petersburg and other centres of agricultural education with the object of enlightening the peasantry and of studying the wants and requirements of the rural population.

It is maintained, therefore, that notwithstanding the want of education of the natives, not to mention other tendencies which cause them to be extremely backward in grasping any novel idea, sure though slow progress in the right direction is undoubtedly being made.

Amongst other measures a scheme is reported to be under consideration whereby it is proposed to assist the development of the manufacture of agricultural machinery in the country, and, with this view, cheap and easily accessible credit to would-be agricultural implement makers is being afforded by the

Ministry of Finance in order to facilitate the erection of factories and works. Further, a certain number of efficient and practical mechanics are to be instructed in the handling and repairing of agricultural machinery and implements, and will subsequently be despatched to the various grain-growing districts for the purpose of assisting and instructing the peasantry in their use, and it seems probable that these mechanics may eventually open their own workshops and establish themselves in the respective localities to which they are sent. It is also stated that the Ministry of Agriculture intends opening depôts of agricultural machinery and implements as well as of seeds in even the most remote parts of the Empire. Such depôts already exist in Russia proper, and it seems likely that they will shortly be established in the Caucasus.

[*Foreign Office Report, Annual Series, No. 1654. Price 1½d.*]

THE SERVIAN MEAT TRADE.

The Foreign Office has lately transmitted to the Board information, supplied by Mr. R. G. D. Macdonald, Her Majesty's Consul at Belgrade, respecting the Servian meat trade. It seems that when the Hungarian frontier was closed to Servian swine, various plans were ventilated and experiments tried for enfranchising the country from her dependence upon the Austro-Hungarian market.

The entire export trade of Servia in 1894 was valued at 1,840,928*l.*, the amount of live stock in general being estimated at 1,049,880*l.*, i.e., at over 50 per cent., and that of swine at 681,780*l.*, or 37 per cent. of the entire exportation. Of Servian live stock in general Austria-Hungary purchased to the value of 1,023,449*l.*, whilst swine from Servia to the value of no less than 681,708*l.* passed through the Hungarian market at Steinbrück.

These figures, it is held, show that, in the absence of any other market for Servia's live stock, an embargo upon her exportation of swine to Hungary cripples the country's resources by 37 per cent., stops the return supply of gold with which she reckons to meet her foreign debts, and exposes her to a risk of partial financial paralysis. The effect of the recent prohibition by Hungary is said to have been aggravated by the fact that Servia is at present suffering from depression of trade, a swollen public debt, and diminishing receipts from taxation.

It seems that experimental shipments were made in the winter of 1894-95, by an Italian firm, of small consignments of Servian swine to Marseilles *via* Salonica, and the success which was claimed for these trials raised the hope that a new outlet for this trade might be found in that direction. A special commissioner was despatched to Salonica by the

Servian Minister of Commerce—who has since reappointed a permanent Consul-General at that port—to arrange for the chartering of vessels for conveying swine to Marseilles. Under his auspices, trial consignments were forwarded at reduced railway fares and free of export dues. The result appears to have been a disappointment. The price realised at Marseilles was a little over 70 centimes per kilogramme (3*d.* per lb.), whereas the average selling price of the same pigs at Steinbrück would be 44 kreuzers, or from 90 centimes to 1 franc (4*d.* to 4½*d.* per lb.), with infinitely smaller expenditure on transport.

The Hungarian market has, besides, a great advantage in being accessible at all seasons, whereas the sea route to France would be found impracticable during the hot summer months. The present demand for foreign swine at Marseilles is also far below the two or three hundred thousand head which Servia is accustomed to dispose of annually. Under such conditions, it appears fairly safe to conclude that there are but slender chances in favour of a development of this trade with France unless Hungary should permanently close her frontier to Servian pigs.

Efforts which have been made by the Servian Government to secure an additional outlet to Italy may be dismissed with a brief mention as the route *via* Fiume is traversed by Hungarian railways and would be liable to arbitrary closure equally with the Steinbrück route.

There seems to remain only one alternative course for Servia to adopt under these circumstances, and this is to kill her own pigs and prepare them for distant exportation in the form of ham, bacon, and lard. A Servian company has already been formed which proposes to establish a factory and cattle market at Belgrade. This enterprise, which bears the character of a national movement, has received support from the Legislature in the shape of two laws which have been passed during the present session of the Skupshtina.

The first of these Acts has a general character, and is entitled a "Law for granting State Aid to Meat-Curing Establishments." It authorises the Government to grant particular privileges, for a period of 10 years, to any companies or private individuals who may propose to erect establishments for slaughtering stock and curing meat; and confers the same powers that the Government already possess under the Law of 1874 for according remission of customs dues and taxes in favour of machinery and other material necessary for the construction and maintenance of industrial factories or of their outgoing manufactured produce. The free cutting of building timber in the public woods and forests is provided for, and salt—which is a Government monopoly—may be sold to concessionaires, under the present Act, at a reduction of 50 per cent. on its current price.

Article 9 provides that Government contracts shall be given to concessionaires at prices 5 per cent. in excess of those pro-

posed by others (*i.e.*, foreign tenderers), a previous section (Article 6) having sanctioned an application of reduced railway rates on transports to and from the factories. Further provision is made for constructing railway lines, roads, and drains, and for a 30 years' occupation by factories of vacant State sites, or for the expropriation, if necessary, of commercial and private lands.

Concessionaires are bound to erect their factories and begin work within two years from the date of their concession and to slaughter from 10,000 to 20,000 head of swine per annum, besides finding security in Servian Guaranteed State Paper to the amount of 5 per cent. of the value of their factories. A right of State control is reserved and the establishments are held subject to the usual sanitary laws and police regulations.

The second law, "A law for granting State Aid to the Servian Shareholders' Cattle Market Company," which accompanied the foregoing in its passage through the Skupshtina, and was published in the same number of the Official Gazette, embodies a special concession, limited to 50 years' duration, in favour of the Belgrade Company above mentioned.

According to the provisions of this measure, the chief seat of the company is Belgrade, and its capital is fixed at 1,250,000 dinars in silver in 50,000 shares of 25 silver dinars per share (the varying equivalent of these shares may be calculated at between 38,793*l.* and 41,666*l.*).

The usual exemptions are granted from import and export duties as well as remission of all direct taxes, with free cutting of building timber in the State forests and power to expropriate land for its purposes.

The Company is to erect at Belgrade cattle yards and sheds sufficient for the accommodation of 10,000 head of swine and for as many horned cattle as it may be found necessary to provide room, with special yards and sheds for the isolation of sick or suspected stock, besides feeding yards, a mill, an inn, and soap works. Amongst other obligations which rest with the Company is that of advancing money upon the security of live stock left in its custody. From this live stock it is empowered to satisfy all its just claims against clients without recourse to ordinary legal procedure. The Court of the Cattle Exchange is invested with competency in all cases of dispute arising between the society and its clients, and from its decisions there is no appeal.

Weekly markets are to be established, and if it should be found necessary to organise additional export centres in other parts of Servia, the society must apply for a decree to that effect from the Minister of Commerce and Agriculture. The State undertakes to connect the stock yards and market with the existing railway system, and to establish postal, telegraphic, and telephonic communication. It will also exercise full sanitary and police control over the management, as well as a power of veto upon the resolutions of the Company's board or general meetings.

All live stock intended for exportation will be required to pass eight days in the Company's yards, the tariff and rules for which are to be submitted for the approval of the Minister of Commerce.

After defining the circumstances under which the Company may go into liquidation, the law reserves to the State a right of pre-emption on a valuation of the premises and buildings. The concession cannot be withdrawn from the Company except by an order from the Council of Ministers, and then only on proof being furnished of failure to comply with the provisions of the Act.

THE CATTLE AND MEAT TRADE OF BELGIUM.

The Board have received from the Foreign Office a copy of a memorandum prepared by Mr. G. R. de Courey Perry, Her Majesty's Consul-General at Antwerp, on the subject of the cattle and meat trade of Belgium. The last agricultural statistics were taken in Belgium in 1880, when the number of cattle and sheep amounted to 1,382,815 and 365,400 head respectively. The figures quoted below show the importation for consumption of cattle and sheep and of fresh meat into Belgium during the years 1891 to 1894 inclusive, and the exports of Belgian cattle, sheep, and meat in the same periods:—

	Cattle.			
	1894.	1893.	1892.	1891.
	No.	No.	No.	No.
Importation - - -	55,653	120,810	68,607	104,913
Exportation - - -	1,184	1,102	3,249	4,781
Excess of importation over exportation -	54,469	119,708	65,358	100,132
	Sheep.			
	No.	No.	No.	No.
Importation - - -	193,395	199,558	190,136	204,621
Exportation - - -	7	318	8,886	7,276
Excess of importation over exportation -	193,388	199,240	181,250	197,345
	Fresh Meat.			
	Cwts.	Cwts.	Cwts.	Cwts.
Importation - - -	414,543	254,434	535,052	499,066
Exportation - - -	389,498	241,882	359,955	343,239
Excess of importation over exportation -	25,045	12,552	175,097	155,846

The average market prices of the different kinds of meat per pound (live weight), were as follows during the years 1889 to 1893 inclusive:—

	1893.	1892.	1891.	1890.	1889.
	Pence.	Pence.	Pence.	Pence.	Pence.
Bullocks - - -	3·49	3·75	3·88	3·75	3·62
Bulls - - -	3·09	3·18	3·32	3·05	2·88
Cows - - -	3·09	3·18	3·27	2·96	2·83
Calves - - -	4·19	4·63	4·36	4·27	4·19
Pigs - - -	3·97	4·10	3·66	3·88	3·71

The average price per cwt. (live weight) of bullocks in 1893 was 32s. 8d.

The average price of mutton (slaughtered) was 5·4d. per lb. in 1893, and 6·1d. per lb. in 1892. Besides the fixed Customs duty of 17d. per lb. (live weight) on bullocks, bulls, and steers; of 22d. per lb. on calves that have not yet lost their milk teeth; of 13d. per lb. for cows and heifers; of 1s. 7d. per head for ewes, wethers, and rams; and of 9½d. per head for lambs, all animals imported from abroad, either by sea or land, must undergo a sanitary inspection at the expense of the importer. A regulation which came into force on the 30th October last fixes the charge for this inspection at 1s. 7d. per head for cattle showing symptoms which necessitate a special examination for tuberculosis, and 9½d. per head for the same animals if in a healthy condition, 4·8d. for calves of all descriptions under four months of age, and ½d. per head for sheep.

No exact information is obtainable respecting the amount of fresh meat consumed in Belgium, but it is estimated that about 500,000 cattle of all kinds are slaughtered in Belgium annually for home consumption.

IMPORTATION OF LIVE STOCK, PORK, AND OTHER ANIMAL PRODUCTS INTO ITALY.

The Board have received from the Foreign Office translations of two decrees concerning the importation into Italy of ham, bacon, and other preserved swine flesh, and of cattle, sheep, and various animal products. It will be observed that Great Britain is not included in the countries from which the importation of preserved swine-flesh is permitted.

These Ordinances, which are dated 1st December 1895, were issued from the Ministry of the Interior, and read as follows:—

Sanitary Decree, No. 11, 1895.

Art. 1. The prohibition of the importation into the kingdom of salted, smoked, or otherwise preserved swine-flesh, remains in

force for all countries in general, except the following :—Austria-Hungary, the German Empire, Switzerland, Denmark, France, Servia, and the United States of America.

Art. 2. Such flesh imported from the above-mentioned countries must be accompanied by a sanitary certificate of origin issued by the competent local authorities, and attested by the Italian Consul or Consular Agent, residing or having jurisdiction in the place from which the flesh is exported.

Sanitary Decree, No. 13, 1895.

Art. 1. The prohibition remains in force against the importation of—

(a.) Cattle and sheep from the following countries and districts :—European and Asiatic Turkey, Island of Cyprus, Egypt, Bombay, Russian ports on the Black Sea and Sea of Azoff, Bulgaria, Greece, Somaliland, Zanzibar.

(b.) Cattle from Malta, whence the importation of sheep is permitted, on condition of their being submitted to a medical examination at the port of destination, at the expense of the parties interested.

(c.) Swine from European and Asiatic Turkey, from Cyprus, Egypt, and the United States of America.

Art. 2. The importation of salted skins into Italy is prohibited from all those countries from which the importation of cattle and sheep is prohibited, with the exception of the island of Malta.

Art. 3. The prohibition against the importation into Italy of untanned hides, raw wool, bones, horns, hoofs, &c., and other products of cattle and sheep from Asiatic Turkey, Somaliland, and Zanzibar remains in force.

Art. 4. The importation into Italy of animals and animal products will be permitted from all other States on condition that both the animals and such products be accompanied by a sanitary certificate of origin to be issued by the competent local authorities, and attested by the Italian Consul or Consular Agent having jurisdiction in the district from which the animals or products are originally sent.

Art. 5. Salted entrails, and washed or calcined wool, may be freely imported into Italy from any place whatever.

PARLIAMENTARY PUBLICATIONS.

Congested Districts Board for Ireland, Fourth Report, for the period from the 1st of April 1894 to the 31st of March 1895.
[C.—7791.] Price 3d.

In the section of this Report which relates to agriculture it is stated that 20 example holdings had been worked under the Board's instructors in the Clifden district, co. Galway, and in the Achill and Kiltimagh districts, co. Mayo, but it was considered desirable to abandon a few of the holdings originally taken up, as the occupiers were either unwilling or unable to give the requisite attention to the cultivation of the plots.

Although each example holding is worked on what is considered to be the best system which the occupier is willing to adopt, yet one general principle is followed throughout, namely, that of taking in rotation a corn crop, a manured green crop, and a corn crop, with which the land is laid down with grass and clover seeds, to be left down until the land is needed by the requirements of the rotation.

The principal faults in the working of the ordinary class of small holdings in the poorest congested districts are, in the first place, a want of thorough cultivation and suitable manuring, and, secondly, a neglect to lay land down with good grass and clover seeds. The first fault leads to the use, or rather waste, of a larger area of land for the produce required than would be necessary under better farming, while the second fault or omission involves the deterioration of the land, and also its being frequently left idle and waste.

It is believed that much improvement will gradually be effected by the steps which the Board are making in the introduction of small ploughs and cultivators capable of being worked by ponies or donkeys, of suitable artificial manures to be used in conjunction with farm-yard manure or seaweed, and of seeds of good quality.

It is not proposed to extend the number of example holdings to any considerable extent in the localities in which the experiment is being tried, as it is believed that the number is sufficient for the purpose of serving as examples, and the methods adopted on them are being followed by many occupiers of neighbouring holdings.

In addition to the operations mentioned above, a number of small occupiers in the Kiltimagh district, county Mayo, have been assisted in providing improved farm offices, cattle houses, pigstyes, barns, &c., and in one instance a dwelling-house is being remodelled and improved. This improvement scheme has not yet been completed. In the cases in which applications have

been received for cow-houses, the cattle have hitherto been kept in the dwelling-houses, but undertakings have been given that this practice will be dropped for the future.

In some few districts where considerable difficulty exists in obtaining at moderate prices good seed oats and seed potatoes, and also rye, grass, clover, turnip, and mangold seeds and artificial manures, the Board sold them in small quantities.

It is hoped that, as the advantages accruing from the use of really good seeds and manures are realised, local merchants or shopkeepers will supply them; or that Farmers' Co-operative Supply Associations will be formed for that purpose.

A sum of 165*l.* 0*s.* 2*d.* was paid to the Irish Agricultural Organisation Society to enable that body to extend the benefits of co-operation to occupiers of land in congested districts.

