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A BOARD OF AGRICULTURE FOR IRELAND.

BY

WILLIAM FIELD, M.P.,

PRESIDENT IRISH CATTLE TRADERS AND STOCK OWNERS ASSOCIATION;
PRESIDENT NATIONAL FEDERATION OF MEAT TRADERS OF ENGLAND,
IRELAND, SCOTLAND, WALES, AND THE ISLE OF MAN.

“Without the means of well founded prosperity, there is little
permanence for a Nation.”

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PREFACE.

The manifest advantages derivable from a Board of Agriculture in connexion with the interests of live stock owners and farmers generally, came frequently under cognisance of the Executive Committee of the Irish Cattle Traders and Stock Owners Association. It was therefore long since resolved to ascertain how representative bodies felt upon this question.

A circular advocating the establishment of a Board of Agriculture for Ireland was forwarded to Corporations, Town Commissioners, and Poor Law Boards. A great majority replied favourably, and many Grand Juries, various Societies, and eminent men, have coincided in that view,—in fact, not a single hostile reply was received.

Probably only a few have had the opportunity of learning how material agricultural interests have been treated by responsible governments in this country; possibly a still more limited number have had the means of knowing what is now done in Great Britain, or of the great educational efforts organized by competing importing countries. This Pamphlet has been compiled to afford information, for public opinion is always in advance of legislation; and until the united voices of those concerned in Ireland demand immediate application of equal law and administration in agricultural affairs, it

will hardly be provided by those in authority, who are generally more active in the political arena than they are in the solution of economic social problems.

Questions have been asked in the House of Commons relative to the establishment of a Veterinary College and a Board of Agriculture for Ireland. The late Prime Minister replied that, "the subjects were having favourable consideration." The Veterinary College is almost an accomplished fact. But the Board of Agriculture is of much vaster importance. Waste of resources must ultimately result in National decay. This subject therefore ought to be dealt with in a sympathetic, inquiring spirit, being entirely non-political and non-sectarian.

It will be shown that the production and population of Ireland is decreasing; everything grows less except the area of uncultivated land, the growth of taxation, and the spread of poverty. This most unfortunate condition of affairs needs a co-operative effort from those who may agree to differ upon other subjects, but might come together for the common good. The ruin of our neighbour is frequently the prelude of approaching disaster to ourselves.

WILLIAM FIELD.

May, 1894.

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A BOARD OF AGRICULTURE

FOR

IRELAND.

CHAPTER I.

DEVELOPMENT OF FERTILITY.—TREATMENT OF LIVE STOCK,
AND FISHING INTERESTS.—FACILITY OF TRANSIT.

IT is agreed almost universally, that a Board of Agriculture is essential to the development of resources and the well-being of Ireland. Such departments are in active existence all over Europe, America, and Great Britain.

"Peace hath her victories as well as war!" And when the enormous sums spent in the Army and Navy are considered, it is especially desirable that an agricultural country should be properly equipped for the competitive industrial warfare which is mainly the result of foreign imports, and the absence of similar facilities for instruction, development, and progress afforded in nearly all competing countries. Ireland is one of the most fertile countries with soil famous in olden time, and it would still preserve its reputation if the proper means were adopted to enable production to be in ratio to its capacity.*

* "Better known than Britain by reason of its ports and harbours, which were more suitable for trade and commerce."—*Tacitus*.

"In this respect (ports and harbours), better provided than Britain."—*Lombard*.

"Scotia, also called Hibernia, is happy in its soil."—*Breviarum Aberdanese*.

"Nature has bestowed on Ireland mildness of look and climate. It has a great many majestic lakes, abounding in fish, larger than there is in any other country we have seen; this land is specially favoured."—*Camb. Dist. Cap. 1, Sept. Top.*

"Its exuberant fertility," said Mr. Curwen in 1837, "enables the husbandman to proceed in a manner which, if pursued in England, would long ago have made there a desert of a garden." In the "Statistical Account of the British Empire," MacCulloch writes: "A large proportion of the surface of Ireland is covered with bogs and mountains (seven-eighths reclaimable) but notwithstanding this deduction it contains a great deal of most excellent land. The luxuriance of the pastures and the heavy crops of oats which are everywhere raised even with the most wretched cultivation, attest its extraordinary fertility." Mr. Wakefield, an English agriculturist of great experience, wrote: "A great portion of the soil of Ireland throws out luxuriant herbage, springing from a calcareous subsoil without any considerable depth. Places exhibit the richest loam I ever saw turned up with a plough." Arthur

"Hibernia is distinguished by some things unknown to the ordinary course of nature, as, though the treasury of this land seems to be of a peculiar nature, wherein she has yielded up her rare and more valuable secrets."—*Ib.*, *Cap.* 2.

"Of all lands she is the most temperate, neither the burning heat of Cancer forces you to the shade, nor the piercing cold of Capricorn forcibly invites you to the fire."—*Ib.*, *Cap.* 25.

"The temperature of its air is such that neither the obstructing cloud, nor the pestilential breeze, nor the emaciating atmosphere is there."—*Ib.*

"She has deer so remarkably fat that they are unable to run; and the smaller they are, the statelier their head and horns."—*Ib.*

"It is an island most rich in plains of undulating corn, well irrigated with fountains and rivers, its woods and meadows are enchanting, in metals abounding, of gems productive."—*Bart. Angl.* c. 15, p. 80.

"Scotia and Hibernia are the same; next to Britain it is the greatest island, less in extent, but more fertile in soil."—*Isidore*, c. 6, b. 14, *de insulis*.

"Of all islands (Ireland) has the most productive glebe."—*Suirus on the Life of St. Rumold*.

"Of every rich soil, of a yield of crops, a genial land, the fields abounding in every sort of produce, its mountains covered with cattle."—*Gerald Barry's Topography of Ireland*.

"An island in air, sun, and soil, salubrious for mankind, Scotia teems with milk and honey throughout its lovely plains.

—*From a Life of St. Bridget in the Vatican*.

Young declared: "It is the richest soil I ever saw and such as is applicable to every wish. It will fatten the largest bullock and at the same time do equally well for sheep, for tillage, for turnips, for wheat, for beans, and in a word for every crop and circumstance of profitable husbandry. You must examine into the soil before you can believe that a country which has so beggarly an appearance can be so rich and fertile." Further confirmation of the superior fertility of the soil may be derived from many agricultural authorities; principally from Messrs. Johnston and Law's Report in 1843, and M. Moreau de Jonnes's interesting record, in which among other curious facts he showed by careful statistics that the mean average yield in Ireland for wheat, rye, barley, oats, etc., exceeded that of England or Scotland.

Sir Robert Kane, speaking of the uncultivated land, said: "The uncultivated land includes bogs and mountains. It has been shown that the area of bog is 2,833,000 acres, of which all is capable of reclamation and of being adapted to productive husbandry, if not required as repositories of fuel. Of the mountainous land also, comparatively little is beyond the domain of agricultural enterprise. The average elevation of Ireland above the sea-level is not more than 387 feet; very little ground indeed lies above the elevation of 600 feet. In fact there is no district in Ireland sufficiently elevated to thereby present serious impediments to cultivation, and scarcely an acre to which the name of incapable of cultivation can be applied."

"Much good could be effected if through the instrumentality of State agricultural schools or model farms, the cultivation of forestry, the more general growth of flax, the rearing of the tobacco plant, and other cognate pursuits were encouraged and taught the people as an alternative agricultural resource. A development of these several industries would alone double the agricultural wealth of the country and almost eliminate the possibility of famine being, as it now unfortunately is,

a sure resultant from the failure of a particular crop.* The example of Germany in forest industries is well deserving of imitation in Ireland, while as regards flax nothing in the nature of things prevents its universal cultivation in the other provinces as extensively and successfully as it is grown in the North. The vast tracts of bog now useless, might be drained and planted, utilized as compressed fuel or peat moss and litter. A judicious aid from an administrative department under the control of a responsible Minister of Agriculture would at little cost effect all those advisable changes so necessary to lift Irish farming industry.† Fruit culture, market gardening, and flower growing should be encouraged."

M. Leonce de Lavergne told us a few years ago that "*l'imagination s'effraie quand on essaie de mesurer ce qui manque à un pays dans cet état,*" and that it would take £320,000,000 to put Irish land into the same condition as that of other civilized countries. Things have improved somewhat since; but the improvement is trivial compared with what remains to be done. What has the Legislature done for Irish agriculture? Until lately it allowed it to languish under a system which everybody now admits to have been indefensible, and it resisted with scorn every attempt at reform. It still leaves the landless labourers in "huts of one room that an Esquimaux would despise." It leaves drainage, the great requirement of Irish soil and climate, almost undone. "And whilst millions of the public money are expended on other parts of the United Kingdom,

* "It is only necessary to mention the fight with the potato disease, experiments with new varieties of the potato, and with imported seed grain, to indicate this. There are reasons for believing that the contest with the potato blight is now entering upon a stage when this pest of the small farmer will be deprived of much of its power for evil. Strange it is, however, that in no country of Northern Europe is less being done to work out the problem than in Ireland. We seem to think it is no affair of ours; we almost trust to the experimental stations of France and Germany carrying it through."