During the season of 1894, twenty-eight sires were stationed at six centres; nineteen were hackneys, four Welsh cobs, two Welsh ponies, two Arabs, and one Barb. It may be mentioned that the hackneys are more popular than any other horses that have yet been introduced into the congested districts. The foals from the Welsh cobs do not show the same quality, and the owners of the mares complain that the foals from the Arabs are too small to sell at a good price. It is therefore the intention of the Board to gradually substitute hackneys for other horses where they are asked to do so.

The total number of service orders issued in 1894 was 1,662, or an average of about 59 per sire. The Board have every reason to be satisfied with the advantage that has been taken by the people of their horses, and the worthless stallions that were previously standing in several of the districts have disappeared.

The Board have purchased several specimens of the foals got by their stallions in different districts in order that they may thoroughly test the experiment and watch the development of these half-bred hackneys and Welsh cobs. These animals are now to be seen at the Chantilly stud farm.

In addition to the horses, the Board have now ten Spanish stallion asses stationed in districts which are considered suitable for ass-breeding. There is a great demand for the service of these asses, and the Board would like to increase the number, but it is very difficult to purchase good animals of this kind.

The Galloway bulls sent to the counties Galway and Mayo were very much liked by the people, and the large number of well-bred Galloway bulls sent out during the past two years cannot fail to materially improve the breed of cattle in West Galway and West Mayo.

It is reported, with satisfaction, that in many instances the purchasers of bulls under a two years' agreement have retained the bulls for further use. At the same time it was to be expected that some of the large number of bulls sent out should have turned out unsatisfactorily. If the Board satisfied

themselves that a bull was a bad stock-getter, or was faulty in other respects, the purchase agreement was cancelled, and the bull taken off the purchaser's hands, provided that the unsatisfactory condition of the animal did not result from negligence or default on the part of the purchaser.

The scheme under which bulls were located in parts of the county Kerry for the improvement of the Kerry breed of cattle has been discontinued, as it did not appear that the local breeders appreciated the advantages offered. All the Kerry bulls but five were therefore sold at the close of the service season, and these five have been placed with persons who undertook to maintain them for service free of cost to the Board.

One hundred and twenty rams were distributed for service in the counties of Donegal, Mayo, Galway, and Kerry during the season of 1894, and satisfactory accounts of these rams have been received. A few rams were sold for breeding purposes, and a small number, which were not considered suitable to retain, were also sold. The remainder were kept over for service in 1895. One hundred and six ram lambs of the Highland breed, and ten Cheviot rams were purchased in Scotland, and will be available for service during the ensuing season.

A sheep-dipping station has been provided at Doon, near Clifden, County Galway, at which 1,368 sheep were dipped in the autumn of 1894. Arrangements are being made for the establishment of similar dipping stations at a few other places.

The demand for boars during the period under review has not been large, probably owing to the fall in the price of pork. Only fourteen boars and thirteen sows of the large York breed were sent out by the Board during the year under their scheme for the improvement of the breed of swine.

The Board spent a sum of 143*l.* 4*s.* 7*d.* in the summer and autumn of 1894, in giving demonstrations in the method of spraying potato plants with sulphate of copper and lime mixture. Demonstrations were given in the counties of Donegal, Leitrim, Sligo, Mayo, Galway, and Cork; and the great success that attended the Board's efforts in this direction caused them to decide upon expending a much larger sum in the year 1895 upon these experiments, if indeed this word can be used, having regard to the wonderful success of the spraying operations.

On the 31st of March 1895, 30 poultry farms were in existence under the Board's scheme for the distribution of eggs for hatching. These poultry farms are usually started with about 20 to 30 pullets, or hens of the Black Minorca or Plymouth Rock breed, with a proportionate supply of cocks. Fifty-five Houdans were purchased in France and supplied to the convents at Claremorris and Foxford, where the nuns are zealously taking up the instruction of the country people in the rearing of poultry. The distribution of eggs from poultry farms during the season of 1894 showed a marked increase as compared

with the issue of the previous year, and good results are being produced.

In accordance with the scheme submitted by the Irish Bee-keeping Association, and approved of by the Board, Mr. T. B. O'Bryen visited certain congested districts during the year 1894, for the purpose of affording advice, instruction, and assistance in bee-keeping to those anxious to avail themselves of his services. His operations were confined mainly to the county Donegal, where 22 persons were supplied with stocks of bees, or appliances to assist them either to commence bee-keeping or to improve the system they had previously adopted. The stocks and appliances were sold either for cash or upon definite terms as to repayment. The result of the season's work was most satisfactory: all the stocks were in a thriving condition at the end of the season, and large quantities of honey had been obtained. Mr. O'Bryen reports that great interest was taken in the work, and that, in addition to the stocks and appliances supplied by the Board, many persons were induced to purchase bees and appliances on their own account.

Appendix to the Sixty-first Report of the Commissioners of National Education in Ireland, for the Year 1894.
[C.—7891.] . Price 1s. 8d.

This publication contains full details regarding the instruction in agriculture which is given in Ireland. The information is contained partly in the Reports of the Inspectors of Irish National Schools, and partly in the Report, by the Superintendent of the Agricultural Department, on the Model Farms and Agricultural Schools.

On the 31st December 1894 there existed in Ireland 47 of the last-mentioned institutions, three of which were under the exclusive management of the Board, the others being under local management. At the same period there were also 30 school gardens under local management in connection with the Board.

In the Report of the Superintendent of the Agricultural Department it is reported that general progress was made during the year. Detailed information is given of the work of the Albert National Agricultural Institution and the Munster Agricultural and Dairy School, as well as of the following experiments which were carried out during the same period:—(1.) On artificial manures applied to grass; (2.) Experiments to test the feeding and manurial value of linseed cake, cotton-seed cake, and maize in the feeding of sheep upon pasture land; swedish turnips and hay being given to the sheep folded upon the pasture; (3.) Various experiments on the feeding of pigs; (4.) On the spraying of potatoes with copper sulphate as a preventive against potato disease.

Tuberculosis.—Return “showing, in respect of each of the Years ended the 25th day of March 1894 and 1895, the Number of Carcases seized by Medical Officers of Health and Inspectors of Nuisances in England and Wales under Section 116 of the Public Health Act, 1875, and Section 47 of the Public Health (London) Act, 1891, and of the Number of such Carcases condemned by Justices under Sections 117 and 47 of those Acts, distinguishing, as far as practicable, the Number so condemned in consequence of the Animal having suffered from Tuberculosis (in continuation of Parliamentary Paper No. 485, of Session 1893-94).” [434.—Sess. 2.] Price 1½d.

This return, in accordance with the terms of an Order of the House of Commons, shows the number of carcasses seized during the years ended the 25th March 1894 and 1895, by the officers of the local authorities, the number of such carcasses condemned by justices, and the number so condemned in consequence of the animal having suffered from tuberculosis.

The following is a summary of the particulars given in the return:—

Local Authorities.	Number of Carcases seized by Medical Officers of Health and Inspectors of Nuisances.		Number of such Carcases condemned by Justices.		Number of Carcases so condemned in consequence of the Animal having suffered from Tuberculosis.	
	1894.	1895.	1894.	1895.	1894.	1895.
Metropolitan sanitary authorities	3,969	6,155	27	20	6	5
Town councils of county boroughs	3,073	3,376	377	175	78	70
Town councils of other boroughs	120	138	79	83	39	56
Urban district councils (late local boards)	88	139	36	32	8	15
Rural district councils (late rural sanitary authorities)	10	15	7	8	1	1
Total	7,260	9,823	526	318	132	147

It will be seen from the above figures that only a small proportion of the carcasses seized were condemned by justices, but the returns in many cases show that the carcasses were destroyed without being taken before the justices, and that some of the carcasses so destroyed were those of animals that had suffered from tuberculosis.

In addition to the particulars required by the Order of the House, some of the local authorities furnished in their returns further information as to—

1. The number of carcasses which had been voluntarily surrendered by owners, without being seized by the officers, and which were destroyed with the owners' consent.

without being condemned by the justices. Some of these were the carcasses of animals which were found to have suffered from tuberculosis.

2. The number of pieces of meat, not being whole carcasses, which had been seized and condemned, some of which were tuberculous.

The information furnished by the local authorities in explanation of, or in addition to, their returns has been tabulated in this publication.

Distress from Want of Employment: Third Report from the Select Committee, together with the Proceedings of the Committee, Minutes of Evidence, Appendix, and Index. [365.] Price 8s. 10½d.

This volume contains the evidence given before the Committee between 15th March and 25th June 1895, which includes the references made by certain of the witnesses, *inter alia*, to agricultural employment as affected by the severe weather and by the general depression of agriculture, to migration of agricultural labourers to the towns, to suggestions for improved methods of cultivation and for the retention of labour on the land, to the wages and social condition of labourers, and to farm colonies.

Local Taxation Returns (Ireland). Returns of Local Taxation in Ireland for the Year 1894. Collected and compiled under the direction of the Local Government Board by desire of His Excellency the Lord Lieutenant of Ireland. [C.—7795.] Price 6d.

It is stated in this publication that the local taxation of Ireland, after making the deductions necessary on account of sums which appear twice in the receipts of local authorities, consequent on the fact that contributions are sometimes made from the receipts of one local authority towards the expenditure of another, may be set down for the year 1894 at 3,749,422*l.*, being an increase of 44,988*l.*, or 1·2 per cent. on the amount in the previous year.

Information is also given in the report regarding dog licences, burial boards, poor rates, drainage, &c.

Allotment Acts. (Acquisition of Land by Local Authorities.) [438.—Sess. 2.]

A return prepared by the Local Government Board showing that 83 rural sanitary authorities had acquired land for allotments under the Allotments Act, 1887, prior to the 28th December 1894, the date from which these authorities ceased to exist under the provisions of the Local Government Act, 1894.

The land was acquired (a) in one parish by compulsory purchase; (b) in 18 parishes by purchase by agreement; (c) in 132 parishes, by hire by agreement: the total acreage amounting to 1,836 acres 1 rood 34 poles. The total number of tenants to whom allotments had been let under the Act was 4,711.

The return also shows that 12 County Councils had acquired land for allotments under the Allotments Acts, 1887 and 1890, (a) in one parish by compulsory purchase; (b) in five parishes by purchase by agreement; (c) in 26 parishes by hire by agreement. The total acreage so acquired was 413 acres 1 rood 5 poles, and the total number of tenants to whom allotments had been let by the County Councils was 825. The county councils had delegated their powers as regards the land acquired by them in three parishes to the rural sanitary authorities.

The total acreage of the land acquired by the rural sanitary authorities and the County Councils under the provisions of the Acts was thus 2,249 acres 2 roods 39 poles, at the date of the return (27th August 1895), and the total number of tenants to whom the land was let was 5,536.

Small Holdings Act, 1892.

Return "showing for each County (a) the Number and Date of the Petitions (if any) presented under Section 5 of the Act, with a Copy of the Resolutions of the County Council thereon; (b) the Amount of Land (if any) acquired under Section 3 of the Act, with the Parish or Parishes in which the same is situate; (c) the Number of Small Holdings provided, with the Acreage of each Holding and the Terms of Sale or Letting, as the case may be." [407.—Sess. 2.] Price 3d.

This return, prepared by the Board of Agriculture from information supplied by local authorities, has, for convenience of tabulation, been divided into three parts:—Part I.: The counties in which land has been acquired for the purposes of the Small Holdings Act, 1892, with particulars as to the land

acquired and as to its division into small holdings. Part II.: The counties in which petitions have been presented, but no land has yet been acquired. Part III.: The counties in which no petitions have been presented.

The total acreage acquired by County Councils is shown to have been 483a. 0r. 28p., distributed as under:—

County.	Parish.	Area.		
ENGLAND :				
Cambridge - - -	Comberton - - -	A.	R.	P.
Devon - - - - -	Tavistock - - -	31	2	23
Lincoln (Holland) - - -	Spalding - - -	4	1	39
" - - - - -	Freiston and Butterwick - - -	88	0	21
London - - - - -	Lewisham - - -	47	1	24
" - - - - -	Charlton - - -	10	2	33 ¹ / ₂
" - - - - -	Plumstead - - -	1	3	3
Sussex, West - - -	Storrington - - -	10	0	3 ¹ / ₂
Warwick - - - - -	Farnborough - - -	41	2	10
Worcester - - - - -	Bromsgrove - - -	17	0	0
		147	0	22
SCOTLAND :				
Ross and Cromarty - - -	Kiltearn - - -	83	1	9

In 27 counties in England and Wales, and in 14 counties in Scotland, petitions were presented, but no land has yet been acquired by the Councils, for reasons explained in detail in the return by the County Councils concerned. In 27 counties in England and Wales, and in 18 counties in Scotland, no petitions have been presented.

Three of the County Councils in England, viz., Cambridge, Lincoln (Holland), and London, have distributed the land acquired under Part I. of the Act into small holdings ranging from 1 to 3 acres in extent; but 14 acres 29 poles of the 88 acres 21 poles at Spalding are let, together with a farmhouse, at a rental of 40l. per annum. The area acquired at Bromsgrove, in Worcester, is divided into 32 holdings of from 3 to 7 acres each, while the land at Storrington, in West Sussex, is divided into four holdings of 5½ to 13 acres in extent. The four acres situated in the parish of Tavistock represent a single holding, and the 17 acres acquired by the Warwick County Council are let to a committee of seven of the applicants. The land acquired by the County Council of Ross and Cromarty is divided into 25 holdings, ranging from 1 to 6 acres in area.

Twenty of the holdings in Comberton are let at rents ranging from 29s. 6d. to 46s. per acre; the holdings in Spalding are let at 40s. to 42s. per acre, and those in Freiston and Butterwick at 45s. to 60s. per acre. In Comberton, 10 lots were sold at 35l. per lot on the average, payable in half-yearly instalments.

In addition to the foregoing, 2 acres of land and a house in the parish of Nailsea, Somerset, were purchased by an applicant

under Part II. of the Act, the purchaser borrowing 150l. out of 200l. purchase-money from the County Council, repayable by instalments of 2l. 18s. 1d. over 50 years.

LAND REGISTRY OFFICE.

Returns of the work done in the Land Registry under the Land Transfer Act, 1875 (Lord Cairns' Act); the Land Registry Act, 1862 (Lord Westbury's Act); the Acts of 1875 and 1862; the Mortgage Debenture Acts, 1865 and 1870, and the Improvement of Land Act, 1864; the Land Charges Registration and Searches Act, 1888; the Middlesex Registry Act, 1708, and the Land Registry (Middlesex Deeds) Act, 1891; and, a Return, in continuation of the Return No. 334, of the Year 1882, showing the amount of Fees received each Year, and the Amount of Salaries and Expenses each Year, in the Land Registry, from the 1st day of April 1881 to the 31st day of March 1895. [H.C.—463.] Sess. 2. Price 1d.

This publication shows that under the Land Transfer Act of 1875, in the period 1876–1894, there were registered 299 estates of 2,953,494l. in value, and of 61,595 acres. The period in question being divided into three terms of six years each, the number of registries in those terms was respectively 71, 51, and 177. Under the Land Registry Act of 1862, 411 estates, the titles to which were registered on first registration, amounted in area to 49,117 acres, and were valued at 5,346,473l. The total number of separate titles on the register under both the Acts of 1875 and 1862 on the 31st March 1894 were 4,236 in number, of about 14,000,000l. in value, and 109,027 acres in area.

It is explained that the present value of estates is somewhat difficult to ascertain with certainty, but the above sum has been arrived at after a careful consideration of the latest recorded dealings with every estate on the register.