—D. C. O'Donelan.

† R. J. Kelly's Pamphlet, "Some of the Resources of Ireland."

Houses of the Oireachtas

Number of Animals Exported from Ireland to Great Britain, and Number of Animals Imported into Ireland during each of the Years 1892 and 1893:—

Year.	Cattle.						Sheep			Swine.			Total Cattle, Sheep, and Swine.	Goats.	Horses.				Mules or Jennets.	Asses.	Total Animals.	
	Oxen, Bulls, and Cows.				Calves.	Total.	Sheep.	Lambs.	Total.	Fat Swine.	Store Swine.	Total.			Stallions	Mares.	Geldings.	Total.				
	Fat Cattle.	Store Cattle for Fattening or Breeding purposes.	Other Cattle.	Total.																		
(1.)—ANIMALS EXPORTED FROM IRELAND TO GREAT BRITAIN.																						
1892,	256,538	305,397	6,278	568,213	56,290	624,503	713,916	368,549	1,082,465	457,977	42,974	500,951	2,207,919	7,465	113	14,377	18,191	32,681	6	863	2,248,934	
1893,*	316,384	319,181	8,473	644,038	45,349	689,387	705,532	404,655	1,110,187	405,244	51,329	456,573	2,256,147	6,224	152	13,387	16,929	30,468	17	465	2,293,321	
(2.)—ANIMALS IMPORTED INTO IRELAND.																						
1892,	—	106	—	106	6	112	3,627	3,384	7,011	1	29	30	7,153	11	88	1,472	2,175	3,735	7	16	10,922	
1893,	—	326	2	328	31	359	7,296	3,112	10,408	10	149	159	10,926	47	131	1,570	2,170	3,871	—	3	14,847	

* Including Isle of Man.

those great works which only Government can deal with, such as the deepening of river-beds and the arterial drainage of large districts are deputed to local boards with limited resources." Of the twenty millions of arable Irish acres it leaves two-thirds either half tilled or in pasture. It leaves over a million of Irish acres that are capable of cultivation without any cultivation whatever. It does not effectively provide agricultural instruction.*

The production of live stock is the most important factor in Irish prosperity, and it must be remembered that upon the production and sale of store animals, and meat, and milk, and butter, the agricultural rates and rents mainly depend. Corn is handicapped so heavily by foreign imports that no farmer could meet his engagements by its culture in our uncertain climate. Therefore, it is evident that animal produce must mainly pay commercial, social, and governmental charges on land.†

Under those conditions it is difficult to realize why the responsible authorities should have been so slow to understand the advantages to be derived from an educated, well-trained body of skilful veterinarians. Surely it is the business of those who assume the functions of government, which rests on the basis of general utility, to take up this portion of national interests, which has hitherto been almost allowed to be maintained by private enterprise. England, Ireland, and Scotland should have their ministers of agriculture, with subordinate officers to look after local stock affairs, and a central council with undisputed authority to enforce such regulations as may be wise and necessary, without unduly interfering with trade and progress.

France founded the first veterinary European college in Lyons under Bourgelat about the year 1761. The success of this institution was so marked that establishments were opened at Alfort and subsequently at Toulouse. In 1791 the first English veterinary college

* J. G. McCarthy.

† See Table opposite.

was inaugurated in London, with Charles Vial de Sainbell as principal.

Subsequently Edinburgh started a similar institution, and now that much needed educational agency, a Veterinary College for Ireland is about to be established.

The time has come when international co-operation is also needed. Fortunately this is not a subject surrounded with political complications. It should be the interest of every nation to protect each other from disease, at the same time giving every opportunity for free trade in cheap, wholesome food supplies, which give strength to "the people, who are the State."

The scientific treatment of anthrax, pleuro-pneumonia, tuberculosis, murrain, foot and mouth and other diseases in cattle, the extirpation of scab and mange amongst sheep, and of swine fever in pigs, require systematic attention, which is now capably afforded by the experienced and efficient staff of the Veterinary Department of the Privy Council of Ireland.

But the central Government's machinery is hardly suitable, and it wants a wider sphere of skilled local co-operation. The poor-law unions have been utilized as a kind of peg to hang on all sorts of legislative functions entirely out of accord with its original design. In Belgium the country is methodically mapped out under certain supervision and control. This could and ought to be done in Ireland, as it would be exceedingly useful in adopting measures when necessary to stamp out disease.

This country is justly famous for producing horses, and the Royal Dublin Society, aided by Government grants, has done much in the direction of improvement. But the whole question of live stock sires should be looked after in every species, and no animal ought to be allowed unless up to a certain standard of excellence.*

* "Dairy farming naturally leads to the breed of cattle, and here we meet with another branch of agriculture where Government direction could be productive of much advantage, and where the present system "*laissez faire*" contrasts so unfavourably with the work of some of the foreign Agricultural Departments. In many parts of

Foreign importing countries have improved their stock relatively much more within the past few years, owing to carelessness at home, which sometimes is financially suicidal to the owners, and at all times detrimental to the character of our stock. Poultry has improved, but the export of eggs and birds should be immensely increased.

Without entering into politics, it may be safely alleged that this country was systematically thinned of its human population in its most fertile parts in order to afford greater scope for cattle raising. Now, when foreign competition is exceedingly keen, the Imperial Government and departments, having at least partial charge of ovine and bovine concerns, apparently fail to note the necessity of home progress and the urgent need of keeping in line with the intelligent, consistent action of food importing nations. For the most part, those imported animal products are frequently favoured with cheaper railway tariffs, quicker transit, more humane treatment by sea and land, and other advantages. This economic question affecting the payment of agricultural rent, if not approached in honest fashion and solved in a statesmanlike manner, will probably force its consideration into the select region of finance, and the boundless prairie of politics, in a disagreeable but earnest style

Ireland the breed of cows is so wretched that feeding them involves a certain loss of land. We find, however, that in several places in Germany, where the "Kleinbetrieb" (small farming) prevails, some Government aid is given to the Communes, which are under very stringent obligation to see that bulls of approved kinds are maintained in their districts. A similar system here would involve a very trifling Government outlay, but would produce a very rapid and satisfactory change in the breed of farm stock. Among the large farms and the dairies of the South it would be either unnecessary or could be made to pay for itself, but in the congested and semi-congested districts of the West, where the small farming prevails, an extension of the useful work done by the Congested Districts Board in this direction is undoubtedly necessary. A few years ago the pig buyers of Limerick undertook to improve upon the breed of pigs in their district of supply by the distribution of some superior animals in Galway and Mayo. The improvement which has followed is an indication of what a small expenditure, properly directed, could bring about in the farm stock of the smaller farms."—*D. C. O'Donelan.*

possibly unprofitable to receiving personages interested in land and revenue.

“What farmers most suffer from is a want of sufficient, efficient and economical means of transport for cattle and produce to a centre of trade and market. The Irish railways, as a rule, cannot be credited with any liberal notions as to moderate rates of traffic. A general overhauling of their constitution, and an entire enforced change in their conceptions of duty to the public are certain and necessary reforms of the near future. Nothing at present hinders the natural development of agricultural industry more than the narrow-minded and foolish policy of these carriers who have monopolised the public highways. Their diverse and divergent management injures their own as well as Ireland’s interests. There frequently is an absence of cordial relations between one neighbouring line and another, and the entire want of competition keeps them at a damaging level of changeless, unprogressive rest. This want of enterprise in so important a factor is against the industrial progress of a country. Under no principle of justice or economy should it be tolerated, and as some boards of directors show an indifference to public censure, such as it is, the only efficient way of dealing with these official anachronisms is by legislative means, compulsorily amalgamating all smaller lines under one supreme control, and appointing a body more useful and efficient than the Railway Commissioners to guide and direct the general policy, determine rates of traffic, train service, and accommodation, upon some basis in consonance with the exigent wants of the time.” *

Facility of transit is equally necessary with volume of production; if Irish railway directors continue to place the individual interest above the welfare of the community, the time is ripening when the iron road of commerce in Ireland must become State property, instead of remaining a close corporation of monopolists chartered and protected by Government, which is sus-

* R. J. Kelly’s Pamphlet, “Some of the Resources of Ireland.”

tained by general taxation. "Now, if from causes which the power and credit of a State alone can deal with, and because of difficulties which only an organized authority can effectually remove, the internal communications of a country are found to be defective, centres of populations isolated for all commercial or trading purposes, harbours unsafe, agriculture languishing, manufacturing industries few and feeble, the bone and sinew of the country idle or emigrating, and all the while the cost of Imperial and local taxation year by year mounting up, if from legislative incumbrances no fiscal reform can be carried out, if roads and railways are unmade owing to administrative difficulties, an inept and antiquated system of Executive control, combined with the constitutional inability of a people so placed, of themselves, to remedy this disastrous condition of affairs, surely it is the necessity and duty of the Government to provide for these wants. In India the gigantic railway enterprises and irrigation works there carried out had to be supported by the State and under State control, and what was done in any of those Eastern presidencies is required as essentially, as pressingly, and as urgently in Ireland." *

In France, Government subventions are levied and given to railway companies to decrease the cost of goods carriage, so as to enable native products to compete with foreign imports coming by a cheaper sea route. The seas surrounding Ireland abound with fish, but until very recent times this great source of food and revenue has been very much neglected. High railway rates practically closed markets, but there is more common sense being exercised at present.

* R. J. Kelly's "Some of the Resources of Ireland."

CHAPTER II.

FOREIGN ACTIVITY AND NATIVE APATHY.

"POLITICAL constitutions count for much ; but they do not count for everything. Communities, like individuals, often thrive under adverse circumstances. Lord Macaulay shows how the desire of each man to better himself and the constant advances of physical science will produce an improvement in the condition of a nation despite great political drawbacks, or even great national calamities; Robert Ramsey wrote an able tract to prove that the loss of Scotch legislative independence was the real hindrance which Scottish industry and energy has had to overcome. But in Scotland physical science has had much more attention than in Ireland."

"In one of Mr. Matthew Arnold's able papers on 'Liberty and Authority,' he elucidates the too-much-forgotten truth that political institutions of all kinds are but pieces of machinery for working out the public welfare. Now, if in working out our public welfare we have been employing a political machinery which common sense, political philosophy, and experience prove to be unsuitable, let advantage be taken of events in other countries."*

An opportunity may be afforded by the Committee on the Land Acts to inquire into the value of a board of the kind and the whole question of State aid to Irish agriculture. The Congested District Board and the Agricultural Department of the Land Commission are the creation of these Acts. Both were intended to undertake some of the duties of a Ministry of Agriculture, and the inquiries of the Committee will be incomplete if they do not include some observations into the proposed new arrangement which is believed to have a powerful influence on Irish land.

* J. G. McCarthy's "Plea for Home Rule."

The work done by the Ministries of Agriculture on the Continent, particularly of Germany, leave no doubt that something of the kind, fashioned on strictly German lines, should be formed here. The condition of Ireland and a very large part of Germany fifty years ago was similar in several particulars. Except in the Rhine provinces the soil was poor, the climate not unlike our own, but largely by a process of State interference Germany has been led to prosperity from the borderland of ruin. Since 1815 the country was divided into from 20 to 30 independent states. Politically, this division was injurious, but from the point of view of political economy it is not without its advantages. There is scarcely a system of State aid which has not been tried out to its fullest extent in some one of them. As a result of the similarity of language there was intimate communication, and a process of the survival of the fittest has been in operation among the various experimental systems of State aid to agriculture and native industries. The Agricultural Departments may be said to have had their origin in Germany, and from the first the support and encouragement of the 'petite' culture was their particular office. It would be, therefore, altogether unfortunate if on setting up an Agricultural Board for Ireland it would select for its model the English Board of Agriculture, which is well known to bear the same proportion to one of the German Agricultural Departments that the English War Office does to the War Office at Berlin. To avoid such a disaster as this the direct simple method must be adopted of placing the department or board under the control, for some years at least, of a Director or Secretary for Agriculture brought from one of the Home Rule Governments of Germany. It is not suggested that Irishmen are not quite equal to Germans in ability; but only that in directing State aid to agriculture and the development of industries we have not the experience or the knowledge which the peculiar condition of Germany and the extreme system of local government have worked out there during the last eight years.

“So long ago as 1851, the first of the Versuchs stationen (experimental stations) was started at Mockern, near Leipzig. It was at first exclusively directed to the chemical questions connected with the management of land. But the success of Mockern was so signal that a few years ago there were 127 stations in the different States of the Empire. ‘The stations have taken over the control of the trade in food, seed, and manure,’ and the latter duty not only secures the best article to the farmer, but the cheap soil analysis enables him to apply the manure which is most suited to his land and to his crop. In our congested districts, for instance, it is nothing extraordinary to find Peruvian guano going into bog, while the valuable but cheap kainit and basic slag are almost unknown. The work done by the seed department of the experimental stations is not less important than the control of the seed trade.”*

How is this managed here now? “There has just been placed on the Statute Book an Act which deeply interests the agriculturists of Ireland, and intimately concerns the farming community. The Fertilisers and Feeding Stuffs Act, which came into operation on the 1st of January, is as much for farmers and agriculturists on one side, as for the vendors of feeding stuffs and manures on the other, and it is intended to prevent the adulteration of those necessary articles of consumption and use upon the farm. If carefully and vigilantly carried out, it is destined to do incalculable good, and to secure for farmers the best and purest kinds of stock foods and fertilisers.

“The elaborate particulars regulating proceedings by a buyer to procure samples of the questioned articles are prepared and promulgated by the Privy Council, in and for this country, and are word for word the same as those issued by the Board of Agriculture in England. The deplorable mismanagement of the interests of this country are seen in the machinery for the administration of this Act. In England it will be

* Dermot C. O'Donelan.

worked by a competent and qualified body acquainted with the interests of agriculturists, and capable of protecting them. The Board of Agriculture will supervise and control proceedings with the watchful care and zeal, which so capable a body can be expected to display in the efficient discharge of their duties, while in the local carrying out of the measure the County Councils will, in each county, be expected to secure thorough efficiency of administration of the protective provisions of a useful Act passed for the benefit of the struggling agriculturists of these countries."

"In Ireland, on the other hand, the Privy Council, whose chief concern and use is for the regulation of the police arrangements and peace maintenance of the country; a body of men entirely unacquainted with the wants, and out of sympathy with Irish farmers, to such a lot of men, with such qualifications, are to be entrusted the general control of the Act. This is bad enough, but still a more grievously unfair condition of things is to have the local administration thrown upon the Grand Juries, for upon them will be imposed the responsibility of carrying out the appointment of the analyst and the practical working of the measure. A more unsatisfactory condition of things could not exist for those interested in the efficiency of the Act. The Grand Juries are not a representative or a popular body to say the least of them. Every successive Government for the past forty years has been threatening to abolish them, and they exist merely on sufferance. Their constitution is objectionable in every sense, and the want of continuity in the body makes them unable to discharge any public duties with that due efficiency needed in these days. Under this Act, for example, they will be obliged to appoint district analysts for their respective counties, but beyond the mere act of appointment, even if they go so far, it will in the nature of things be impossible to advance, as to superintend the practical working of the Act will be out of the question for a body meeting only twice a year, and then only for at most six days, after which they disappear into space and seek

directly to exercise authority or control over the local administration." *

It would be interesting to learn how many Grand Juries in Ireland have appointed analysts, as there are many able native and resident agricultural chemists available.

"That agriculture would be enormously improved by an efficient board, the example of the German Agricultural Departments places beyond a doubt. It is now more than forty years since the first experimental station was established in Germany. The success of the system has been so great that it has extended to most other countries in Europe, and in the United States of America there is an Agricultural Department formed on strictly German lines, having 55 stations in the Union." †

CHAPTER III.

WHAT HAS BEEN DONE FOR GREAT BRITAIN.

AN Act was passed in August 1889 establishing a Board of Agriculture for Great Britain, and defining its working—which now costs something over £50,000 per annum. Yet although Ireland is supposed to enjoy equal law, up to the present no attempt has been made to provide a similar governmental institution, where it is more urgently required in an agricultural country. An Irish Board should be responsible through its Minister to Parliament, unlike the old fashioned, practically irresponsible nominated Boards now in existence, which are mainly charged with the material interests of the country. Obviously many of the details set out would not suit Ireland, but they are printed to show what has been done for manufacturing Great Britain.

* "Tuam Herald."

† "Irish Daily Independent."

BOARD OF AGRICULTURE ACT, 1889.

52 & 53 VICT. CHAP. 30.

(FOR GREAT BRITAIN.)

A.D. 1889.

An Act for establishing a Board of Agriculture for
Great Britain. [12th August, 1889.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :

1.—(1). There shall be established a Board of Agriculture consisting of the Lord President of the Council, Her Majesty's Principal Secretaries of State, the First Commissioner of Her Majesty's Treasury, the Chancellor of Her Majesty's Exchequer, the Chancellor of the Duchy of Lancaster, and the Secretary for Scotland, and such other persons (if any) as Her Majesty the Queen may from time to time think fit to appoint during Her Majesty's pleasure: Provided that the Board shall not be entitled to act unless the President or one of the officers of State above mentioned is present.

Establish-
ment of
Board of
Agriculture.

(2.) It shall be lawful for Her Majesty the Queen from time to time to appoint any member of the Privy Council to be President of the Board during Her Majesty's pleasure.

(3.) The Board shall be deemed to be established on the appointment of the President thereof.

2.—(1.) There shall be transferred to the Board of Agriculture—

Powers and
duties of
Board.

(a) the powers and duties of the Privy Council

under the Acts mentioned in Part One of the First Schedule to this Act ;

- (b) the powers and duties of the Land Commissioners for England under the Acts mentioned in Part Two of the First Schedule to this Act or under any other Act, whether general, local and personal, or private ; and
- (c) on such date as shall be fixed by the Commissioners of Her Majesty's Treasury all powers and duties vested in the Commissioners of Her Majesty's Works and Public Buildings under the Survey Act, 1870.

33 & 34 Vict.
c. 13.