Weights and Measures. A Report by the Board of Trade on their proceedings and business under the Weights and Measures Acts, 1878 and 1879 (41 & 42 Vict. c. 49, and 52 & 53 Vict. c. 21). [432.—Sess. 2.]

This report relates to the period between 2nd August 1894 and 14th August 1895, and is made by the Board of Trade in pursuance of section 33 of the Weights and Measures Act, 1878 (41 & 42 Vict. c. 49).

Among the information contained in this publication, which is mostly of a technical character, it is stated that the decision of the Standards Department has been asked by two official authorities on the question as to what was the true capacity of a *tun* of water on the 3rd June 1824. A local authority agreed for a consideration to supply certain ships with 400 tuns of water each day, and as on 3rd June 1824 there were in use three different gallon measures on which the tun might be based it became doubtful as to how many imperial gallons of the present day the local authority were bound to deliver.

The three different gallon measures in use were:—

	Cubic inches.
A Winchester corn gallon - - -	= 272½
A wine gallon - - -	= 231
An ale gallon - - -	= 282

Three such separate gallon measures had been in use from ancient times (two of them probably from 1225) until 1824, when by the passing of the Weights and Measures Act, 5 Geo. 4. c. 74 (17th June 1824), the present imperial gallon containing 277·274 cubic inches was introduced, and the use of the three ancient gallon measures was made illegal. The new imperial gallon did not, however, come into legal use until 1st May 1852, and, therefore, no contracts by it could have been compulsory in June 1824.

The gallon measure referred to in the expression “tun” appears to have been the wine gallon, as the tun since 1423 (Act 2 Hen. 6) had been declared to contain 252 wine gallons, and the use of such “tun” became general for shipping and customs purposes. The expression *tun* appears to have been derived from the old French shipping term *tonne*, and was often found to be used in place of the *ton* or weight of 2,240 pounds. Thus a tun of timber was a measure of 40 solid feet cut to the square (Act 12 Charles 2. c. 14); a tun of coals was 20 cwt. (Act 9 & 10 Will. 3. c. 13); a tun of oil (Trinity House measurement) was 252 gallons. The tun of ale contained 216 gallons, and it appears to have been a customary measure confined to the measurement of ale and beer, and not to have been legalised in the same manner as the wine gallon, or to have been used for shipping or navigation purposes.

No reference appears to be made in any statutes or official reports as to the capacity or weight of a tun of water, and it can only be assumed that the tun of water referred to was the tun generally used for shipping, customs, and navigation purposes.

The contract on 3rd June 1824 would, therefore, have been by the tun of 252 wine gallons. As each wine gallon contained 8·33 avoirdupois pounds, as compared with 10 pounds contained in the present imperial gallon, it would appear to follow that the contract to deliver daily 400 tuns of water would be fulfilled by the delivery of 210 imperial gallons to the tun, or 209·916 gallons, equivalent to 252 of the old wine gallons in use

on 3rd June 1824. By the use of the present imperial ton of 224 gallons, or of 2,240 pounds weight, any uncertainty as to the capacity of a “tun” would, of course, be avoided.

Board of Agriculture.—Annual Reports of Proceedings under the Contagious Diseases, (Animals) Acts, Markets and Fairs (Weighing of Cattle) Acts, &c., for the Year 1894. [C.—7685.] Price 1s. 4d.

The first part of this volume consists of a report by Mr. A. C. Cope, the Chief Veterinary Officer of the Board, upon the various contagious diseases which affected animals in Great Britain in 1894. It is stated that after struggling for years in a combat against the various contagious diseases which at one time caused incalculable losses to agriculturists and stock-owners, it is some satisfaction to be able to report that at no previous period have the live stock of this country been so free from these specific affections as at present. Several pages of the report of the Chief Veterinary Officer are devoted to an account of the investigations made at the Board's Laboratory into the pathology of swine fever, and coloured illustrations are given of the morbid appearances observed in the intestines of pigs affected with this disease.

In the second section of the volume Major J. T. Tennant, the Principal of the Animals Division, reports on matter dealt with by the executive staff of the division. During 1894 the duties performed were, as in former years, of a varied character, including the enforcement of the regulations enacted for the protection of animals from unnecessary injury or suffering when in transit either by sea or by land, the execution of certain administrative duties imposed on the Board in connection with contagious and infectious diseases of animals, and the administration of the Markets and Fairs (Weighing of Cattle) Acts. Diagrams are attached to the report showing the number of outbreaks of swine fever and rabies reported in Great Britain in 1894.

The remainder of the publication is devoted to an account of the diseases of animals in foreign countries and to a series of statistical tables showing the outbreaks of contagious diseases of animals in Great Britain, and the trade in animals of the United Kingdom and of foreign countries.

IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE IN THE YEARS 1894 AND 1895.

IMPORTS AND EXPORTS OF LIVE ANIMALS.

The imports of live stock into the United Kingdom during 1895 show that rather fewer cattle, but more than twice as many sheep, as in 1894 were received. The weekly returns furnished by the Board of Customs to the Board of Agriculture indicate the cattle imports to have been significant only in the case of three exporting countries and the sheep in the case of four countries. The complete list of the sources whence our supplies came is given below :—

Countries from which exported.	Cattle.		Sheep.	
	52 Weeks ended December 29, 1894.	52 Weeks ended December 28, 1895.	52 Weeks ended December 29, 1894.	52 Weeks ended December 28, 1895.
	No.	No.	No.	No.
Channel Islands - - -	1,603	1,695	—	—
Iceland - - - - -	—	—	65,524	64,991
Norway - - - - -	3	120	10,837	20,650
Argentina - - - -	9,546	38,763	73,442	306,262
Australia :—				
New South Wales - -	36	1,407	42	803
Queensland - - - -	—	252	—	—
South Australia - -	—	—	—	210
Canada - - - - -	82,326	95,561	136,692	214,891
Chili - - - - -	—	—	—	85
New Zealand - - -	—	—	—	1,812
United States - - -	381,241	273,992	193,837	445,689
Uruguay - - - - -	—	57	—	624
Total - - - - -	474,755	411,847	480,374	1,056,017

Two-thirds of the cattle came from the United States, but the arrivals from that quarter show a falling off since 1894 of over 100,000 head, or 28 per cent., while the Canadian cattle landed alive were more numerous by 16 per cent., and those from Argentina were fourfold what they were in 1894, when the landing of as many as 9,500 head was noted as the largest importation ever recorded from the River Plate.

It will be seen that "trial" shipments, on a much larger scale than in the previous season, were continued from New South Wales, and a commencement was made by Queensland.

The large imports of sheep in 1895 carry back the total receipts of this class of stock to the numbers we were receiving in 1886 and some earlier years. They are nearly 17 times greater than those of 1893, when only 62,682 head were landed. The live sheep trade now, however, consists almost wholly of trans-atlantic shipments. As in the case of cattle, the quota sent from Argentina in 1894 was more than quadrupled last year. The arrivals from the United States exceeded those of the previous year by 130 per cent., and Canadian sheep also increased by 57 per cent., although the imports from the three last-named countries in 1894 were already the heaviest on record.

The exports of cattle of British and Irish origin during 1895 were less than the exports of 1894, while those of sheep and swine were greater, the figures being as follows :—

Description.	Numbers.		Values.	
	1894.	1895.	1894.	1895.
	No.	No.	£	£
Bulls, oxen, cows, and calves -	8,281	7,534	135,317	125,552
Sheep and lambs - - - -	4,737	6,965	39,593	55,490
Swine - - - - -	1,368	3,072	7,921	13,981

IMPORTS OF DEAD MEAT.

Larger imports of fresh beef, mutton, and pork than have ever before been recorded were received in 1895, and this occurred although the fresh beef sent from the United States was rather less than in the preceding year, the excess from other countries more than counterbalancing this decline. As usual, by far the largest quantity of fresh mutton comes from Australasia, but there is also a noteworthy augmentation from Argentina. An increase in the relatively insignificant item of fresh pork is more than accounted for by the increased shipments from Holland, whence six-sevenths of these imports came :—

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
Beef - - - - -	2,104,104	2,190,567	4,213,688	4,275,548
Mutton - - - - -	2,295,066	2,610,375	4,341,227	4,593,066
Pork - - - - -	180,383	288,557	436,546	665,223
Rabbits - - - - -	108,476	120,279	297,818	315,585
Total - - - - -	4,688,029	5,209,778	9,289,279	9,849,422

With the increasing imports of live animals and fresh meat, the trade in salt beef and pork exhibited a tendency to decline, and in both these items there was a falling off from the figures of 1894, though they exceeded the quantities imported in 1893. The fall in the value of these articles was also out of proportion to the fall in quantities, thus further accentuating the diminished demand. Both bacon and ham, on the other hand, came in larger quantities, especially the former, although its amount represented a slightly smaller value. The United States, our chief source of supply, sent comparatively little more bacon in 1895 than in 1894, the increase being greatest from Denmark. Practically all the hams were from the United States.

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
Salted beef - - -	242,311	219,956	342,814	286,511
" pork (not hams) - -	225,019	220,168	335,556	269,829
Bacon - - -	3,689,604	4,063,418	8,083,887	7,935,799
Hams - - -	1,129,784	1,289,518	2,771,828	2,897,477
Meat, preserved otherwise than by salting (chiefly canned).	554,366	856,255	1,490,902	2,040,045
Meat, unenumerated, salted or fresh.	189,757	237,228	410,724	490,555
Total - - -	6,030,841	6,886,543	13,435,711	13,920,216

IMPORTS OF DAIRY PRODUCE AND LARD.

Of the imports of dairy produce, as exhibited in the following table, the quantities of butter, condensed milk, lard, and eggs, have proved the largest yet recorded. The fresh milk imports which attracted attention in 1894 and in the early part of 1895, fell off rapidly in the later months:—

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
Butter - - -	2,574,835	2,825,682	13,456,699	14,245,230
Margarine - - -	1,109,325	940,168	3,044,810	2,577,170
Cheese - - -	2,266,145	2,133,809	5,471,940	4,674,181
Lard - - -	1,400,516	1,712,688	2,758,416	2,941,941
Condensed milk - - -	529,465	515,400	1,079,235	1,084,559
	Gallons.	Gallons.		
Fresh milk and cream - - -	161,633	126,995	21,371	19,991

The interest attaching to the imports of butter and cheese invites attention to the sources of supply of these articles.

Butter.

From the next table, exhibiting the sources of supply, it will be seen that nearly all countries, except Germany, sent more butter to this country in 1895 than in 1894. The increased Australasian shipments were mostly from Victoria, whence the largest consignments arrive during the winter months; the imports from Victoria alone in the three months December (1894), January, and February, exceeding the receipts from France during the same period. The increase in "other countries" is due principally to the United States and Canada, while among them is now included Argentina, whence we in 1895 obtained 3,676 cwts., most of it in the last three months.

The average value per cwt. of the butter imported from all sources in 1895 was 5*l.* 0*s.* 9*d.*, or 3*s.* 9*d.* less than in 1894, and about 9*s.* below the average of 1892 and 1893 respectively.

Countries.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
From Denmark - - -	1,102,493	1,162,770	5,843,954	5,948,463
" France - - -	424,645	454,843	2,351,867	2,444,734
" Australasia - - -	292,037	313,398	1,429,977	1,424,585
" Sweden - - -	266,306	310,809	1,413,779	1,644,111
" Holland - - -	165,157	191,221	831,951	939,326
" Germany - - -	137,755	112,838	702,960	565,093
" Other countries - -	186,382	280,303	882,211	1,278,918
Total - - -	2,574,835	2,825,682	13,456,699	14,245,230

Margarine.

Almost the whole of the imports of margarine came as usual from Holland. The total again showed a marked decline, occurring mostly during the first half of the year. The value per cwt., as deduced from the trade returns, only shows a very slight falling off from the values of the preceding year.

Cheese.

As will be seen from the table below, there was a slight decline in the imports of this commodity, entirely attributable to the decrease of 25 per cent. in the shipments from the United States; Canada again showing a small increase. The imports from the United States were comparatively small during the summer months, at the time when they are usually heaviest. Despite the smaller importation of foreign cheese, the year was marked by a considerable drop in the price of ordinary cheese in Great Britain, and there was also some fall in the prices of better qualities. This has caused the total value of the imports of

cheese from both the United States and Canada to be much below the figures for 1894. The declared value per cwt. of the consignments from the Continent, which consist mainly of fancy cheese, fell comparatively little.

Countries.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
From United States -	672,347	500,409	1,608,405	1,099,284
„ Canada -	1,112,104	1,150,018	2,688,946	2,334,598
„ Holland -	298,693	305,920	760,835	774,790
„ Other countries -	153,001	177,462	416,754	465,509
Total -	2,266,145	2,133,809	5,474,940	4,674,181

IMPORTS OF EGGS.

The increase in the imports of eggs in 1895 must be mainly credited to Russia, the northern ports of that country sending 62 per cent. more than in 1894. The quantities from France, which fell off so remarkably in 1894, were somewhat larger in 1895 than in that year, but were still below the shipments in 1893 by over a million great hundreds. Belgian exports decreased, being last year less than those of France; the shipments from Germany were slightly larger. Of the "other countries," Canada and Morocco, although not of great importance, are yet interesting countries of export on account of the rapid development they exhibit; the former sending 436,903 great hundreds (most of it in the later months) against 254,595 in 1894, and Morocco 58,470 against 21,683 great hundreds.

Countries.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Great Hundreds.	Great Hundreds.	£	£
From Germany -	3,361,188	3,406,584	937,087	916,821
„ Belgium -	2,954,843	2,361,680	885,136	713,458
„ France -	2,440,559	2,730,332	982,800	1,069,580
„ Russia (North) -	1,367,559	2,215,180	981,306	1,303,581
„ Other countries -	1,752,819	2,008,516		
Total -	11,876,968	12,722,292	3,786,329	4,003,440

IMPORTS AND EXPORTS OF HORSES.

Both imports and exports of horses show, as they did in 1894, a considerable increase over the figures for the previous year.

As regards imports, all the more important countries (except Germany) from which these animals are sent supplied greater numbers in 1895 than in the previous year. The increase, however, was almost entirely due to the United States and Canada, the totals for these two countries together (stallions, mares, and geldings) being 3,134, 10,267, and 23,259 in 1893, 1894, and 1895 respectively.

Horses.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	No.	No.	£	£
Stallions -	764	824	30,778	75,137
Mares -	5,152	10,331	125,758	269,375
Geldings -	16,950	22,994	391,522	578,303
Total -	22,866	34,149	548,058	922,815

The increase in the exports of horses, which are shown in the following table, was mainly to Belgium. The value of these animals is, however, very variable, and the 2,982 geldings exported to France were worth more than the 8,777 shipped to Belgium. The average value of all the stallions exported was considerably below that of 1894, being a little under 110*l.* per head as against nearly 210*l.* in 1894:—

Description.	Numbers.		Values.	
	1894.	1895.	1894.	1895.
	No.	No.	£	£
Stallions -	259	590	54,269	64,714
Mares -	2,891	3,610	147,790	153,023
Geldings -	13,307	17,237	247,745	331,043
Total -	16,457	21,437	449,804	548,780

IMPORTS OF HAY AND STRAW IN 1895.

Imports of hay, which have attained importance in recent years only, depend very much upon the British crop. These imports were very large in 1893-4, consequent upon the drought of the earlier year. In 1895 there is a marked decline, although the figures for the last four months show an advance upon those for 1894, probably as a result of the dry weather of 1895 in England. The good English crop of 1894 was accompanied by a much poorer one in the United States, and to this may be due the fact that the decline in the total imports from all countries

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in 1895 was equalled by the decrease in the shipments from North America alone. The imports from Russia have almost ceased during the past year, but countries nearer our shores (Germany, Holland, Belgium, France) have sent larger quantities.

Countries whence exported.	Hay.		Straw.	
	1894.	1895.	1894.	1895.
	Tons.	Tons.	Tons.	Tons.
Algeria - - - -	3,951	7,090	—	—
Argentine Republic - - -	805	1,678	27	306
Belgium - - - -	3,887	6,236	1,687	604
Canada - - - -	28,711	16,899	30	—
Cape of Good Hope - - -	1	—	—	—
Channel Islands - - - -	—	—	2	—
Chili - - - -	4,070	217	—	—
Denmark - - - -	5,042	2,668	2,922	1,886
Egypt - - - -	—	—	8	—
France - - - -	6,206	16,379	11,605	30,460
Germany - - - -	1,929	5,198	6,088	1,384
Greece - - - -	25	—	—	—
Holland - - - -	13,540	24,267	22,612	6,125
Italy - - - -	125	—	—	133
Newfoundland - - - -	23	6	—	—
New South Wales - - - -	—	13	—	—
New Zealand - - - -	22	1	—	—
Norway - - - -	2,969	1,601	348	11
Russia, North - - - -	27,825	298	913	—
„ South - - - -	997	—	511	7
Spain - - - -	364	—	—	—
Sweden - - - -	—	31	11	—
Tripoli - - - -	3	—	—	—
Tunis - - - -	275	—	—	—
Turkey, European - - -	476	—	—	—
„ Asiatic - - - -	542	25	—	—
United States - - - -	152,423	36,176	466	16
Uruguay - - - -	—	2	—	—
Victoria - - - -	3	10	—	—
Total - - - -	254,214	118,795	47,233	41,532

The connection between the imports and the hay crop in this country may be best shown by a comparison of the imports during the twelve months ending June of each year, as in the following table:—

Years.	Six Months, July to December.	Six Months, January to June.	Twelve Months, July to June.
	Tons.	Tons.	Tons.
1892-3 - - - -	35,191	62,738	97,929
1893-4 - - - -	200,312	184,735	385,047
1894-5 - - - -	69,479	43,070	112,549
1895-6 - - - -	75,725	—	—

Imports of straw were slightly less than in 1894, but whereas in the former year Holland sent nearly half the total and France

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but a quarter, the latter country in 1895 shipped three-quarters of the total to our shores.

IMPORTS OF GRAIN.

The quantity of wheat was the largest ever imported into the United Kingdom, and showed an increase of 17 per cent. over the imports of 1894. In value the total was 20 per cent. higher, prices being rather better than in the preceding year. On the other hand, imports of flour were smaller. Practically all the increase in the grain took place during the first eight months of the year.

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
Wheat - - - -	70,126,232	81,749,955	18,760,505	22,526,171
Wheat meal and flour -	19,134,605	18,368,410	7,994,673	7,679,017
Barley - - - -	31,241,384	23,618,837	7,090,579	5,538,405
Oats - - - -	14,979,214	15,528,310	3,900,096	3,723,415
Peas - - - -	2,272,623	2,422,851	647,194	693,828
Beans - - - -	5,259,895	4,130,538	1,346,096	1,079,780
Maize - - - -	35,365,043	33,944,350	7,952,238	7,808,870
Other kinds of corn and meal.	—	—	528,844	668,766
Total - - - -	—	—	48,220,225	49,718,252

The sources of the wheat imports are shown below. Some 6½ million cwts. more than in 1894 were received from Russia. The remarkable imports from Argentina noticed in 1894 declined somewhat in 1895. Those from British East Indies, which were small in 1894, increased by nearly 65 per cent. The United States sent more wheat but less flour.

Wheat and Wheat Flour.

Countries.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
Wheat:—				
From United States -	24,658,245	27,084,120	6,854,594	7,760,967
„ Russia -	16,775,881	23,017,035	4,284,862	6,043,929
„ Argentina -	13,272,152	11,400,360	3,400,954	3,142,378
„ British East Indies.	5,349,056	8,802,950	1,429,433	2,342,132
„ other countries	10,070,898	11,445,490	2,790,662	3,236,765
Wheat meal and flour:—				
From United States -	15,925,486	13,131,850	6,530,249	5,384,658
„ Austrian Territory.	1,106,971	1,305,760	667,880	706,818
„ other countries	2,102,148	3,930,800	796,544	1,587,541

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The monthly trade returns exhibit some very remarkable changes in the source of our maize supply during the past year. The imports from Roumania, which country in 1894 sent more than any other (14,000,000 cwts.), would appear to have been almost insignificant in comparison during 1895. The United States sent 15,438,000 cwts. last year, as against 9,571,000 in 1894, while the Argentine Republic apparently takes second place; the imports from this country during the last six months being 7,163,000 cwts., against a total importation in 1894 of 334,000 cwts., and 232,000 in 1893.

IMPORTS OF FRUITS, VEGETABLES, AND HOPS.

The imports of fruit, especially pears, were much below those of 1894, the only kinds showing an increase being oranges and grapes. The fall in values was, as will be seen, very marked in fruits that compete with native produce. Imports of onions were higher in 1895 than in any earlier year, while potatoes also show an increase notwithstanding the large crop in this country.

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
Fruit:—	Bushels.	Bushels.	£	£
Apples - - -	4,968,669	3,292,562	1,389,421	960,273
Oranges - - -	6,594,101	7,698,739	1,828,912	2,111,090
Lemons - - -	1,288,893	1,165,590	377,305	365,820
Cherries - - -	311,215	195,627	166,899	96,043
Plums - - -	777,411	401,080	302,105	166,045
Pears - - -	1,310,074	407,146	411,316	166,706
Grapes - - -	832,893	865,285	470,428	486,978
Unenumerated - -	1,300,518	1,251,291	563,859	513,870
Total - - -	—	—	5,510,245	4,865,825
Vegetables:—				
Onions - - -	5,288,512	5,734,768	765,040	696,428
Potatoes - - -	2,708,803	3,758,161	1,030,091	1,170,302
Unenumerated - -	—	—	1,090,370	1,277,058
Total - - -	—	—	2,885,501	3,143,788
Hops - - -	189,155	217,161	774,378	644,505

The imports of hops were rather more than in 1894. The exports of British hops amounted to 10,203 cwts. in 1895 as compared with 13,317 cwts. in the previous year. The declared value both of imports and exports shows a considerable fall.

IMPORTS OF FLAX, HEMP, JUTE, AND SEEDS.

The quantities of flax, hemp, and jute imported were all larger than in 1894, but the jute shows a considerable decline in value.

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Tons.	Tons.	£	£
Flax - - -	71,701	102,758	2,525,195	3,270,851
Hemp - - -	83,541	97,937	1,897,943	2,086,425
Jute - - -	338,884	392,025	4,622,137	4,358,036
Total - - -	494,126	592,720	9,045,275	9,715,312
	Cwts.	Cwts.		
Seeds:—				
Clover and grass - -	345,118	402,020	825,155	855,642
Flax and linseed - -	2,087,969	1,961,637	3,941,995	3,352,810
Rape - - -	299,046	325,388	319,189	307,348
Total - - -	—	—	5,086,339	4,515,800

IMPORTS OF HIDES, WOOD, AND TIMBER.

Hides were again imported in larger quantities than in the preceding year, and at a slightly enhanced value. Imports of wood and timber, on the other hand, declined, but were still above the quantities imported in 1893.

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Cwts.	Cwts.	£	£
Hides, raw, and piecesthereof:—				
Dry - - -	419,205	491,642	988,912	1,153,941
Wet - - -	608,584	771,136	1,242,168	1,651,756
Total - - -	1,027,789	1,262,778	2,231,080	2,805,697
	Loads.	Loads.		
Wood and Timber:—				
Hewn - - -	2,338,062	2,278,548	4,187,763	4,201,370
Sawn or split, planed or dressed	5,446,487	5,065,798	11,899,533	10,716,249
Staves of all dimensions	182,145	144,751	541,797	594,605
Total - - -	7,916,694	7,489,097	16,629,093	15,512,224

IMPORTS AND EXPORTS OF WOOL.

The quantities of sheep and lambs' wool received in this country in 1895 have proved the heaviest ever recorded, exceeding by 70,000,000 lbs. the imports of 1894; nearly all of the excess was re-exported. The value per lb. of colonial and foreign

sheep and lambs' wool, as deduced from the declarations to the Customs, stands at little over 8*d.*, or slightly below the level of 1894, when it was 8½*d.* per lb. Low prices prevailed during the earlier part of the year, in which the larger share of the imports reach our ports. The imports during the last half year were nearly ½*d.* per lb. dearer than those received during the first half.

Of other kinds of wool, alpaca (including vicuña and llama), while less in quantity, showed a considerable increase in value. Imports of goats' wool or hair showed a rise in quantity of 34 per cent., while their value augmented by 65 per cent., their enhanced value being due to the special demand which arose last summer for alpaca and lustre wools.

The imports of sheep and lambs' wool are shown below:—

Wool, Sheep and Lambs'.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	lbs.	lbs.	£	£
From Australasia -	502,002,490	541,394,383	18,040,107	18,204,871
From British Possessions in South Africa.	70,585,593	75,334,080	2,743,552	2,916,931
From British East Indies.	41,156,812	38,993,242	1,136,240	1,038,648
From Other countries -	86,805,367	115,239,655	2,871,261	3,871,100
Total - - -	700,550,262	770,961,360	24,791,160	26,031,559

Exports, both of home and foreign wools, show a great increase, practically the whole of the excess having been shipped to the United States. The exports of British wool to the States, our principal customer, were 134 per cent. more than in 1894, while their value was almost 200 per cent. more. The figures of the re-exports and exports of native wools during the two past years may be shown as under:—

Wool, Sheep and Lambs'.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	lbs.	lbs.	£	£
To United States:				
Home - - -	5,898,000	13,823,400	162,761	485,605
Foreign - - -	53,003,894	125,226,620	1,641,168	4,132,619
„ Other countries:				
Home - - -	7,086,900	7,893,900	328,253	874,348
Foreign - - -	291,945,567	278,951,313	11,833,880	11,004,617
Total - { Home -	12,984,900	21,717,300	491,014	859,953
Foreign -	344,949,461	404,177,933	13,475,048	15,137,236

IMPORTS OF MANURES.

Imports of manures were below those of 1894, except in the case of guano, the imports of which, at an enhanced value, were not far from double those of 1894, in which year there had already been a great advance over the figures for 1893.

Description.	Quantities.		Values.	
	1894.	1895.	1894.	1895.
	Tons.	Tons.	£	£
Bones, whether burnt or not -	88,664	74,056	412,529	320,054
Guano - - - - -	28,582	49,849	146,361	392,395
Nitrate of Soda (Nitre, Cubic) -	125,300	122,687	1,166,800	998,897
Phosphate of Lime and Rock -	380,269	359,659	723,205	634,214
Total - - - - -	622,815	606,251	2,418,895	2,345,560

STATEMENT showing the NUMBER of CATTLE, SHEEP, SWINE, and HORSES imported into GREAT BRITAIN from IRELAND during the Years 1895, 1894, and 1893.

Animals.	1895.	1894.	1893.
	No.	No.	No.
Cattle - - - - -	791,607	826,954	688,669
Sheep - - - - -	652,578	957,101	1,107,960
Swine - - - - -	547,220	584,967	456,571
Horses - - - - -	34,560	33,589	30,390

PRICES OF LIVE STOCK AS RETURNED UNDER THE WEIGHING OF CATTLE ACTS.

Returns of prices are now available for three complete years under the Markets and Fairs (Weighing of Cattle) Act, 1891. These statements show the number of animals entering the markets or auction marts of the 19 places scheduled by the Statute, together with the number whereof the live weights were ascertained, and the current prices per live stone or live cwt. calculated. The three years' statistics make the total number of cattle, sheep, and swine reported to the Board as entering, as weighed, and as priced, respectively, within the scheduled places as under :—

Animals.	1895.	1894.	1893.
CATTLE :	No.	No.	No.
Entering markets - - -	1,186,149	1,203,533	1,219,208
Weighed - - - - -	100,033	96,344	92,492
Prices returned - - -	88,403	84,593	84,403
Prices returned with breed and quality distinguished.	64,072	58,559	57,323
SHEEP :			
Entering markets - - -	4,330,256	4,649,277	4,854,732
Weighed - - - - -	34,886	39,210	38,177
Prices returned with breed and quality distinguished.	23,577	26,072	28,180
SWINE :			
Entering markets - - -	233,189	139,187	191,376
Weighed - - - - -	2,803	2,498	1,450
Prices returned - - -	1,226	523	401
Prices returned with breed and quality distinguished.	17	56	6

The table shows the slow, but nevertheless distinct growth of the practice of weighing cattle in British markets. Over 100,000 head of cattle were weighed in 1895, against 92,000 in 1893, although the total number of cattle shown was less in the later year. Taking the country as a whole, the proportion remains, however, remarkably small, not quite $8\frac{1}{2}$ per cent. passing over the weighbridge. Of this quota, however, the local prices were last year supplied in 64,000 cases in such form as to provide the basis for a record of transactions which may be expected to year by year become of increasing comparative value.

As previously pointed out, the weighbridge is far more largely resorted to in the cattle trade of Scotland than in that of England, where the producers have shown themselves less anxious than the northern farmers to make use of the facilities

the law has placed at their disposal for marketing their stock with a minimum of loss. The five Scotch scheduled towns of Aberdeen, Dundee, Edinburgh, Glasgow, and Perth, account for nearly three-fourths of the cattle weighed in Great Britain. The cattle reported as weighed in Scotland exceeds 26 per cent. of the whole number shown, whereas the English average is hardly over three animals in every 100.

Showing the totals quarter by quarter for 1895, the difference between the practice of the two countries is apparent.

Year 1895.	England.		Scotland.	
	Entering Markets.	Weighed.	Entering Markets.	Weighed.
1st Quarter - - -	210,777	6,237	60,871	18,534
2nd Quarter - - -	224,010	6,176	74,030	19,887
3rd Quarter - - -	210,373	6,401	60,458	15,919
4th Quarter - - -	266,492	8,746	79,138	18,133
Total - - - - -	911,652	27,560	274,497	72,473

Some decline is visible in the English returns for the last quarter of the year as compared with the same quarter of 1894. In London, especially, which supplies more than one half of the number weighed, the reduction is partly but not wholly due to the smaller number of cattle shown in the metropolitan market in the last quarter of 1895. The Scotch returns for this quarter are, on the other hand, greater, a result that must be largely credited to the more satisfactory reports now received from the market of Glasgow, which were originally very defective.

So far as regards other animals than cattle, the falling off in the sheep stock of the country is, incidentally, apparent from the reduction of more than half-a-million in the numbers shown at the scheduled markets between 1893 and 1895. Less than two per cent. of the sheep shown in Scotland are returned as weighed, and less than a half of one per cent. in England. More sheep in the aggregate are weighed in London than elsewhere, but even there the per-centage does not reach $1\frac{1}{2}$ per cent. on the numbers entering the market.

The numbers of swine shown in 1895 were in excess of those accounted for in 1894, but little more than one pig in a hundred appears to have been placed on the weighbridge; and in this case the English weighings are more numerous than the Scotch. The practice of weighing swine seems nearly confined to the markets of Leeds, Newcastle, and Perth.