(2.) The Board of Agriculture shall also undertake the collection and preparation of statistics relating to agriculture, and forestry, and may also undertake the inspection of, and reporting on, any schools which are not public elementary schools, and in which technical instruction, practical or scientific, is given in any matter connected with agriculture or forestry, and the aiding of any school which admits such inspection, and in the judgment of the board is qualified to receive such aid and the aiding of any system of lectures or instruction connected with agriculture or forestry, and the inspection of and reporting on any examinations in agriculture or forestry.

(3.) The Board of Agriculture may also make or aid in making such inquiries, experiments, and research, and collect or aid in collecting such information as they may think important for the purpose of promoting agriculture or forestry.

Power as to
dogs.

3. The Board of Agriculture may from time to time make such general or special orders as they think fit for the following purposes, or any of them, that is to say—

- (a.) for prescribing and regulating the muzzling of dogs, and the keeping of dogs under control :
- (b.) for prescribing and regulating the seizure, detention, and disposal (including slaughter) of stray dogs, and of dogs not muzzled, etc. :

and the Contagious Diseases (Animals) Acts, 1878 to 1886, shall apply as if the said purposes were among the purposes mentioned in section thirty-two of the Contagious Diseases (Animals) Act, 1878. 41 & 42 Vict. c. 74.

4. It shall be lawful for Her Majesty the Queen in Council from time to time by order to transfer to the Board of Agriculture such powers and duties of any Government department as are conferred by or in pursuance of any statute, and appear to Her Majesty to relate to agriculture or forestry, and to be of an administrative character; Power to transfer other powers of Government departments.

Provided that before any such order is made, the draft therefor shall be laid before each House of Parliament for not less than thirty days on which such House is sitting, and if either of such Houses before the expiration of such thirty days presents an address to Her Majesty against the draft or any part thereof, no further proceedings shall be taken thereon, without prejudice to the making of any new draft order.

5.—(1.) The Board of Agriculture may from time to time appoint a secretary and such officers and servants as the Board may, with the sanction of the Treasury, determine. Staff and remuneration and expenses.

(2.) There shall be paid out of money provided by Parliament to the President, if not one of the Officers of State above mentioned, nor any other Officer of State receiving a salary, the annual salary of two thousand pounds a year, and to the secretary, officers, and servants of the Board such salaries or remuneration as the Treasury may from time to time determine.

(3.) All expenses incurred by the Board of Agriculture in the execution of their duties under this Act, to such amount as may be sanctioned by the Treasury, shall be paid out of money provided by Parliament.

6.—(1.) The Board of Agriculture may sue and be sued, and may for all purposes be described, by that name. Style and seal of Board.

(2.) The Board shall have an official seal, which shall be officially and judicially noticed, and such seal shall be authenticated by the signature of the president

or some member of the Board, or of the secretary, or some person authorised by the President of the Board to act on behalf of the secretary.

(3.) In the execution and discharge of any power or duty transferred to the Board of Agriculture by or in pursuance of this Act, the Board shall adopt and use the style and seal of the Board of Agriculture and no other.

Proceedings
of Board.

7.—(1.) Every document purporting to be an order, licence, or other instrument issued by the Board of Agriculture, and to be sealed with the seal of the Board, authenticated in manner provided by this Act, or to be signed by a secretary or any person authorised by the President of the Board to act on behalf of the secretary shall be received in evidence and be deemed to be such order, licence, or instrument without further proof, unless the contrary is shown.

(2.) A certificate signed by the president or any member of the Board of Agriculture, that any order, licence, or other instrument purporting to be made or issued by the Board is so made or issued, shall be conclusive evidence of the fact so certified.

Power of
President to
sit in Parlia-
ment.

30 & 31 Vict.

c. 102. s. 52.

31 & 32 Vict.

c. 48. s. 51.

31 & 32 Vict.

c. 49. s. 11.

8.—(1.) The office of President of the Board of Agriculture shall not render the person holding the same incapable of being elected to, or sitting or voting as a member of, the Commons House of Parliament, and shall be deemed to be an office included in Schedule H. of the Representation of the People Act, 1867, Schedule H. of the Representation of the People (Scotland) Act, 1868, and Schedule E. of the Representation of the People (Ireland) Act, 1868.

(2.) The President of the Board of Agriculture, if not one of the officers of State above in this Act mentioned, shall take the oath of allegiance and official oath, and shall be deemed to be included in the first part of the schedule to the Promissory Oaths Act, 1868.

Transfer of
officers.

9.—(1.) There shall be transferred and attached to the Board of Agriculture such of the persons employed under the Privy Council or any other Govern-

ment department, in or about the execution of the powers and duties transferred by or in pursuance of this Act to the Board of Agriculture as the Privy Council, or Government department, with the sanction of the Treasury, determine.

(2.) There shall be transferred and attached to the Board of Agriculture all persons employed under the Land Commissioners.

(3.) The Board of Agriculture may from time to time distribute the business of the Board amongst the several persons transferred thereto in pursuance of this Act in such manner as the Board may think right, and those officers shall perform such duties in relation to that business as may be directed by the Board.

Provided that such persons shall, while they continue in office, be in no worse position as respects their tenure of office, salaries, or superannuation allowances than they would have been in if this Act had not passed.

(4.) Any order in Council may in pursuance of this Act which transfers any powers or duties to the Board of Agriculture shall extend this section to the persons employed in or about the execution of those powers and duties.

10. After the establishment of the Board of Agriculture, no person shall be appointed to the Office of Land Commissioner for England.

Ultimate
abolition of
Land Com-
missioners.

Provided that any person who holds office as Land Commissioner at the passing of this Act shall be assigned such position in or under the Board of Agriculture as Her Majesty may direct, so that he is not placed in any worse position as respects his tenure of office, salary, or superannuation allowance than he would have been in if this Act had not passed.

11.—(1.) In the construction and for the purposes of any Act of Parliament, judgment, decree, order, award, deed, contract, or other document passed, or made before the establishment of the Board of Agriculture, but so far only as may be necessary for the exercise of the powers or the discharge of the duties by this Act,

Construction
of Acts and
documents.

or any order in Council made in pursuance thereof, transferred to that Board, the name of that Board shall be substituted for the Privy Council, Land Commissioners, &c., or other Commissioners or Government department, as the case may require, and anything authorised or required to be done by, to, or before an Assistant Commissioner of any of the above-named Commissioners may be lawfully done by any officer of the Board of Agriculture for the time being assigned for that purpose.

Definitions.

12. In this Act—

The expression “agriculture” includes horticulture:

The expression “the Treasury” means the Commissioners of Her Majesty’s Treasury:

The expression “the Privy Council” means Her Majesty’s most Honourable Privy Council.

Repeal.

13. The Acts specified in the Second Schedule to this Act are, as from the date of the establishment of the Board of Agriculture, hereby repealed to the extent in the third column of that schedule mentioned.

14. This Act may be cited as the Board of Agriculture Act, 1889.

N.B.—The first Schedule as relating to powers and duties of Privy Council, Land Commissioners, Copyhold Acts, Inclosure of Commons and Allotments Acts, Metropolitan Commons, Drainage and Improvement of Land Acts, and their duties are omitted, as the Local Acts of Great Britain do *not* apply to Ireland; also some sub-sections which need not be reproduced.

CHAPTER IV.

COPY OF GREAT BRITAIN'S WORKING
OF THE
BOARD OF AGRICULTURE.

1st August, 1893.

DIVISION OF BUSINESS, NAMES OF OFFICERS, ETC.

President.

Secretary.

Assistant Secretary.

Agricultural Adviser and Director of Land Department.

Directors of Branches—Two: Director of Veterinary Department; Director of Statistical, Intelligence, and Educational Branches.

Legal Advisers—Two: Resident Legal Adviser; Junior Legal Assistant.

Private Secretary to President.

Private Secretary to Secretary.

Chief Clerks.

A. DIVISION.

CHIEF CLERK'S BRANCH.—Superintendence, marking, and circulation, of official letters and papers in the A. Division.

Business and correspondence connected with the administration and execution of the Contagious Diseases (Animals) Acts of 1878, 1884, 1886, 1890, and 1892, including the preparation, issue, and publication, of Orders thereunder.

Business and correspondence connected with the administration and execution of the Markets and Fairs (Weighing of Cattle) Acts, 1887 and 1891, including the preparation and issue of Orders thereunder.

Business connected with the supply of printing and stationery for the A. and B. Divisions.

Dealing with all Establishment questions arising in the Department and other kindred matters.

Preparation of Establishment Returns and keeping of records of service.

Keeping official leave-books and records of leave in the A. Division.

Preparation and revision of List of Inspectors of Local Authorities of Great Britain.

Clerks—Two : Chief Clerk ; First Class Clerk.

Registration Room.

Registration, docketing, indexing, distribution, and custody, of official letters and papers connected with the A. Division.

Clerks—Two, and one Boy Copyist.

Examining and Despatching Room.

Examining and despatching of all Correspondence of the A. Division, and circulation of Orders, Circulars, Reports, Leaflets, etc.

Clerks—One, and one Boy Clerk.

Copying Room.

One Lady Typist.

VETERINARY DEPARTMENT.—Business connected with the administration and execution of the powers conferred by the Contagious Diseases (Animals) Acts of 1878, 1884, 1886, 1890, and 1892, for the suppression of contagious diseases among animals in Great Britain.