Reviewing the relative extent of the use of the weighbridge in each of the scheduled towns, as shown in the table on page 490, it is to be noted that in Bristol and Lincoln no single case of cattle being weighed has been reported in 1895,

and the market authorities of Wakefield, though showing a few cases of weighing, stand in the exceptional position of being altogether unable to supply any record of prices. The returns from Ashford, Birmingham, and York also continue very insignificant, while sufficient and comparable returns of transactions for the purpose of establishing the local course of prices can, as in 1894, be only quoted for the four markets of Liverpool, London, Newcastle, and Shrewsbury, and from the Scotch markets of Aberdeen, Dundee, Edinburgh, and Perth. The quotations from Glasgow having only become satisfactory during the last half of 1895 cannot be included in the yearly averages, but they are shown in the detailed tables for the fourth quarter of the year, where they will be found to agree generally with those of neighbouring markets; although, like Edinburgh, Liverpool, and Newcastle, the quotations are practically confined to the two higher grades of quality.

As previously shown, the local classing of the stock sold according to quality displays considerable irregularity of practice, so that the quotations of the extreme range of prices in each grade do not offer information of much comparative value. It is, however, permissible, as on former occasions, to obtain something of the nature of an annual average price for each of the eight above-named markets, by dividing the total price entered under each grade by the total weight. These figures, which exclude all quotations relating to store cattle separately distinguished, furnish at least a more satisfactory basis for the current market value of cattle in Great Britain than are available in other form in this country. For the two past years the averages calculated as explained stand as in the following table:—

Places.	Inferior or Third Quality.		Good or Second Quality.		Prime or First Quality.	
	1895.	1894.	1895.	1894.	1895.	1894.
	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.
ENGLAND:						
Liverpool	—	—	27 10	28 4	33 8	32 4
London	29 6	29 4	34 4	34 0	38 0	38 6
Newcastle	—	—	33 0	34 0	35 4	35 4
Shrewsbury	25 10	24 8	30 6	29 2	33 10	32 0
SCOTLAND:						
Aberdeen	25 3	24 6	32 9	32 3	36 8	36 3
Dundee	27 3	26 2	33 2	31 10	35 3	34 2
Edinburgh	28 7	26 6	34 6	33 4	35 1	34 8
Perth	31 19	30 4	33 5	32 1	35 11	34 4

The rates thus ascertained per live cwt. are in the case of third quality cattle in every instance slightly higher in 1895

than in 1894. Except in Liverpool and Newcastle, medium stock have also sold better in the later year. The rate for prime cattle is above that of 1894, with the exceptions of London (where the quotation was relatively high in 1894), and, perhaps, Newcastle (where the averages come out alike in both years). According to these returns the average value of prime cattle per cwt. of live weight throughout 1895 may be said to have ranged from a minimum of 33s. 8d. at Liverpool, and 33s. 10d. at Shrewsbury to 36s. 8d. at Aberdeen, and 38s. in London; the lowest average quotation, similarly calculated for 1894, having been 32s. at Shrewsbury, and the highest figure—that quoted by London—being 38s. 6d.

For the separate quarters of the past year, the averages quoted for each of the eight markets above referred to stand as shown in the following table:—

	England.				Scotland.			
	Liverpool.	London.	Newcastle.	Shrewsbury.	Aberdeen.	Dundee.	Edinburgh.	Perth.
	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.
First Quarter:—								
Inferior or Third Quality.	—	29 4	—	—	24 8	26 2	—	29 8
Good or Second Quality.	27 8	34 0	32 8	—	31 6	31 8	33 6	32 0
Prime or First Quality.	33 10	37 6	34 2	—	35 6	33 6	34 0	34 10
Second Quarter:—								
Inferior or Third Quality.	—	28 6	—	26 2	25 8	28 11	—	33 9
Good or Second Quality.	28 0	36 0	34 4	31 6	33 1	33 9	36 1	34 7
Prime or First Quality.	34 8	38 4	36 2	34 6	36 9	35 5	36 0	36 2
Third Quarter:—								
Inferior or Third Quality.	—	29 4	—	27 2	26 3	28 2	—	33 8
Good or Second Quality.	28 6	34 6	34 10	30 2	34 7	34 1	36 11	35 5
Prime or First Quality.	34 8	38 0	37 10	35 8	38 0	36 6	36 4	37 1
Fourth Quarter:—								
Inferior or Third Quality.	—	30 2	—	24 6	24 11	26 2	28 7	31 3
Good or Second Quality.	27 6	34 0	31 2	30 10	33 1	33 1	32 11	33 0
Prime or First Quality.	32 8	38 4	34 10	34 4	36 11	35 7	33 5	35 5

TOTAL NUMBER of **Cattle, Sheep, and Swine**, entering the MARKETS and MARTS of the under-mentioned Places in ENGLAND and SCOTLAND, with the Number WEIGHED, as received from the Market Authorities in the Year 1895, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
ENGLAND.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Ashford - -	11,714	173	37	96,078	10	—	23,095	—	—
Birmingham - -	27,618	49	49	87,181	—	—	1,079	—	—
Bristol - - -	62,984	—	—	118,743	—	—	186	—	—
Leicester - - -	55,586	904	672	75,181	215	169	7,805	2	2
Leeds - - -	33,522	1,302	369	111,170	1,447	—	12,328	1,573	—
Lincoln - - -	8,586	—	—	60,045	—	—	16,634	—	—
Liverpool - - -	73,740	4,636	4,636	437,180	2,240	2,240	—	—	—
London - - -	99,005	14,757	5,763	746,520	11,055	1,690	2,804	—	—
Newcastle-upon-Tyne	100,991	1,411	1,411	318,786	—	—	47,168	755	†755
Norwich - - -	90,128	570	570	206,832	—	—	29,770	1	†1
Salford - - -	138,992	694	694	608,500	90	90	2,710	—	—
Shrewsbury - - -	33,349	2,607	2,193	53,548	—	—	16,381	—	—
Wakefield - - -	91,993	371	—	198,915	—	—	22,180	—	—
York - - -	73,514	86	78	175,024	—	—	5,796	4	—
SCOTLAND.									
Aberdeen - - -	67,832	19,194	19,194	156,356	10,605	10,516	19,853	—	—
Dundee - - -	17,401	10,929	10,904	23,516	2,045	1,925	2,658	15	15
Edinburgh - - -	68,022	27,500	*13,311	214,551	20	10	7,959	—	—
Glasgow - - -	56,306	2,134	1,714	415,212	279	152	6,481	—	—
Perth - - -	64,936	12,626	*2,477	220,900	6,880	6,785	8,222	453	†453
TOTAL for ENGLAND	911,652	27,560	16,472	3,289,712	15,057	4,189	188,016	2,335	755
TOTAL for SCOTLAND	274,497	72,473	*47,600	1,030,544	19,829	19,388	45,173	468	†468
Total - - -	1,186,149	100,033	*64,072	4,320,256	34,886	23,577	233,189	2,803	†1,223

* Prices for 14,182 cattle in addition to the above were quoted from Edinburgh, and for 10,140 cattle from Perth, but without distinguishing breed or quality.
† Prices given, but details insufficiently furnished.
‡ The details for 17 swine only were furnished in the form prescribed.

TOTAL NUMBER of **Cattle, Sheep, and Swine**, entering the MARKETS and MARTS of the under-mentioned Places in ENGLAND and SCOTLAND, with the number WEIGHED, as received from the Market Authorities in the Fourth Quarter 1895, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
ENGLAND.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Ashford - - -	3,213	9	—	23,421	—	—	7,382	—	—
Birmingham - - -	5,603	1	1	13,739	—	—	1,079	—	—
Bristol - - -	18,890	—	—	24,099	—	—	49	—	—
Leicester - - -	13,334	233	149	20,555	29	13	2,903	—	—
Leeds - - -	8,146	450	369	22,830	—	—	3,058	568	—
Lincoln - - -	2,191	—	—	15,417	—	—	4,336	—	—
Liverpool - - -	27,480	1,695	1,695	107,282	204	204	—	—	—
London - - -	27,330	4,414	1,327	171,000	1,152	155	1,360	—	—
Newcastle-upon-Tyne	29,040	181	181	73,851	—	—	15,812	128	†128
Norwich - - -	34,495	195	195	34,625	—	—	7,358	1	†1
Salford - - -	39,450	223	223	108,013	—	—	1,031	—	—
Shrewsbury - - -	9,286	1,347	1,312	11,984	—	—	4,676	—	—
Wakefield - - -	24,390	40	—	40,095	—	—	3,943	—	—
York - - -	23,844	8	1	69,345	—	—	2,623	—	—
SCOTLAND.									
Aberdeen - - -	18,711	4,957	4,957	28,000	2,997	2,908	5,122	—	—
Dundee - - -	3,789	2,476	2,476	5,543	670	647	678	11	11
Edinburgh - - -	20,431	7,706	*3,484	52,346	—	—	2,259	—	—
Glasgow - - -	17,891	771	601	142,656	45	45	2,683	—	—
Perth - - -	18,266	2,223	*522	78,438	1,430	1,395	2,359	100	†100
TOTAL for ENGLAND	266,492	8,746	5,403	736,256	1,385	872	55,510	697	†129
TOTAL for SCOTLAND	79,138	18,133	*12,040	306,983	5,142	4,995	13,101	111	†111
Total - - -	345,630	26,879	*17,443	1,043,239	6,527	5,367	68,611	808	†240

* Prices for 4,198 cattle in addition to the above were quoted from Edinburgh, and for 1,701 cattle from Perth, but without distinguishing breed or quality.

† Prices given but details insufficiently furnished.

‡ The details for 11 swine only were furnished in the form prescribed.

NUMBER and PRICES of **Cattle** WEIGHED in the under-mentioned Places in
Fourth Quarter of 1895, under the Markets and Fairs

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals			Animals			Animals		
		Weighed.	Per Stone.	Per Cwt.	Weighed.	Per Stone.	Per Cwt.	Weighed.	Per Stone.	Per Cwt.
ENGLAND : Liverpool	Irish Cross Bred	No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
		—	—	—	352	3 5½	27 6	1343	4 1	32 8
London	Devons	—	—	—	30	4 5	35 4	25	4 11½	39 6
	Herefords	6	3 10	30 8	91	4 4½	34 10	246	4 8	37 4
	Herefords*	—	—	—	22	4 4½	34 10	27	4 6½	36 6
	Highland	—	—	—	4	4 6½	36 2	—	—	—
	Highland Scots	—	—	—	—	—	—	6	4 10	38 8
	Irish Shorthorns*	—	—	—	9	3 11	31 4	—	—	—
	Kerry	1	3 3	26 0	—	—	—	—	—	—
	Norfolks	—	—	—	6	4 3½	34 2	8	4 9½	38 6
	Polled Scots	—	—	—	66	4 6	36 0	219	5 1	40 8
	Polled Scots*	—	—	—	15	4 8½	37 6	27	4 11½	39 8
	Runts	12	3 10½	31 0	117	4 2	33 4	54	4 6½	36 2
	Runts*	—	—	—	5	4 2	33 4	4	4 6	36 0
	Shorthorns	24	3 8½	29 10	149	4 1½	33 0	47	4 5½	35 8
	Shorthorns*	4	3 10	30 8	58	4 1	32 8	15	4 5½	35 8
Newcastle - upon-Tyne.	Cross Bred	—	—	—	45	3 10½	31 0	53	4 7½	37 0
	Highland Kylee	—	—	—	11	4 1½	33 0	10	4 0½	32 2
	Irish	—	—	—	2	3 8½	29 6	—	—	—
	Shorthorns	—	—	—	2	3 6	28 0	28	4 1½	33 0
Shrewsbury	Cross Bred	—	—	—	4	3 11½	31 8	—	—	—
	Herefords	24	3 0½	24 6	25	3 10½	31 0	7	4 3½	34 4
	Polled Angus	—	—	—	2	3 9½	30 2	—	—	—
	Shorthorns	—	—	—	10	3 9½	30 6	—	—	—
	West Highland	—	—	—	3	3 9½	30 2	—	—	—
	Cross Bred (Stores)*	50	3 2	25 4	45	3 5½	27 6	—	—	—
	Herefords (Stores)	38	3 1½	25 2	225	3 8½	29 8	31	4 4½	35 0
	Kerry (Stores)	—	—	—	10	3 6½	28 6	—	—	—
	Polled Angus (Stores)	62	3 2½	25 10	203	3 8½	29 6	10	4 0½	32 2
	Shorthorns (Stores)	120	3 0½	24 2	274	3 6½	28 2	—	—	—
	Welsh (Stores)	17	2 9	22 0	27	3 8½	29 8	—	—	—
	West Highland (Stores).	16	3 2½	25 8	—	—	—	—	—	—

* Sold by Live Weight.

ENGLAND and SCOTLAND, as received from the Market Authorities in the
(Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals			Animals			Animals		
		Weighed.	Per Stone.	Per Cwt.	Weighed.	Per Stone.	Per Cwt.	Weighed.	Per Stone.	Per Cwt.
SCOTLAND : Aberdeen	Cross Bred	No. 717	s. d. 3 0½	s. d. 24 2	No. 1,992	s. d. 4 1½	s. d. 32 10	No. 1,581	s. d. 4 7½	s. d. 36 10
	Polled	102	3 7½	29 2	147	4 5	35 4	93	4 7½	37 2
	Polled Angus	43	3 4½	26 10	127	4 3½	34 4	57	4 9½	38 0
	Cross Bred (Stores)	—	—	—	79	3 6	28 0	9	3 9½	30 2
	Cross Bred (Stores)*	—	—	—	7	3 7½	29 0	—	—	—
	Polled (Stores)	—	—	—	3	4 0½	32 6	—	—	—
Dundee	Cross Bred Polled	19	3 5½	27 8	223	4 2	33 4	260	4 5½	35 6
	Cross Bred Polled*	—	—	—	11	4 2	33 4	32	4 6½	36 2
	Cross Bred Short-horns.	33	3 5½	27 8	189	4 1½	33 2	130	4 5½	35 8
	Cross Bred Short-horns.*	—	—	—	10	4 3½	34 4	26	4 6½	36 4
	Highland	1	3 2½	25 10	—	—	—	4	4 7½	36 10
	Highland*	—	—	—	—	—	—	6	4 8½	37 10
	Irish Cross Bred	57	3 1½	24 10	900	4 1½	33 0	424	4 5	35 4
	Irish Cross Bred*	—	—	—	—	—	—	61	4 5½	35 10
	Jersey	1	3 5½	27 6	—	—	—	—	—	—
	Polled Angus*	1	3 9	30 0	—	—	—	—	—	—
	West Highland	1	3 6	28 0	42	4 1	32 8	28	4 6½	36 2
	West Highland*	—	—	—	—	—	—	8	4 8	37 4
	Irish (Stores)	—	—	—	6	3 7½	28 10	—	—	—
Edinburgh	Black Polled Galloways.	—	—	—	7	4 1	32 8	—	—	—
	Cross Bred	—	—	—	1,933	4 1½	33 0	1,300	4 1½	33 2
	Cross Bred Shetland.	3	3 6½	28 6	—	—	—	—	—	—
	Polled Angus	—	—	—	—	—	—	11	4 7½	36 10
	Polled Galloways*	—	—	—	—	—	—	20	4 4½	35 0
	Shorthorns	—	—	—	4	3 8	29 4	48	4 3½	34 4
	Shorthorns*	—	—	—	—	—	—	4	4 9	38 0
	West Highland	—	—	—	4	4 1½	32 10	5	4 5½	35 8
	West Highland*	—	—	—	—	—	—	71	4 6	36 0
	Irish Shorthorns (Stores).	—	—	—	16	3 6½	28 6	—	—	—
	Irish Shorthorns (Stores)*	—	—	—	50	3 10½	30 10	—	—	—
	Polled Irish (Stores)*	—	—	—	8	3 6	28 0	—	—	—
Glasgow	Ayrshire	—	—	—	5	3 3½	26 4	—	—	—
	Cross Bred	—	—	—	83	4 3½	34 6	33	4 7½	36 10
	Highland	—	—	—	12	4 5½	35 6	9	4 10½	38 10
	Highland*	—	—	—	—	—	—	29	4 8½	37 10
	Irish Cross Bred	—	—	—	32	3 9½	30 2	—	—	—
	Polled	—	—	—	160	4 4½	35 0	151	4 7	36 8
	Polled*	—	—	—	25	4 2½	33 10	62	4 7½	37 2
Perth	Cross Bred	6	3 9½	30 6	57	4 3	34 0	47	4 6½	36 4
	Cross Bred Polled	20	3 11	31 4	218	4 1½	32 10	138	4 4½	35 0
	Polled Angus	—	—	—	5	3 11½	31 10	16	4 5½	35 6
	West Highland	—	—	—	—	—	—	6	4 6½	36 6

* Sold by Live Weight.

The number and prices of Sheep reported as weighed under the Markets and Fairs (Weighing of Cattle) Act, 1891, in the under-mentioned places in the Fourth Quarter of 1895 are shown in the following table:—

PLACES.	BREED OR CLASS.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.		Animals Weighed.	Average Price.	
			Per Stone.	Per Cwt.		Per Stone.	Per Cwt.		Per Stone.	Per Cwt.
ENGLAND:		No.	s. d.	s. d.	No.	s. d.	s. d.	No.	s. d.	s. d.
Liverpool	Irish Cross Bred	—	—	—	204	5 6	44 0	—	—	—
London	Half Bred	—	—	—	82	5 0½	40 6	—	—	—
	Half Bred*	—	—	—	73	5 3½	42 6	—	—	—
SCOTLAND:										
Aberdeen	Black Face Wethers	56	4 0	32 0	163	4 4	34 8	230	4 7	36 8
	Cheviot Wethers	—	—	—	55	4 8½	37 6	36	4 5½	35 8
	Cross Bred	25	3 3½	26 6	1,261	4 0½	31 2	797	4 8	37 4
	Cross Bred Hogs	6	4 3½	34 6	81	4 6½	36 6	63	5 0	40 0
	Half Bred Hoggets	—	—	—	10	4 4½	34 10	135	4 9½	38 4
Dundee	Black Face Wethers	—	—	—	—	—	—	5	4 4½	35 0
	Canadian Hogs*	—	—	—	12	4 1	32 8	—	—	—
	Cheviot Wethers*	—	—	—	—	—	—	72	4 11½	39 8
	Cross Bred Hoggets	—	—	—	—	—	—	390	4 10½	39 0
	Cross Bred Hoggets*	—	—	—	—	—	—	86	5 0	40 0
	Cross Bred Hogs	—	—	—	—	—	—	7	4 6½	36 6
	Cross Bred Hogs*	—	—	—	—	—	—	1	4 9½	38 6
	Cross Bred Ewes	—	—	—	20	3 9½	30 4	—	—	—
	Highland Wethers	—	—	—	—	—	—	35	4 11½	39 6
	Leicester Hoggets	—	—	—	—	—	—	8	4 8	37 4
	Shropshire Cross Bred Hoggets.*	—	—	—	—	—	—	11	4 8	37 4
Glasgow	American Ewes	—	—	—	35	3 3	26 0	—	—	—
	Cross Bred Hogs	—	—	—	—	—	—	10	4 11	39 4
Perth	Black Face Wethers	—	—	—	34	4 7½	37 0	138	4 8½	37 10
	Black Face Ewes	29	3 3	26 0	46	3 4	26 8	—	—	—
	Cheviot Wethers	—	—	—	—	—	—	95	4 8½	37 10
	Cross Bred Hoggets	—	—	—	—	—	—	9	4 5½	35 8
	Cross Bred Hogs	—	—	—	—	—	—	602	4 8½	37 10
	Cross Bred	—	—	—	174	4 10½	38 10	206	5 2½	41 6

* Sold by Live Weight.

PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

I.—PRICES OF MEAT.

AVERAGE PRICES of DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the Fourth Quarter of 1895, with the Average Price for the Year.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	4TH QUARTER. 1895.	AVERAGE FOR THE YEAR.
BEEF:—	s. d. s. d.	s. d. s. d.
Scotch, short sides	4 2 to 4 6	4 3 to 4 6
„ long sides	3 9 „ 4 0	3 10 „ 4 1
English, Prime	3 7 „ 3 10	3 9 „ 4 0
Cows and Bulls	2 0 „ 2 11	2 3 „ 3 1
American, Birkenhead killed	2 11 „ 3 4	3 4 „ 3 7
„ Deptford killed	2 11 „ 3 5	3 4 „ 3 8
„ Refrig. hind-qrs.	3 4 „ 3 10	3 7 „ 4 0
„ „ fore-qrs.	1 9 „ 2 3	2 2 „ 2 6
Argentine	—	2 11 „ 3 5
Australian, Refrig. hind-qrs.	2 0 „ 2 2	2 1 „ 2 3
„ „ fore-qrs.	1 7 „ 1 8	1 7 „ 1 8
MUTTON:—		
Scotch, Prime	4 6 „ 4 11	4 9 „ 5 1
English, Prime	4 1 „ 4 7	4 5 „ 4 10
Ewes	3 0 „ 3 5	3 5 „ 3 10
Dutch	3 4 „ 3 11	4 0 „ 4 4
German	—	
New Zealand	2 8 „ 2 11	2 2 „ 2 7
Australian	1 10 „ 2 1	1 10 „ 2 0
River Plate, Frozen	1 11 „ 2 1	1 10 „ 2 0
„ „ Town killed	3 1 „ 3 5	3 2 „ 3 7
LAMB:—		
English	—	5 6 „ 6 5
New Zealand	3 0 „ 3 4	2 10 „ 3 4
VEAL:—		
English	4 1 „ 4 8	4 1 „ 4 8
Foreign	3 10 „ 4 5	3 10 „ 4 6
PORK:—		
English, small	3 2 „ 3 7	3 4 „ 3 8
„ medium and large	2 7 „ 3 1	2 8 „ 3 2
Foreign		

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE and SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during each Quarter of 1895, with the Mean Prices for the Year.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
1st Quarter 1895	s. d. 2 8	s. d. 3 11	s. d. 4 5	s. d. 4 4	s. d. 5 9	s. d. 6 4
2nd Quarter "	2 9	4 2	4 6	4 1	5 2	5 9
3rd Quarter "	2 8	3 11	4 7	3 8	5 1	5 9
4th Quarter "	2 5	3 10	4 7	3 8	5 5	5 11
Mean of the Year	2 8	3 11	4 6	3 11	5 4	5 11

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during each Quarter of 1895, with the Mean Prices for the Year.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
1st Quarter 1895	s. d. 2 10	s. d. 3 8	s. d. 3 4	s. d. 5 0	s. d. 2 8	s. d. 4 2	s. d. 4 0	s. d. 5 4
2nd Quarter "	2 8	3 10	3 8	5 2	3 0	4 4	3 8	5 6
3rd Quarter "	3 2	3 10	3 6	5 2	2 8	4 0	3 4	4 8
4th Quarter "	2 8	3 6	3 4	4 10	2 8	3 8	3 0	4 6
Mean of the Year	2 10	3 8	3 5	5 0	2 9	4 0	3 6	5 0

* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the Liverpool Abattoir, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.

I.—PRICES OF MEAT—*continued.*

BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) in the BERLIN CATTLE MARKET in the under-mentioned months of 1895, with the Mean Prices for the Year.

MONTHS.	CATTLE.		SHEEP.	
	Per cwt.		Per cwt.	
1895.	s. d.	s. d.	s. d.	s. d.
October -	58 0	to 61 4	50 5	to 55 9
November -	58 4½	„ 60 5	48 10½	„ 53 7½
December -	59 9	„ 61 9	52 11	„ 55 8
Mean of the Year	59 7	„ 62 2	49 6	„ 53 1

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirtschaftliche Presse*.

PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium Quality) in the PARIS CATTLE MARKET in the under-mentioned months of 1895, with the Mean Prices for the Year.

MONTHS.	OXEN.	CALVES.	SHEEP.	PIGS.
	Per cwt.	Per cwt.	Per cwt.	Per cwt.
LIVE WEIGHT.				
1895.	s. d.	s. d.	s. d.	s. d.
October -	35 11	37 7½	41 8	37 11½
November -	35 11	42 0½	42 10	36 3
December -	36 3	44 3½	42 4	34 5
Mean of the Year	36 1	40 4	42 5	41 2
DEAD WEIGHT.				
1895.	s. d.	s. d.	s. d.	s. d.
October -	60 3	75 5	77 2½	55 2½
November -	60 3	76 9	77 9	52 4
December -	60 8	80 7½	77 7	51 11
Mean of the Year	59 11	78 4	76 9	56 6

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.

I.—PRICES OF MEAT—*continued*.

CHICAGO.

AVERAGE PRICES of CATTLE at CHICAGO per Cwt. (Live Weight) in the under-mentioned months of 1895, with the Mean Prices for the Year.

Months.	Good Dressed Beef and Shipping Steers.		Export Cattle.		Extra Prime Cattle.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1895.						
October -	19 3	to 22 4	21 5	to 23 0½	24 3	to 25 4½
November -	17 2½	„ 21 0	19 11½	„ 21 6½	22 7	„ 23 9
December -	16 7½	„ 19 10	19 4½	„ 21 5	21 11½	„ 23 10¾
Mean of the Year	19 7	to 23 5	22 11	to 24 5	25 1	to 26 4

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson, & Co., of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per Cwt., of various Kinds of DEAD MEAT Imported into the United Kingdom from FOREIGN COUNTRIES and BRITISH POSSESSIONS in each Quarter of 1895, with the Average Value for the Year.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.		PORK.		BACON.		HAMS.
	Fresh.	Salted.	Fresh.	Fresh.	Salted.	Fresh.	Salted.	Fresh.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
1st Quarter 1895 -	40 6	26 7	35 4	43 5	29 0	37 2	43 0		
2nd Quarter „ -	38 11	25 9	35 9	48 2	25 3	38 2	44 5		
3rd Quarter „ -	38 3	25 5	34 8	48 11	21 7	41 7	46 1		
4th Quarter „ -	38 9	26 3	34 11	45 11	22 3	39 4	45 11		
The Year -	39 0	26 1	35 2	46 1	24 6	39 1	44 11		

II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1895, 1894, and 1893.

QUARTER ENDED	PRICES.			QUANTITIES.		
	1895.	1894.	1893.	1895.	1894.	1893.
Wheat.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day -	20 1	25 1	25 7	652,874	613,313	708,986
Midsummer -	23 1	24 4	26 2	496,615	429,459	671,704
Michaelmas -	23 11	22 11	26 4	361,223	313,288	577,112
Christmas -	25 1	19 2	27 2	417,671	600,773	659,258
Barley.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day -	21 6	28 1	25 2	1,035,588	671,620	1,092,457
Midsummer -	20 3	25 2	24 0	79,936	40,963	101,155
Michaelmas -	21 3	22 1	24 1	141,985	95,121	218,829
Christmas -	21 10	22 7	29 1	2,109,067	1,921,744	1,920,615
Oats.						
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
Lady Day -	13 9	18 1	17 7	259,838	193,922	291,572
Midsummer -	15 2	18 7	19 5	111,424	61,862	75,457
Michaelmas -	15 1	17 11	19 9	88,312	70,824	99,699
Christmas -	13 10	13 10	18 1	215,365	239,139	198,594

* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

II.—CORN PRICES:—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1896, and in the Corresponding Weeks in 1895 and 1894.

Weeks ended (in 1896).	Wheat.			Barley.			Oats.		
	1896.	1895.	1894.	1896.	1895.	1894.	1896.	1895.	1894.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Jan. 4	25 2	20 1	26 1	24 7	21 5	28 10	13 10	14 2	17 8
" 11	25 4	20 8	26 4	23 11	21 3	28 10	13 9	13 9	18 0
" 18	25 10	20 8	26 3	23 6	21 8	20 2	13 11	14 0	18 0
" 25	26 1	20 9	26 1	23 7	21 11	20 1	13 10	13 10	18 0
Feb. 1	26 3	20 6	25 7	23 1	21 5	28 11	14 1	13 10	18 1
" 8	26 4	19 11	25 3	22 5	21 8	28 8	14 0	13 6	17 10
" 15	26 7	19 10	24 10	21 11	21 10	28 3	14 0	13 8	18 0
" 22	26 3	19 10	24 5	21 10	22 2	28 0	13 9	13 9	18 4
" 29	25 6	19 10	24 3	21 10	21 9	27 5	13 10	14 0	18 5

II.—CORN PRICES:—ANNUAL AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels, computed from the Weekly Averages of Corn Returns from the 196 Returning Markets, together with the QUANTITIES returned as sold at such Markets during each of the Years 1891 to 1895.

YEARS.	PRICES.			QUANTITIES.		
	Wheat.	Barley.	Oats.	Wheat.	Barley.	Oats.
	s. d.	s. d.	s. d.	Quarters.	Quarters.	Quarters.
1891	37 9	28 2	20 0	3,248,743	3,255,518	561,719
1892	30 3	26 2	19 10	3,052,879	3,193,634	492,166
1893	26 4	25 7	18 9	2,620,060	3,366,056	575,522
1894	22 10	24 6	17 1	1,956,824	2,729,318	565,747
1895	23 1	21 11	14 6	1,928,383	3,426,576	665,939

II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the Fourth Quarter of 1895, with the Average Price for the Year.

COUNTRIES from which Exported	Average Value per Imperial Quarter.	
	Fourth Quarter, 1895.	The Year.
	s. d.	s. d.
ARGENTINE REPUBLIC	21 11	23 8
CHILE	26 3	25 1
ROUMANIA	23 0	22 10
RUSSIA	22 9	22 6
TURKEY	21 6	21 10
UNITED STATES OF AMERICA {Atlantic	24 7	24 5
{Pacific	25 3	24 9
AUSTRALASIA	24 11	24 11
INDIA, BRITISH	23 2	22 10
NORTH AMERICA, BRITISH	25 6	25 11

II.—CORN PRICES:—BELGIUM, FRANCE AND ENGLAND.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND AND WALES in the under-mentioned months of 1895 and 1896.

Month.	Belgium.	France.	England.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October	24 11½	30 11½	24 6
November	—	30 11	25 9
December	25 8½	30 5½	24 11
1896.	—	30 4½	25 7
January	—	—	—
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October	19 11½	19 5	25 5
November	—	19 8	25 1
December	20 5½	19 9	23 11
1896.	—	19 9½	23 10
January	—	—	—
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October	15 10½	17 7	13 5
November	—	17 4½	14 2
December	16 1	17 6	13 11
1896.	—	17 3½	13 10
January	—	—	—

Note.—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished

II.—CORN PRICES:—LONDON, PARIS, BERLIN.

AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER at the under-mentioned Markets in the under-mentioned months of 1895, with the Mean Prices for the Year.

Month.	London.	Paris.	Berlin.
WHEAT.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October - - -	24 6	32 3	30 2
November - - -	26 8	32 3	31 0
December - - -	26 1	31 7½	31 6
Mean of the Year - - -	23 11	30 10	31 1
BARLEY.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October - - -	31 5	18 11	19 10 to 22 0½
November - - -	30 7	18 11	20 4½ „ 22 11
December - - -	28 6	19 0	20 4 „ 22 2
Mean of the Year - - -	25 11	18 9	18 11 „ 27 0
OATS.			
1895.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October - - -	14 10	18 2	16 7½
November - - -	15 10	18 2	16 8½
December - - -	15 5	18 2	16 11½
Mean of the Year - - -	15 5	17 10	17 2

Note.—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.