Regulation of the landing, and inspection of all foreign animals landed in this country. Inspection of cattle-ships, landing-places, lairs, markets, auction-marts, sale-yards, etc., and railway stations.

Preparation of an Annual Report for Parliament.

Professional Officers—Director of the Veterinary Department ; Chief Inspector ; Assistant Inspector.

Travelling Inspectors.—Four : Chief Travelling Inspector ; Travelling Inspectors.

STATISTICAL BRANCH.—Collection, compilation, and publication, of the annual Agricultural and Produce Returns, and such other Statistics as are required by the Board or for presentation to Parliament.

Compilation of data for annual Reports.

Collection, tabulation, and publication weekly of the Corn Returns under the Corn Returns Act, 1882.

Calculation of local Corn Averages for special districts, in supplying statements thereof (for which Fees are charged) in reply to applications.

Collection and compilation of returns relating to diseases among Home animals, for the Veterinary Department.

Preparation and publication of Gazette Return, weekly, respecting Animal Diseases.

Collection and tabulation of Returns as to the live weight and prices of Cattle under the Markets and Fairs (Weighing of Cattle) Acts, 1887 and 1891.

Correspondence upon subjects connected with the work above mentioned.

Correspondence relating to the Returns received, and work connected with the Declarations of Local Authorities as to diseases among animals.

Obtaining from Local Authorities records as to the amounts of compensation paid by them annually to owners of animals slaughtered.

Drawing up the necessary forms for collecting the information required in this Branch, and correspondence relating thereto.

Clerks, and Assistant Clerks, Second Division ; Assistant Clerks ; and Copyists and Boy Clerks.

INTELLIGENCE BRANCH.—Noting and abstracting information transmitted by the Foreign Office, respecting agriculture in foreign countries and with reference to diseases of animals abroad.

Noting, filing for reference, and translating information contained in the official reports of Foreign and Colonial Departments of Agriculture.

Translating and digesting information from the foreign agricultural press and from veterinary and scientific publications.

Collection and filing of information from the English agricultural and general press relating to home agriculture.

Preparation for publication, of leaflets, press notices, and special reports on insects and fungi, experiments, and other subjects.

Compilation, from foreign trade reports, of statistics of the trade in animals of foreign countries.

Indexing and filing in library, of blue books, agricultural publications, and reports of foreign and colonial Departments of Agriculture.

Business and correspondence connected with distribution of leaflets and special publications, and with sale of publications at half-price to farmers' clubs and other bodies.

General correspondence with applicants for information.

Correspondence relating to insect-attacks, experiments, and similar subjects.

Clerks.

EDUCATIONAL BRANCH.—Business and correspondence connected with the administration and allotment of the Parliamentary Grant for agricultural education. Examination, discussion, and amendment, of schemes for the organization of agricultural teaching bodies. Preparation of an Annual Report for Parliament on the Distribution of Grants. Inspection of and reporting on Educational Institutions or other bodies (other than Elementary Schools) who seek the financial assistance of the Board in respect of the technical instruction in Agriculture or Forestry furnished by their means.

Inspection of and reporting on Examinations in Agriculture or Forestry.

Compiling and publishing summaries of reports on

Agricultural Experiments conducted by bodies aided by Grants.

Conferring, when so requested, with County Councils and local bodies respecting their schemes of Agricultural Education, advising them thereon, inspecting the work when in operation, and reporting thereon for the information of such councils or local bodies.

Clerk, Librarian, and Inspector.

This department would be the most important for Ireland.

B. DIVISION.

CHIEF CLERK'S BRANCH.—Dealing with Office and Establishment questions in the B. Division. Preparation of Annual Report for Parliament on the work transacted in the B. Division. Keeping official leave-books and record of leave in the B. Division.

Chief Clerk.

Registration and Collating Room.

Registration, docketing, indexing, distribution, and custody of, official letters and papers, and collating and despatching all correspondence connected with the B. Division.

Engrossing documents for confirmation; preparing estimates for the public, and, as required, supplying them, on payment, with copies of, and extracts from, confirmed documents; Copying other than that done by Lady Typists.

Clerks, Registrar and Superintendent, etc.

INCLOSURE AND COMMONS BRANCH.

Metropolitan Commons Act, 1866 to 1878.

Universities and College Estates Acts, 1858 to 1880.

Glebe Lands Act, 1888.—Business connected with applications for approval of sales of glebe lands, and investment of the moneys arising therefrom.

Small Holdings Act, 1892.—Correspondence connected therewith.

Clerks.

COPYHOLD BRANCH.—Copyhold Acts, 1841 to 1887.
Conveyancing and Law of Property Act, 1881.

TITHE BRANCH.

LAND IMPROVEMENT BRANCH.

Business connected with Applications made by Land-owners to improve and charge their Estates for carrying out the works under those Acts.

Settled Land Act, 1882.—Certifying the due execution of works of land improvement, and the amount payable in respect thereof, approval of competent engineers or able practical surveyors nominated by trustees for the purpose of giving like certificates.

Certifying, on request, of the period for which tenants for life shall maintain and repair improvement works at their own expense, and as to the insurance of the same.

Agricultural Holdings (England) Act, 1883.—Appointment of Umpires in certain Cases.

Clerks.

SURVEY AND LAND DRAINAGE BRANCH.—Arterial Drainage.—Business connected with the Land Drainage Act, 1861, including examination and determination of areas for new Commissions of Sewers and for Special Drainage Districts; Mortgage of Rates to cover the expenses of works.

Inclosure.—Examination and preparation of Maps in connection with Regulation and Inclosure Awards, and Awards for the division, partition, and exchange, of lands under the Inclosure Acts; examination of private Parliamentary Bills affecting Commons, and of all Bills affecting any public boundary.

Universities and College Estates Acts.

Glebe Lands Act.

Copyhold Enfranchisement.

Municipal and other Boundaries.

Records and Map Store.

Inspection and Copying.—Confirmed documents and maps are open to inspection by the Public, to whom copies and tracings are supplied upon payment.

Staff :

Officer in charge of Branch.

Building Clerk.

Chief Surveyor.

Assistant Surveyors.

Second Division—Record Keeper.

Draftsmen.

A. AND B. DIVISIONS.

LAW BRANCH.

Advising upon, and supervising correspondence relating to questions of law submitted to the Board; advising upon legal questions arising in connection with the work of the Board, etc.

ACCOUNTS BRANCH.

Preparation of Annual Estimates and Appropriation Accounts; calculation and payment of salaries; furnishing Monthly Accounts to Audit Office; examination and payment of Accounts; receipt of Fees for inspection of official documents deposited in the Office, and of sums paid for Extracts and Tracings therefrom supplied to the public. The various Account transactions in connection with moneys received under Acts administered by the Board, etc.

Clerks.

Office Keeper.

House Keeper.

Messengers.

Fireman.

CHAPTER V.

WHAT IS BEING DONE IN IRELAND.

THERE are at present a number of Departments dealing with agricultural matters in Ireland, at least four or five, viz. :—

1. General Register Office (Statistics and General information.)
2. Veterinary Department, Privy Council (Diseases of animals, etc.)
3. National Board of Education (Teaching at Glensnevin, etc.)
4. Land Commission (helping Congested Districts Board and experimenting.)
5. Board of Works (Agricultural Loans.)

Besides these, there is the Royal Dublin Society doing all sorts of things in the Agricultural line.

It is obvious that a proper co-ordination of the various scattered arrangements dealing with Irish Agriculture under a well organised Department will do more to profit Ireland than any other scheme. Meantime, to educate public opinion up to that point, it is expedient to briefly summarize the reports of those Departments, and to contrast their limited sphere of operations with the wider scope afforded in Great Britain.

AGRICULTURAL STATISTICS, IRELAND, 1893.

The following Table shows, by Provinces, the total extent (in statute acres), under Crops, Grass, Fallow, Woods and Plantations, Turf Bog, Marsh, Barren Mountain Land, Water, Roads, Fences, &c., in 1892 and 1893:—

PROVINCES.	Total extent under Crops (including Meadow and Clover).	Grass.	Fallow.	Woods and Plantations.	Turf Bog, Marsh, Barren Mountain Land, Water, Roads, Fences, &c.*	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Leinster, . . . {1892, . . . {1893,	1,333,183 1,319,922	2,662,104 2,681,830	5,298 5,046	94,484 94,796	747,036 740,511	4,842,105
Munster, . . . {1892, . . . {1893,	1,214,029 1,226,982	3,224,303 3,223,851	7,883 4,706	102,507 102,363	1,385,959 1,376,779	5,934,681
Ulster, . . . {1892, . . . {1893,	1,693,312 1,686,517	2,295,624 2,313,796	7,520 8,006	58,976 58,046	1,266,902 1,255,969	5,322,334
Connaught, . . {1892, . . {1893,	642,584 644,107	2,071,793 2,089,371	3,597 4,280	53,619 53,440	1,462,631 1,443,026	4,234,224
Total, . . . {1892, . . {1893,	4,883,108 4,877,528	10,253,824 10,308,848	24,298 22,038	309,586 308,645	4,862,528 4,816,285	20,333,344

The total extent under crops in 1893 is 4,877,528 acres, being a net decrease on the extent in 1892 of 5,580 acres, or 0·1 per cent. There was an increase in Munster of 12,953 acres, or 1·1 per cent.; in Connaught, of 1,523 acres, or 0·2 per cent.; and a decrease in Leinster, of 13,261 acres or 1·0 per cent.; and in Ulster, of 6,795 acres, or 0·4 per cent.