III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE, in the month of January 1896, and in the Third and Fourth Quarters of 1895.

(Compiled from the *Grocer*.)

DESCRIPTION.	3rd Quarter of 1895.	4th Quarter of 1895.	Month of January 1896.
	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.
BUTTER:			
Cork, 1sts -	84 0 to —	112 0 to —	121 0 to —
„ 2nds -	81 4 „ —	99 9 „ —	114 3 „ —
„ 3rds -	78 8 „ —	89 2 „ —	96 0 „ —
„ 4th -	71 6 „ —	78 3 „ —	82 0 „ —
Friesland -	87 8 „ 92 0	98 8 „ 103 3½	103 0 „ 107 0
Dutch Factories -	91 9 „ 96 8	102 8 „ 107 9	107 0 „ 110 6
French Baskets -	101 7 „ 104 7	112 10½ „ 117 10	116 0 „ 122 0
„ Crocks and Firkins.	88 10 „ 97 0	102 5 „ 109 3	104 0 „ 112 0
„ 2nds and 3rds	80 2 „ 85 3	93 2 „ 98 9½	91 6 „ 100 0
Danish and Swedish	101 0 „ 104 9	114 5 „ 120 3½	112 6 „ 116 6
Finnish -	80 9 „ 95 0	96 9 „ 110 5	96 0 „ 110 6
Russian -	76 7 „ 87 9	89 1 „ 103 3	84 0 „ 90 0
Australian -	75 6 „ 98 9	106 3 „ 114 10	101 0 „ 111 0
New Zealand -	75 6 „ 98 9	104 1 „ 114 10	101 0 „ 111 0
Fresh Rolls (Foreign) per doz.	9 11½ „ 13 7½	11 5 „ 14 9	11 0 „ 15 6
MARGARINE:			
Margarine -	34 0 „ 52 2	37 0 „ 57 0	38 0 „ 58 6
Mixtures -	56 0 „ 77 1	63 0 „ 86 8	64 0 „ 88 6
CHEESE:			
Cheddar -	40 0 „ 67 8	38 8 „ 64 8	41 0 „ 68 0
Somerset -	42 0 „ 61 7	40 0 „ 66 0	40 0 „ 60 0
Cheshire -	31 6 „ 72 6	31 7 „ 75 7½	30 0 „ 81 6
Wiltshire -	27 6 „ 55 8	36 8 „ 59 4	40 0 „ 60 0
Double Gloucester -	29 8 „ 54 1	35 8 „ 54 8	39 0 „ 56 6
Derby -	33 0 „ 43 6	30 4 „ 48 1	31 0 „ 55 6

PRICES OF VEGETABLES AND FRUIT.

I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	JANUARY.				FEBRUARY.			
	COVENT GARDEN.		FARRINGDON.		COVENT GARDEN.		FARRINGDON.	
Artichokes, per half bushel	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Asparagus, 1st size, per bundle	5 0	to 6 0	1 6	to —	5 8	to 6 8	1 6	to —
" 2nd size "	2 6	3 0	—	—	2 6	3 0	—	—
Beans, Channel Islands, per lb.	1 4½	1 7½	—	—	1 9	2 0	—	—
" Madeira, per basket	4 6	5 0	—	—	4 6	5 0	—	—
Beetroot, per bushel	—	—	1 6	—	—	—	—	—
Cabbages, per tally	—	—	2 0	—	—	—	—	—
Carrots, per dozen bunches	—	—	2 6	3 0	—	—	2 0	2 6
Cauliflowers, per crate	5 9½	11 0	—	—	5 0	7 0	—	—
" per dozen	—	—	1 6	—	—	—	1 6	—
Celery, per dozen bunches	—	—	14 0	—	—	—	—	—
Cucumbers, per dozen	10 5	14 0	—	—	11 4	14 0	12 0	—
Greens, bunch, per dozen	—	—	1 8	—	—	—	1 6	—
Horseradish, per bundle	—	—	1 2	—	—	—	1 2	—
Kale, curly, per bushel	—	—	1 1	—	—	—	0 6	1 0
Leeks, per dozen	—	—	1 6	—	—	—	1 0	1 6
Mint, per bunch	—	—	—	—	0 6	0 8	—	—
Mushrooms, per lb.	0 7	0 9	—	—	0 8	0 9	—	—
Onions, English, per cwt.	5 0	6 0	—	—	5 0	6 0	—	—
" per bag	—	—	3 9	4 0	—	—	—	—
Parsley, per dozen bunches	—	—	2 0	—	—	—	—	—
Parsnips, per dozen bunches	—	—	2 0	—	—	—	—	—
Potatoes:—	—	—	—	—	—	—	—	—
Main Crop, per ton	—	—	80 0	87 6	70 0	90 0	70 0	90 0
Saxons, per ton	—	—	72 6	82 6	70 0	80 0	70 0	80 0
Sutton's Abundance, per ton	—	—	67 6	77 6	40 0	60 0	40 0	60 0
Bruces, per ton	45 0	60 0	52 6	62 6	60 0	80 0	60 0	80 0
Magnums, per ton	—	—	40 0	50 0	35 0	40 0	35 0	40 0
Snowdrops, per ton	70 0	90 0	—	—	—	—	—	—
Hebrons, per ton	75 0	85 0	—	—	70 0	80 0	70 0	80 0
Potatoes, New:—	—	—	—	—	—	—	—	—
Channel Islands, per lb.	0 5	0 6½	—	—	0 5	0 6	—	—
Myatts, per lb.	0 3	0 5	—	—	—	—	—	—
Magnums, per lb.	0 2	0 3	—	—	—	—	—	—
Canary Islands, per cwt.	18 0	28 0	—	—	—	—	—	—
Malta kidneys, per cwt.	12 0	16 0	—	—	—	—	—	—
Rhubarb, per dozen bunches	—	—	1 3	—	—	—	1 0	—
Savoy, per tally	—	—	4 0	—	—	—	3 6	4 0
Seakale, per punnet	0 9	1 2	1 0	—	0 9	1 1	1 0	—
Sprouts, per bushel	—	—	2 4	—	—	—	—	—
Tomatoes, Homegrown, per dozen lbs.	4 0	5 0	—	—	—	—	—	—
Tomatoes, Canary Islands, per case (12-14 lbs.)	5 0	5 6	—	—	5 0	5 6	—	—
Tomatoes, Canary Islands, per box (4 ½ lbs.)	1 9	2 6	—	—	1 5	2 0	—	—
Turnips, per dozen bunches	—	—	2 2	—	—	—	2 0	—
Turnip tops, per bushel	—	—	1 0	1 3	—	—	—	—

PRICES OF VEGETABLES AND FRUIT—continued.

I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—continued.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	JANUARY.				FEBRUARY.			
	BOROUGH AND SPITAL-FIELDS.		STRAITFORD.		BOROUGH AND SPITAL-FIELDS.		STRAITFORD.	
Artichokes, per bushel	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beetroot, per bushel	1 6	to 2 6	—	—	1 0	to 1 3	—	—
" " dozen	0 9	1 3	0 6	to 0 8	—	—	0 4	0 7
Broccoli, per score	—	—	—	—	1 0	1	—	—
Brussels sprouts, per bushel	2 0	2 6	2 6	2 9	2 0	2	2 0	2 6
Carrots, per dozen bunches	2 0	2 6	—	—	2 0	2 6	—	—
" per ton	23 2	27 6	26 0	30 0	22 0	27 6	23 3	30 0
" cattle feeding, per ton	—	—	—	—	—	—	17 6	23 0
Cauliflowers, per dozen	—	—	1 6	2 0	—	—	1 1½	1 9
Celery, per dozen rounds	9 8	13 0	—	—	12 0	15 0	8 0	12 0
Greens, per dozen bunches	—	—	1 1½	1 6	1 6	1 9	1 0	1 4½
Horseradish, per bundle	0 11	1 1	1 1	1 3	—	—	1 1	1 3
Kale, per bushel	0 9	1 0	—	—	0 9	1 0	—	—
Leeks, per dozen	1 0	1 6	—	—	1 0	—	—	—
Mangels, per ton	—	—	11 6	15 6	—	—	11 9	15 6
Onions, English, per ton	—	—	85 0	95 0	—	—	—	—
" Bordeaux, per case	—	—	—	—	—	—	4 9	5 6
" Dutch, per ton	—	—	55 0	60 0	—	—	—	—
" per bag	—	—	3 0	3 6	2 9	3 6	2 9	3 1½
Parsley, per dozen bunches	1 0	1 6	1 6	2 0	1 6	2 0	1 0	1 4½
Parsnips, per score	0 6	0 8	0 6	0 8	0 5	0 7	0 5	0 7½
Potatoes:—	—	—	—	—	—	—	—	—
Sutton's Abundance, per ton	60 0	80 0	50 0	70 0	—	—	40 0	60 0
Bruces, dark soil, per ton	—	—	32 6	40 0	—	—	30 0	35 0
" light "	42 6	60 0	40 0	60 0	—	—	30 0	55 0
Main Crop, per ton	55 0	70 0	—	—	60 0	70 0	—	—
" Scotch, per ton	—	—	80 0	100 0	—	—	70 0	80 0
Snowdrops "	55 0	75 0	—	—	60 0	70 0	—	—
Reading Giants, per ton	42 6	57 6	40 0	50 0	—	—	35 0	55 0
Hebrons, per ton	60 0	80 0	—	—	—	—	—	—
Imperators, per ton	50 0	62 6	—	—	—	—	—	—
Highland Magnums	—	—	—	—	50 0	55 0	50 0	55 0
Rhubarb, per dozen bundles	1 0	1 3	1 0	1 6	1 0	1 3	1 1½	1 6
Savoy, per tally	3 0	4 4	2 0	4 0	3 3	5 0	1 9	4 6
Scotch kale, per sieve	—	—	0 6	0 9	—	—	0 3	0 6
Swedes, per ton	—	—	13 0	17 6	—	—	13 0	18 0
Turnips, per dozen bundles	—	—	—	—	1 9	2 1½	1 3	2 0
" per ton	28 4	35 0	30 0	40 0	25 0	30 0	25 0	40 0
Turnip tops, per bag	—	—	—	—	1 6	2 0	—	—

PRICES OF WOOL.

AVERAGE PRICES OF ENGLISH WOOL, per pack of 240 lbs., in
the year 1895 and the month of January 1896.

(Compiled from the *Economist*.)

DESCRIPTION.	THE YEAR 1895.	JANUARY 1896.
	£ s. £ s.	£ s. £ s.
South Down - - -	9 10 „ 11 10	9 10 „ 12 0
Half-breds - - -	9 5 „ 11 0	9 10 „ 12 0
Leicester - - -	9 10 „ 10 10	10 0 „ 12 0
Lincoln - - -	— 12 0	— 15 10

DESCRIPTION.	December 1895.				January 1896.				February 1896.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
COVENT GARDEN:												
Apples, Blenheim, per bushel	3	0	to	5	0	3	9	to	5	9	—	—
" " " " " "	1	6	"	3	0	—	—	—	—	—	—	—
" Nova Scotia, per barrel	11	0	"	14	0	13	5	"	20	5	14	0
" Wellington, per bushel	4	6	"	5	0	4	6	"	5	0	5	2
Apricots, Cape, per box	—	—	—	—	—	—	—	—	—	—	—	—
Cobs, per 100 lbs.	30	0	"	35	0	25	0	"	30	0	25	0
Grapes, Gros Colmar, 1st quality, per lb.	1	6	"	1	9	1	7	"	2	1	2	3
" Muscats, 1st quality, per lb.	3	3	"	4	6	3	10	"	5	6	2	3
" Alicante, " " "	1	3	"	1	6	1	9	"	2	1	2	0
Nectarines, per box	—	—	—	—	—	—	—	—	—	—	5	6
" extra quality, per box	—	—	—	—	—	—	—	—	—	—	9	6
Peaches, Cape, per case	—	—	—	—	—	—	—	—	—	—	14	0
Pears, Cape, per box	—	—	—	—	—	—	—	—	—	—	9	0
Pine apples, St. Michael, each	3	0	"	6	9	2	11	"	6	11	2	6
FARRINGTON:												
Apples, Blenheims, per bushel	4	8	"	—	5	0	"	—	—	—	—	—
" Wellingtons, " " "	4	6	"	—	7	0	"	—	—	—	—	—
" Greenings, per barrel	15	1	"	—	15	1	"	—	—	—	15	0
" Baldwins, " " "	17	1	"	—	17	6	"	—	—	—	16	0
" Newtowns, " " "	16	0	"	18	0	16	0	"	18	0	18	0
" No.thern Spy " " "	—	—	—	—	—	—	—	—	—	—	12	0
" Ribstons, " " "	22	9	"	—	21	0	"	—	—	—	16	0
" Russets, " " "	—	—	—	—	—	—	—	—	—	—	—	—
" Canadian Ribstons, per barrel	18	0	"	—	—	—	—	—	—	—	20	0
" " Newtowns " " "	18	0	"	—	18	0	"	—	—	—	—	—
" " Baldwins " " "	18	0	"	—	16	0	"	—	—	—	—	—
Chestnuts, per cwt. bag	7	0	"	10	6	9	0	"	—	—	—	—
Grapes, English, per lb.	1	1	"	—	1	6	"	1	9	1	6	"
" Almeira, per barrel	10	0	"	—	—	—	—	—	—	—	—	—
Pears, stewing, per cask	8	0	"	—	8	0	"	—	—	—	2	3
" French, per basket	—	—	—	—	—	—	—	—	—	—	—	—
Walnuts, per bag	6	0	"	—	—	—	—	—	—	—	—	—
BOROUGH AND SPITALFIELDS:—												
Apples, per bushel	3	0	"	6	0	4	0	"	6	0	4	0
" cooking, per bushel	3	6	"	4	0	3	0	"	3	9	4	0
" dessert, " " "	4	6	"	5	0	4	0	"	5	0	5	0
" Blenheims, " " "	4	0	"	1	6	4	6	"	5	0	—	6
" King Pippin, per bushel	4	10	"	5	4	—	—	—	—	—	—	—
" Queennings, " " "	3	3	"	3	9	4	0	"	4	6	—	—
" Greenings, " " "	2	11	"	3	6	3	9	"	4	0	—	—
" Wellingtons, " " "	3	8	"	4	2	4	6	"	5	0	—	—
Chestnuts, per bag	6	0	"	9	2	—	—	—	—	—	—	—
Walnuts, per bag	1	0	"	4	6	—	—	—	—	—	—	—
STRATFORD:—												
Apples, English cooking, per bushel	2	4	"	3	7	2	9	"	4	0	2	3
" " " " " " "	2	6	"	4	0	—	—	—	—	—	2	3
" Nova Scotia, per barrel	11	9	"	14	3	11	6	"	14	6	14	0
Pears, English, per bushel	2	9	"	3	6	—	—	—	—	—	—	—

DISEASES OF ANIMALS.