* Including 129,681 acres under water.

† Exclusive of 492,252 acres under the larger rivers, lakes, and tideways.

GREEN CROPS.

—	1892.	1893.	Increase in 1893.	Decrease in 1893.
	Acres.	Acres.	Acres.	Acres.
Potatoes,	740,025	723,536	—	16,489
Turnips,	300,447	302,820	2,373	—
Mangel Wurzel and Beet Root,	51,554	47,025	—	4,529
Cabbage,	41,184	41,209	25	—
Vetches and Rape, . .	11,948	11,046	—	902
Carrots, Parsnips, and other Green Crops, .	29,705	27,891	—	1,814
Total,	1,174,863	1,153,527	—	21,336
<i>Decrease in Green Crops in 1893, . . . 21,336 Acres.</i>				

GENERAL SUMMARY OF CEREALS, GREEN CROPS, &C.

—	1892.	1893.	Increase in 1893.	Decrease in 1893.
	Acres.	Acres.	Acres.	Acres.
Cereal Crops,	1,494,788	1,489,393	—	5,395
Green Crops,	1,174,863	1,153,527	—	21,336
Flax,	70,647	67,444	—	3,203
Meadow and Clover. { Clover, Sainfoin, and Grasses } under Rotation	623,886	642,056	18,170	—
Permanent Pas- ture or Grass not broken up in Rotation,	1,518,924	1,525,108	6,184	—
Total,	4,883,108	4,877,528	—	5,580
<i>Total Decrease in extent of Land under Crops in 1893, 5,580 Acres.</i>				

Table showing the area under the several Crops in each year from 1889 to 1893, inclusive:—

CROPS.	1889.	1890.	1891.	1892.	1893.
Wheat,	Acres. 89,745	Acres. 92,341	Acres. 80,870	Acres. 75,408	Acres. 54,988
Oats,	1,238,952	1,221,013	1,215,396	1,226,244	1,248,360
Barley,	185,783	182,058	177,966	175,178	168,788
Bere and Rye,	16,257	14,952	13,796	13,525	13,651
Beans and Pease,	4,356	4,370	4,735	4,433	3,606
Potatoes,	787,234	780,801	753,332	740,025	723,536
Turnips,	297,913	295,386	300,326	300,447	302,820
Mangel Wurzel and Beet Root,	44,021	46,457	51,757	51,554	47,025
Cabbage,	42,437	45,964	43,049	41,184	41,209
Vetches and Rape,	13,038	13,282	12,872	11,948	11,046
Carrots, Parsnips, and other Green Crops,	35,106	32,572	30,088	29,705	27,891
Flax,	113,652	96,896	74,665	70,647	67,444
Meadow and Clover { Clover, Sainfoin, and Grasses under Rotation, Permanent Pasture or Grass <i>not broken up in Rotation</i> }	670,242	631,818	595,609	623,886	642,056
Total extent under Crops,	1,517,280	1,461,816	1,463,920	1,518,924	1,525,108
	5,056,016	4,919,726	4,818,381	4,883,108	4,877,528

In this connection it is useful to note the enormous decrease in the cultivation of Potatoes and Wheat. Also to observe that, although Cattle are less by 67,099, and Sheep less by 406,184, there has been a very large increase in Meadow and Clover Land.

RETURNS OF LIVE STOCK.

It appears from the following Table that between 1892 and 1893 there has been an *increase* of 8,550 in the number of horses and mules; and an *increase* in the number of pigs amounting to 38,893. Cattle exhibit a *decrease* of 67,099, and sheep a *decrease* of 406,184. Of the 16,096,685 poultry enumerated in 1893, 1,031,928 were turkeys, 2,177,227 were geese, 2,909,252 were ducks, and 9,978,278 were ordinary fowl.

Horses and Mules.	Asses.	Cattle.	Sheep.	Pigs.	Goats.	Poultry.
YEAR 1892.						
635,213	217,600	4,531,125	4,827,777	1,113,472	332,726	15,335,749
YEAR 1893.						
643,763	218,627	4,464,026	4,421,593	1,152,365	323,169	16,096,685
Difference in Numbers between 1892 and 1893.						
Increase, 8,550	Increase, 1,027	Decrease, 67,099	Decrease, 406,184	Increase, 38,893	Decrease, 9,557	Increase, 760,936

Scutching Mills.—In connection with the area under Flax, the number of Scutching Mills enumerated in 1893 is as follows:—In the province of Ulster, 954; Leinster, 6; Munster, 10; and Connaught, 6; making a total of 976 for Ireland.

As partially explaining the decrease in production, it is desirable to show the diminution of small holdings, of 1,427 under 5 acres, which decrease continues until the area of 50 acres is reached, as per Table annexed. This proves the tendency to extirpate cottier tenants and consolidate large farms, which produce less, from the absence of cultivation.

NUMBER OF HOLDINGS AND NUMBER OF OCCUPIERS.

Size of Holdings.	Number in 1891.	Number in 1892.	Increase or Decrease in 1892.	
			Increase.	Decrease.
Not exceeding 1 Acre, - - -	55,628	54,201	—	1,427
Above 1 and not exceeding 5 Acres, - - -	63,464	62,825	—	639
Above 5 and not exceeding 15 Acres, - - -	156,661	156,025	—	636
Above 15 and not exceeding 30 Acres, - - -	133,947	133,614	—	333
Above 30 and not exceeding 50 Acres, - - -	73,921	73,532	—	389
Above 50 and not exceeding 100 Acres, - - -	56,361	56,673	312	—
Above 100 and not exceeding 200 Acres, - - -	22,811	22,926	115	—
Above 200 and not exceeding 500 Acres, - - -	8,280	8,293	13	—
Above 500 Acres, - - -	1,567	1,565	—	2
Total, - - -	572,640	569,654	—	2,986

The number of separate holdings and the number of occupiers in each Province in 1891 and 1892 were :—

Provinces.	Number of Separate Holdings.		Number of Occupiers.	
	1891.	1892.	1891.	1892.
Leinster, - - -	123,007	121,781	109,560	108,575
Munster, - - -	126,269	125,827	114,398	114,306
Ulster, - - -	200,955	200,269	188,125	188,020
Connaught, - - -	122,409	121,777	114,587	114,374
Total, - - -	572,640	569,654	526,670	525,275

The number of occupiers of land in 1892 was 525,275, being 1,395 less than in the previous year. Excluding those holding land "not exceeding one acre," who are to a great extent merely occupiers of small gardens, they numbered 471,820 in 1892, or 113 less than in 1891. The decrease in occupiers holding land above 1 and not exceeding 50 acres was 485, and the number holding land exceeding that acreage *increased* by 372.

As a net result of the 1893 statistics, it should be noted that there is a decrease in green crops of 21,336 acres; a total decrease in land under crops of 5,580, the enormous decrease in wheat cultivation of 20,420 acres, and the alarming decrease of 16,489 acres in potato culture. Cattle less by 67,099; sheep less by 406,084. As a general result, this is the natural outcome of a decrease in small holdings to the number of 2,986, and a decrease in the number of occupiers by 1,395. This is a serious state of affairs, demanding a remedy from those who assume governmental responsibility. Ulster has by far the greatest number of occupiers, and consequently is the most prosperous of the provinces.

CHAPTER VI.

ALL ROUND DECREASE IN CULTIVATION OF CROPS.
—DIMINUTION IN THE NUMBER OF CATTLE AND
SHEEP IN THE THREE KINGDOMS.—INCREASE OF
POPULATION IN GREAT BRITAIN.—STEADY DEPOPULATION OF IRELAND.

COMBINING all the information furnished, the more striking alterations as to aggregate increase or decrease

between 1892 and 1893 occurring in the entire United Kingdom, may be thus conveniently shown:—

Acreage.	1893.	1892.	1893 compared with 1892.	
			Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Total Cultivated Area -	47,979,698	47,977,903	1,795	—
Total of Permanent Pasture	27,700,381	27,533,326	167,055	—
Total of Arable Land -	20,279,317	20,444,577	—	165,260
Corn Crops - - -	9,171,180	9,328,701	—	157,521
Green Crops - - -	4,462,755	4,467,115	—	4,360
Clover, &c., under Rotation	5,916,349	5,973,456	—	57,107
Flax - - - - -	68,715	72,065	—	3,350
Hops - - - - -	57,565	56,259	1,306	—
Small Fruit - - -	65,845	62,547	3,298	—
Bare Fallow - - -	536,908	484,434	52,474	—
Live Stock.	No.	No.	No.	No.
Horses - - - - -	2,079,587	2,067,549	12,038	—
Cattle - - - - -	11,207,554	11,519,417	—	311,863
Sheep - - - - -	31,774,824	33,642,808	—	1,867,984
Pigs - - - - -	3,278,030	3,265,898	12,132	—

For the purpose of a longer retrospect the data previously given for Great Britain may be supplemented by summarising here a few of the leading features which mark the changes of the agricultural position of the United Kingdom, viewed as a whole, at intervals of 10 and 20 years back, giving the estimated population at each period.

	1873.	1883.	1893.
Population - - No.	32,178,000	35,449,000	38,432,000
Cultivated Area Acres	46,927,000	47,667,000	47,980,000
Permanent Grass - - „	23,364,000	25,289,000	27,700,000
Corn Crops - - - „	11,423,000	10,327,000	9,171,000
Wheat - - - - - „	3,670,000	2,713,000	1,955,000
Oats - - - - - „	4,198,000	4,370,000	4,436,000
Cattle - - - - - No.	10,154,000	10,098,000	11,208,000
Sheep - - - - - „	33,982,000	28,348,000	31,775,000
Pigs - - - - - „	3,564,000	3,986,000	3,278,030

In comparison with the increase of population in Great Britain it may be useful to give a return from the Emigration Statistics of Ireland for the year 1893.

The total number of Emigrants—*natives of Ireland*—who left Irish ports from the 1st of May, 1851 (the date at which the collection of these returns commenced), to the 31st December, 1893, is 3,566,530,—1,880,359 males and 1,686,171 females. The number for each year is given in the following Table (II.).

TABLE II.—Showing the Number of Emigrants—NATIVES of IRELAND—in each year from the 1st of May, 1851,* to the 31st of December, 1893.

Years.	No. of Emigrants.	Years.	No. of Emigrants.
1851, (from the 1st of May.*)	152,060	1875, ...	51,462
1852, ...	190,322	1876, ...	37,587
1853, ...	173,148	1877, ...	38,503
1854, ...	140,555	1878, ...	41,124
1855, ...	91,914	1879, ...	47,065
1856, ...	90,781	1880, ...	95,517
1857, ...	95,081	1881, ...	78,417
1858, ...	64,337	1882, ...	89,136
1859, ...	80,599	1883, ...	108,724
1860, ...	84,621	1884, ...	75,863
1861, ...	64,292	1885, ...	62,034
1862, ...	70,117	1886, ...	63,135
1863, ...	117,229	1887, ...	82,923
1864, ...	114,169	1888, ...	78,684
1865, ...	101,497	1889, ...	70,477
1866, ...	99,467	1890, ...	61,313
1867, ...	80,624	1891, ...	59,623
1868, ...	61,018	1892, ...	50,867
1869, ...	66,568	1893, ...	48,147
1870, ...	74,855		
1871, ...	71,240		
1872, ...	78,102		
1873, ...	90,149		
1874, ...	73,184	Total,	3,566,530

* The date at which the collection of these Returns commenced.

During the last year 17,620 labourers emigrated. Whilst this steady exodus of workers goes on from Ireland where land is going to waste for the want

of labour, it is necessary to note the importation of food products from all countries.

The agricultural industry is the mainstay of Ireland, therefore, foreign competition in English Markets, frequently aided by preferential through rates, has a most prejudicial effect on the prices of native produce, unless given fair play rates and equal conditions of skilled production. Adam Smith laid down, that native produce always enjoys a certain measure of protection by reason of freight charges. That used to be so, but now cheaply freighted exports, frequently bounty fed, are imported into the three kingdoms, where the great monopolizing carrying corporations levy commercial tariffs in excess of those in any other civilized country.

CHAPTER VII.

GREAT INCREASE IN THE IMPORTS OF FOREIGN
AGRICULTURAL AND ANIMAL PRODUCE.

	Quantities.		Values.		
	1892.	1855.	1886.	1892.	
		£	£	£	
Cows, Oxen, etc., No.	502,237 . .	1,333,763 . .	5,068,846 . .	9,224,011	
Sheep, No. - -	79,048 . .	282,844 . .	2,010,194 . .	125,659	
Swine, No. - -	3,826 . .	— . .	63,357 . .	12,465	
Horses, No. - -	20,994 . .	— . .	189,901 . .	425,401	
Bacon and Hams, cwts. - - -	5,134,510 . .	617,423 . .	8,402,828 . .	10,893,833	
Beef, cwts. - -	2,355,031 . .	482,802 . .	2,178,677 . .	4,801,736	
Butter, cwts. -	2,183,009 . .	2,449,522 . .	8,141,438 . .	11,965,190	
Margarine, cwts. -	1,305,350 . .	inc. w. but.	2,962,264 . .	3,712,884	
Cheese, cwts. -	2,232,817 . .	1,027,774 . .	3,871,359 . .	5,416,784	
Eggs, 1000's -	1,336,730 . .	236,865 . .	2,884,063 . .	3,794,718	
Poultry and Rab- bits - - -	— . .	— . .	639,704 . .	886,692	
Hops, cwts. - -	187,507 . .	171,955 . .	447,253 . .	960,280	
Lard, cwts. - -	1,239,051 . .	310,036 . .	1,544,632 . .	2,233,011	
Pork, cwts. - -	360,461 . .	489,935 . .	631,538 . .	616,427	
Maize, cwts. -	35,281,224 . .	2,640,250 . .	7,617,470 . .	9,425,211	
Potatoes, cwts. -	3,008,336 . .	10,196 . .	799,265 . .	950,332	
Tallow, cwts. -	1,375,679 . .	2,647,173 . .	1,299,214 . .	1,747,968	
Meat, salted, etc., cwts. - - -	950,074 . .	— . .	1,281,245 . .	2,296,710	
Mutton, fresh, cts.	1,699,966 . .	— . .	1,405,383 . .	3,447,102	
Milk, condensed, cwts. - - -	481,374 . .	— . .	— . .	930,288	
Onions, bushels -	4,420,276 . .	— . .	506,710 . .	724,040	
Vegetables - -	— . .	— . .	540,670 . .	1,016,280	
Total - - -	—	12,700,538	52,486,011	75,607,022	

1892 over 1886 increase 44·0 per cent.

		£	£	£
Flour, cwts. -	22,106,009 . .	2,304,106 . .	8,228,051 . .	12,267,453
Increase 47·8 per cent.				

This large import of flour instead of grain deprives
millers of wages.

Corn, exclusive of maize & flour -	cwts.	£	£	£
	103,429,894 . .	13,644,544 . .	27,702,658 . .	37,041,428
	—	28,649,188	88,416,720	124,915,903
Increase 33·6 per cent.				

Population -	-	-	-	36,312,715 . .	38,104,973
Increase 5·0 per cent.					

The Board of Agriculture report notes those imports include 1,305,000 cwts. of margarine which were not distinguished prior to 1886, 1,197,000 cwts. of that quantity coming to us from Holland. The wide range of countries which supply us with butter, cheese, and eggs excites interest; but it may suffice to note here that Denmark with 864,000 cwts. still heads the list of the butter exporting countries with which we deal, France following next in magnitude with 543,000 cwts., and Sweden next in order with 229,000 cwts., nearly four-fifths of the butter received in 1892 coming from the three countries named. Under the head of Cheese, out of 2,233,000 cwts., 1,039,000 cwts. came from Canada, and 818,000 cwts. from the United States. France, Germany, Belgium, and Russia continue to be the largest exporters of Eggs to this country.

The total value of the three groups of animals, dead meat, and other animal produce imported, exceeded £57,000,000. The cereal imports of the year reached a still greater sum. The grain and flour imported in 1892, although in value showing a lower total than in 1891—in round numbers £59,000,000 against £62,000,000—owed this reduction in the valuation of smaller prices, for, measured by quantities, the imports of flour, maize, and beans were all conspicuously greater.

A larger volume of fruit imports has been shown; the quantity rising to 14,148,000 bushels against 11,816,000 bushels in 1891.

Among other items of additional information, included this year, in view of the interest felt in questions of forestry in this country, attention may be called to the details as to the quantities, values, and descriptions of foreign timber imported into the United Kingdom in the past five years. The total value in 1892 of this group of imports, including fitted frames and joiners' work, reaches little less than £18,500,000, a larger total than in 1891, but less than in 1889, when £21,000,000 worth of timber was imported. The item is, however, one that, with considerable annual fluctuations, has not,

on the whole, if measured in value, materially increased in recent years, the total of ten years back being over £17,609,000. The quantities received, especially of hewn and sawn fir, are, however, considerably greater now than in 1882 or 1872.

In the year 1892 the returns show an importation of 208,532 tons of linseed cake, 90,130 tons of cotton seed cake, besides 13,210 tons of cakes of other descriptions not enumerated. This total is larger than of late.

Hay imports have also, on the suggestion of the Board, been separately distinguished in the Annual Statement of Trade in 1892 for the first time, and the figures for that year are here given. Holland, it will be seen, supplied the largest quota of the 61,237 tons imported, Canada being the next largest exporter to the United Kingdom. The hay imports shown for 1892 will be altogether dwarfed by the remarkable augmentation of old and opening up of new sources of supply.

As to the sources of our entire supplies of Straw in 1892, it will be seen that out of 70,000 tons of Straw imported, France supplied three-fifths and Holland more than one-fifth of the total.