I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER OF CATTLE returned as SLAUGHTERED, by order of the Board of Agriculture, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having DIED from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Contact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro- Pneumonia.	SWINE that Died of Swine- Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine- Fever.
September 1894	No. 7	No. 88	No. 7	No. 1,971	No. 12,311	No. 435
December 1894	—	—	5	1,212	7,622	290
March 1895	—	43	2	1,914	9,584	190
June 1895	—	—	8	2,812	15,096	570
September 1895	—	—	3	2,449	18,293	540
December 1895	—	—	3	3,742	26,958	550

NUMBER of PLACES upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.
	OUT- BREAKS.	ANIMALS ATTACKED.	OUT- BREAKS.	ANIMALS ATTACKED.	DISEASED ANIMALS KILLED OR DIED.
	No.	No.	No.	No.	No.
September 1894	91	220	230	372	49
December 1894	106	162	212	332	111
March 1895 -	128	284	238	427	212
June 1895 -	110	266	251	360	228
September 1895	86	178	284	449	139
December 1895	115	201	197	359	146

II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of CATTLE returned as SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, on account of **Pleuro-Pneumonia**, and Number of SWINE returned as having Died from **Swine-Fever**, or as having been SLAUGHTERED, by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.		
	CATTLE Slaughtered as Diseased, including those which were found after Slaughter to be diseased.	CATTLE Slaughtered as having been in Con- tact with Cattle affected or as having been otherwise exposed to infection.	CATTLE Slaughtered as Suspected, but found free from Pleuro- Pneumonia.	SWINE that Died of Swine- Fever.	SWINE Slaughtered as Diseased, or as having been exposed to infection.	SWINE Slaughtered as Suspected, but found free from Swine- Fever.
	No.	No.	No.	No.	No.	No.
September 1894	—	—	1	902	9,446	651
December 1894	—	—	—	562	6,146	947
March 1895 -	—	—	—	504	3,402	675
June 1895 -	—	—	—	556	1,491	220
September 1895	—	—	—	481	1,240	330
December 1895	—	—	1	143	625	635

NUMBER of PLACES in Ireland upon which OUTBREAKS were reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in each of the under-mentioned periods.

QUARTER ENDED.	Anthrax.		Glanders (including Farcy).		Rabies.
	OUT- BREAKS.	ANIMALS ATTACKED.	OUT- BREAKS.	ANIMALS ATTACKED.	DISEASED ANIMALS KILLED OR DIED.
	No.	No.	No.	No.	No.
September 1894	1	1	6	19	242
December 1894	1	2	2	3	244
March 1895 -	1	1	5	5	171
June 1895 -	2	2	—	—	235
September 1895	1	1	—	—	241
December 1895	—	—	—	—	138

POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

ADVANTAGES OFFERED FOR OLD AGE PENSIONS.

Provision for old age can be made by buying Savings Bank Deferred Annuities from 1*l.* to 100*l.* to begin at any age selected.

RETURN OF PURCHASE MONEY. The Premiums for Deferred Annuities can be returned on application, or on Death before the Annuity begins, if the Contract is taken out on these conditions.

IMMEDIATE PENSIONS. Annuities to begin at once, of any amount from 1*l.* to 100*l.* a year, can be bought through the Post Office Savings Bank. The Purchase Money is payable in a lump sum which is not returnable, and the Pensions are payable half-yearly.

Savings Banks Annuities are payable by half-yearly instalments on the 5th January and the 5th July, or the 5th April and 10th October, according to the date of purchase.

PROCEDURE. A simple form of Proposal, and a form for statement of age, can be obtained at any Post Office Savings Bank. When filled up the forms will be forwarded by the local Postmaster to the Chief Office, London, and a Contract will be issued when the first premium has been paid. Annuity Premiums are payable in the same way as Insurance Premiums, namely, by transfers from Savings Bank accounts.

The following Table shows the cost of an Immediate Life Annuity of £1, and the annual or single premium for which a Deferred Life Annuity of £1 will be granted.

OLD AGE PENSIONS.—IMMEDIATE LIFE ANNUITIES.

This Table shows the cost of an Immediate Life Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below.

AGE at time of Purchase.	Males. Cost of an Immediate Annuity of £1.	Females. Cost of an Immediate Annuity of £1.	AGE at time of Purchase.	Males. Cost of an Immediate Annuity of £1.	Females. Cost of an Immediate Annuity of £1.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
5 and under 6	25 19 0	27 12 6	41 and under 45	16 15 8	18 13 3
6 " 7	25 15 1	27 9 1	45 " 46	16 9 11	18 6 9
7 " 8	25 11 1	27 5 8	46 " 47	16 4 2	18 0 0
8 " 9	25 7 0	27 2 2	47 " 48	15 18 3	17 13 2
9 " 10	25 2 11	26 18 8	48 " 49	15 12 3	17 6 1
10 " 11	24 18 10	26 15 1	49 " 50	15 6 1	16 18 11
11 " 12	24 14 9	26 11 6	50 " 51	14 19 11	16 11 9
12 " 13	24 10 6	26 7 10	51 " 52	14 13 6	16 4 7
13 " 14	24 6 4	26 4 1	52 " 53	14 7 1	15 17 4
14 " 15	24 2 1	26 0 4	53 " 54	14 0 5	15 9 11
15 " 16	23 17 10	25 16 6	54 " 55	13 13 8	15 2 4
16 " 17	23 13 6	25 12 7	55 " 56	13 6 9	14 14 9
17 " 18	23 9 1	25 8 8	56 " 57	12 19 8	14 6 11
18 " 19	23 4 9	25 4 8	57 " 58	12 12 5	13 19 0
19 " 20	23 0 4	25 0 8	58 " 59	12 1 11	13 11 1
20 " 21	22 15 10	24 16 6	59 " 60	11 17 4	13 3 1
21 " 22	22 11 1	24 12 4	60 " 61	11 9 8	12 15 1
22 " 23	22 6 9	24 8 1	61 " 62	11 2 2	12 7 0
23 " 24	22 2 3	24 3 10	62 " 63	10 14 11	11 19 0
24 " 25	21 17 7	23 19 5	63 " 64	10 7 8	11 11 0
25 " 26	21 12 11	23 15 0	64 " 65	10 0 6	11 2 11
26 " 27	21 8 3	23 10 6	65 " 66	9 13 4	10 14 7
27 " 28	21 3 6	23 5 11	66 " 67	9 6 4	10 6 4
28 " 29	20 18 9	23 1 3	67 " 68	8 19 7	9 18 1
29 " 30	20 13 11	22 16 6	68 " 69	8 12 10	9 9 10
30 " 31	20 9 1	22 11 8	69 " 70	8 6 2	9 1 10
31 " 32	20 4 2	22 6 9	70 " 71	7 19 5	8 14 2
32 " 33	19 19 2	22 1 9	71 " 72	7 12 10	8 6 10
33 " 34	19 14 2	21 16 7	72 " 73	7 6 4	7 19 10
34 " 35	19 9 2	21 11 5	73 " 74	7 0 1	7 13 0
35 " 36	19 4 1	21 6 2	74 " 75	6 14 1	7 6 4
36 " 37	18 18 11	21 0 9	75 " 76	6 8 4	6 19 10
37 " 38	18 13 9	20 15 3	76 " 77	6 2 8	6 13 7
38 " 39	18 8 6	20 9 7	77 " 78	5 17 4	6 7 5
39 " 40	18 3 2	20 3 11	78 " 79	5 12 3	6 1 6
40 " 41	17 17 10	19 18 0	79 " 80	5 7 2	5 15 9
41 " 42	17 12 4	19 12 1	80 or any greater age.	5 2 4	5 10 3
42 " 43	17 6 10	19 5 11			
43 " 44	17 1 4	18 19 8			

OLD AGE PENSIONS.—DEFERRED LIFE ANNUITIES.

The Annuity Tables below give the cost of an Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below. In this class of Annuities the Purchase Money will be returned on application, or on the Death of the Nominee, if an instalment of the Annuity shall not have become due. These Pensions can be Deferred any number of years from 10 to 50, and any cost not given below will be furnished on application to the Controller, Post Office Savings Bank, London.

Purchase Money Returnable Scale.

Age at time of Purchase.	Cost of an Annuity of £1 payable after the expiration of 10 YEARS.				Cost of an Annuity of £1 payable after the expiration of 20 YEARS.			
	Males.		Females.		Males.		Females.	
	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.
21 and under 22	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
22 " 23	1 12 5	15 15 9	1 15 10	17 9 0	0 13 0	10 15 1	0 14 6	11 19 3
23 " 24	1 12 0	15 11 10	1 15 5	17 5 1	0 12 10	10 11 8	0 14 3	11 15 6
24 " 25	1 11 7	15 7 11	1 15 0	17 1 1	0 12 7	10 8 4	0 14 0	11 11 9
25 " 26	1 11 3	15 4 0	1 14 7	16 17 0	0 12 5	10 4 10	0 13 9	11 7 10
26 " 27	1 10 10	15 0 0	1 14 2	16 12 11	0 12 2	10 1 4	0 13 6	11 3 10
27 " 28	1 10 5	14 16 0	1 13 9	16 8 8	0 12 0	9 17 10	0 13 3	10 19 9
28 " 29	1 10 0	14 11 11	1 13 4	16 4 4	0 11 9	9 14 3	0 13 0	10 15 6
29 " 30	1 9 7	14 7 10	1 12 10	16 0 0	0 11 6	9 10 7	0 12 9	10 11 3
30 " 31	1 9 2	14 3 9	1 12 5	15 15 6	0 11 4	9 6 10	0 12 6	10 6 10
31 " 32	1 8 8	13 19 9	1 11 11	15 10 11	0 11 1	9 3 1	0 12 3	10 2 6
32 " 33	1 8 3	13 15 3	1 11 5	15 6 3	0 10 10	8 19 2	0 12 0	9 18 1
33 " 34	1 7 10	13 11 0	1 10 11	15 1 6	0 10 7	8 15 2	0 11 9	9 13 8
34 " 35	1 7 5	13 6 8	1 10 5	14 16 7	0 10 4	8 11 2	0 11 5	9 9 2
35 " 36	1 6 11	13 2 3	1 9 11	14 11 7	0 10 1	8 7 0	0 11 2	9 4 6
36 " 37	1 6 6	12 17 9	1 9 5	14 6 6	0 9 10	8 2 10	0 10 11	8 19 11
37 " 38	1 6 0	12 13 3	1 8 11	14 1 3	0 9 7	7 18 6	0 10 7	8 15 2
38 " 39	1 5 6	12 8 7	1 8 4	13 15 10	0 9 4	7 14 1	0 10 4	8 10 4
39 " 40	1 5 1	12 3 11	1 7 9	13 10 4	0 9 1	7 9 6	0 10 0	8 5 5
40 " 41	1 4 7	11 19 2	1 7 2	13 4 10	0 8 9	7 4 10	0 9 9	8 0 7
41 " 42	1 4 1	11 14 4	1 6 7	12 19 2	0 8 6	7 0 2	0 9 5	7 15 8
42 " 43	1 3 7	11 9 4	1 6 0	12 13 7	0 8 3	6 15 7	0 9 2	7 10 9
43 " 44	1 3 0	11 4 3	1 5 6	12 7 11	0 7 11	6 11 2	0 8 10	7 5 10
44 " 45	1 2 6	10 19 1	1 4 10	12 2 1	0 7 8	6 6 9	0 8 6	7 1 0
45 " 46	1 2 0	10 13 9	1 4 3	11 16 3	0 7 5	6 2 4	0 8 3	6 16 0
46 " 47	1 1 5	10 8 4	1 3 8	11 10 3	0 7 2	5 18 0	0 7 11	6 11 0

Purchase Money Not Returnable Scale.

21 and under 22	1 10 3	14 2 4	1 14 0	16 1 5	0 11 0	8 5 11	0 12 11	9 19 2
22 " 23	1 9 10	13 18 1	1 13 7	15 17 3	0 10 10	8 2 2	0 12 8	9 15 4
23 " 24	1 9 5	13 13 8	1 13 2	15 13 1	0 10 7	7 18 5	0 12 5	9 11 5
24 " 25	1 8 11	13 9 4	1 12 9	15 8 10	0 10 4	7 14 7	0 12 2	9 7 6
25 " 26	1 8 6	13 4 10	1 12 4	15 4 6	0 10 2	7 10 9	0 11 11	9 3 6
26 " 27	1 8 1	13 0 5	1 11 10	15 0 1	0 9 11	7 6 11	0 11 8	8 19 5
27 " 28	1 7 8	12 15 11	1 11 5	14 15 7	0 9 8	7 3 1	0 11 5	8 15 3
28 " 29	1 7 2	12 11 5	1 10 11	14 11 1	0 9 5	6 19 2	0 11 2	8 11 0
29 " 30	1 6 9	12 6 10	1 10 6	14 6 5	0 9 3	6 15 4	0 10 11	8 6 9
30 " 31	1 6 3	12 2 3	1 10 0	14 1 9	0 9 0	6 11 4	0 10 8	8 2 5
31 " 32	1 5 10	11 17 8	1 9 6	13 16 11	0 8 9	6 7 5	0 10 5	7 17 11
32 " 33	1 5 4	11 13 0	1 9 0	13 12 1	0 8 6	6 3 6	0 10 1	7 13 5
33 " 34	1 4 11	11 8 3	1 8 6	13 7 2	0 8 3	5 19 6	0 9 10	7 8 10
34 " 35	1 4 5	11 3 6	1 8 0	13 2 1	0 8 0	5 15 6	0 9 6	7 4 2
35 " 36	1 3 11	10 18 9	1 7 6	12 16 11	0 7 9	5 11 5	0 9 3	6 19 5
36 " 37	1 3 5	10 13 11	1 6 11	12 11 8	0 7 6	5 7 5	0 8 11	6 14 8
37 " 38	1 3 0	10 9 1	1 6 5	12 6 4	0 7 3	5 3 4	0 8 8	6 9 10
38 " 39	1 2 6	10 4 2	1 5 10	12 0 10	0 7 0	4 19 2	0 8 4	6 4 1
39 " 40	1 2 0	9 19 2	1 5 3	11 15 3	0 6 9	4 15 1	0 8 0	6 0 0
40 " 41	1 1 6	9 14 2	1 4 8	11 9 7	0 6 6	4 10 10	0 7 9	5 14 11
41 " 42	1 0 11	9 9 1	1 4 1	11 3 9	0 6 2	4 6 8	0 7 5	5 9 10
42 " 43	1 0 5	9 4 0	1 3 5	10 17 9	0 5 11	4 2 5	0 7 1	5 4 9
43 " 44	0 19 11	8 18 10	1 2 10	10 11 9	0 5 8	3 18 1	0 6 9	4 19 7
44 " 45	0 19 4	8 13 7	1 2 2	10 5 6	0 5 4	3 13 9	0 6 5	4 14 4
45 " 46	0 18 10	8 8 3	1 1 6	9 19 3	0 5 1	3 9 5	0 6 1	4 9 1

**LIST OF LEAFLETS ISSUED BY THE BOARD OF
AGRICULTURE.**

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A 3.—1893 I.	Cultivation of Osiers.
A 5.— „ I.	The Mangel Wurzel Fly.
A 6.— „ I.	The Field Vole.
A 7.— „ I.	Autumn Catch Crops and Fodder Supply.
A 8.— „ I.	Farmers and Assessments to Local Rates.
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A 10.— „ I.	The Ribbon Footed Corn-Fly.
A 12.— „ I.	The Gooseberry Saw-Fly.
A 13.— „ I.	Acorn Poisoning.
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A 17.— „ I.	Preservation of Commons.
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A 3.— „ I.	The Turnip Fly or Flea.
A 4.— „ I.	Caterpillars on Fruit Trees.
A 5.— „ I.	The Magpie Moth.
A 1.—1896 I.	Swine Fever.

Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.

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ERRATA.

Page 217, Heading of Table X.; for *Wool* read *Wood*.
 „ 262, lines 14 and 22 (from bottom); for *bushels* read *lbs*.
 „ 371, line 18 (from bottom); for *satisfactory* read *unsatisfactory*.

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