Almost everything except money is imported by non-residents, who neither give employment, nor pay taxes. Reciprocal Free Trade is a righteous, sound, economic principle, but protecting the foreigner with preferential rates and frequently governmental contracts, is hardly calculated to produce national prosperity, more especially in Ireland, which is mainly dependent on Great Britain as a market for Agricultural and Animal products.

Food production within the three kingdoms should be strenuously encouraged and developed by the State. It is a dangerous and humiliating position for a great nation to occupy, that of principally depending on foreigners (who may become enemies) for food supplies. Meantime, millions of acres of arable soil remain untilled, and the agricultural labourers, who were the best soldiers, are emigrating from their own land, which will not afford employment.

CHAPTER VIII.

FORESTRY STATISTICS (IRELAND), 1893.

THE following is a summary of the acreage under each kind of tree (exclusive of detached trees) planted previous to 1791 and up to 1840:—

	Acres.
Oak	59,536
Ash	6,042
Elm	1,417
Beech	3,274
Fir	25,239
Mixed	280,006
Total	345,604

Since 1851 (with the exception of the year 1852) the acreage under Woods and Plantations has been ascertained annually in connection with the Agricultural Statistics; but until the year 1891 the total extent was the only information sought for, no particulars as to the kind of trees having been obtained. In that year returns giving the latter information were collected and the results were published in a Table showing, by Counties, the distribution of the various description of trees.

The following shows the acreage under Woods and Plantations for the last five years, showing a decrease every year but one:—

ACREAGE UNDER WOODS AND PLANTATIONS.

Year.	Statute Acres.
1888	331,587
1889	326,343
1890	327,461
1891	311,554
1892	309,586
1893	308,535

In view of the interest attaching to this subject in later years, it was considered desirable to institute detailed inquiries into forestry operations in 1890. The subjects of investigation were: I. Planting—The area planted during the year ended 30th June, 1890, the total number of trees planted in that period, and the number of each description; II. Felling—The area cleared and the number of trees of each description felled; III. Ages of trees felled; IV. Disposal of Timber.

It appears that 1,111 statute acres were planted with trees in Ireland during the year ended 30th June, 1893. In the year ended the 30th June, 1892, the total area planted was 1,198 acres. The total number of trees planted on the 1,111 acres in the year 1892-3 was 2,149,722. Larch, Fir, and Spruce were the trees chiefly planted.

In connection with this subject it may be here mentioned that from the passing of the Act 29 and 30 Vict., cap. 40, up to the 31st March, 1893, 120 loans for £27,055 were sanctioned for Planting for Shelter, and of this number 5, amounting to £1,125, were sanctioned in the last year of the period.

Statistics of the number of trees felled both for clearance and for thinning plantations during the year ended 30th June, 1893, show the total amounted to 1,190,320. The area returned as cleared is 1,552 acres. In the year ended 30th June, 1892, the total area cleared was 1,296 acres, so that there was a greater clearance and less planted in 1893 than in 1892,—the same retrograde movement as in other industrial matters.

The total area planted in the year ended 30th June, 1893, being 1,111 acres, and the area cleared 1,552 acres, there would appear to have been 441 acres less under Woods and Plantations in the middle of 1893 than at the corresponding period in 1892. The total area under Woods and Plantations in 1892 was 309,586 acres, and in 1893, 308,535 acres, *showing a decrease of 1,051 acres.*

In former times, Ireland was covered with forests, now it is almost denuded of trees except within a few

favoured demesnes and choice spots of scenery. Other countries plant as they fell; in the United States, one day in the year is reserved for tree planting.

Very many industries are fostered and much employment is given in countries where trees abound. Germany, France, the States, and most civilized communities recognise this economic fact, and have taken measures to keep abreast of the needs of the age we live in. A project for re-afforesting Ireland has long been under discussion, but remains at that, save the limited exertions recorded in the Registrar-General's report. Thousands of acres of land, useless practically for most purposes, would profitably grow trees suitable to the position and soil; but a policy of waste and carelessness has in most instances accompanied the felling of timber, which has not been replaced to any extent in this neglected country.

CHAPTER IX.

FORESTS.

THE absence of the prime materials is a principal reason why Ireland has not become a manufacturing country. We have neither the coal nor the iron of England, but we have unfailing water power, cheap labour, and in 15 years we could have abundance of timber. As a prime material, timber ranks next to coal and iron, and, according to Professor Schlich:—

“Prussia, Bavaria, Saxony, Wurtemburgh, Baden, and Alsace-Lorraine have a combined population of 40,644,736 people; the labour connected with the forests of these countries has been estimated to be £9,450,000; these earnings suffice for the maintenance of about 300,000 families, or one and a-half million people. It has further been estimated that the prime material yielded by the forests occupies about four million people, so that forests and industries

dependent on them to provide work for some seven million people, or one-sixth of the total population of the above-mentioned countries."

Apart from the outlay on the draining and planting, which would form an immediate source of relief, forests supply the raw materials for various industries almost from the very first. Osier beds begin to give a return as early as the second year, thinnings for wood chemicals from the seventh, and wood for paper-making is at its best before it passes the twentieth year.

For economical results forests must be of great extent. Woods planted by private individuals do not afford the steady and constant supply necessary for manufacturing centres. This is seen everywhere, and was noticed by Professor Schlich in his evidence before the Forestry Committee in 1887: "If timber were available in sufficient quantities from English forests year after year, the public, who go in for the timber business, could rely on so much every year . . . they could make arrangements for cutting and converting the timber at a cheap rate . . . but they cannot now rely on it. In order to make these things cheap, they must be done systematically." At the Curragh Bobbin Mills, Tuam, up to 9s. a ton is paid for the mere carriage of the timber, which is collected over a wide area. "We could give better prices for the timber if the lop and branches could be used, but the distances are too long, and we have not a steady supply of this sort of thing for any useful purpose."

The labour of collecting timber in trifling woods scattered over a large district, and transporting it in carts along country roads, absorbs all the profit, while the supply is too small to create a market either for export or manufacture. In the German forests, the output being large and constant, permanent means are taken to reduce the cost of transit to a mere trifle. The streams are furnished with dams to keep up the depth of water necessary to float the timber into the mills or to the export centres. Far up among the mountains, where the streams or torrents are too small to be constantly

utilised in this way, large dams or "schwellungen" are constructed, and in wet weather, by letting go the water at certain times, the timber is removed at a trifling cost.

In these forest districts the supply has created the demand, and in Gotha, in the centre of the Thuringian forest, the price of rough timber, between 1872 and 1882, averaged from 150 to 200 per cent. its price in Ireland.

For the manufacture of paper, wood is now preferred to esparto, grass, and straw. In 1886, Mr Pratt Barlow, Secretary to the Paper Makers' Society of Great Britain, was sent by his Society to Germany "to discover the cause of the foreign competition, and why the Germans were able to compete with us so successfully." He was examined by the Committee on the depression of trade in that year, and he stated (question 14,686): "They are starting mills all over the country for the manufacture of cullulose (paper pulp), (14,695). These manufactories of cullulose and mechanical wood pulp are situated in the middle of forests. We have no forests in England to compare with them, (14,697). If we started such a work we must start it in Norway and Sweden, (14,708). The cost of wages per ton of paper is much the same as ours. Although the labour is cheaper, there are many more men about the mills than we should employ, (14,711). They are starting mills all over Germany."

Seven or eight years ago no wood pulp was imported into the British Islands. For the ten months ending October 1887, 60,000 tons had arrived. Its manufacture in the United States was estimated in 1882 at 10,000,000 dollars a year. Since then its production has enormously increased. For his purpose and for paper making generally young wood may be employed. "In the New England States, saplings it would not pay to cut into firewood are worked in this way into paste-board." Among the forests in the Landes (France) the manufacture of wood chemicals became important very few years after the planting. Pyroligneous acid, charcoal

for deodorising and for gunpowder, wood extracts for tanning, tar, etc., are manufactured from the youngest and most worthless thinnings. "Coppice does not reach its prime until it is about 18 years old, but some manufacturers maintain that they can get good yields from a seven or eight years' growth."

Since the completion of the Zollverein, no country in Europe has made such rapid progress as Germany. To its great supplies of timber this progress is largely attributed, and at present one-sixth of the entire population of the German empire depend on the forest industries. What, it may be asked, would be the condition of the whole of Germany if its forests were suddenly reduced to the condition of Irish bogs?

Baden, Wurtemberg, and Connaught are nearly equal in point of size. None of them possess any degree of mineral wealth. All three have large portions of their surfaces unsuited to agriculture. The two former are forest districts, and in them the timber industries have assumed enormous proportions. The following figures are important in estimating the result:—

—	Total area in square Miles.	Of which under Forest.	Population.
Baden . .	5824	2146	1,601,255 (1885.)
Wurtemberg .	7675	2300	1,995,185 (1885.)
Connaught .	6614	None	765,000 (1888) estimated.

The Governments of Germany are among the most successful and practical in Europe; 25 per cent. or 53,000 square miles of the surface of the German Empire is covered with forest. If agriculture on bad lands were more profitable than the production of timber, the cutting but not the planting of these forests would be in steady operation. Instead of this, however, the remaining waste lands are being planted, and

in 1885 only 6 per cent. of the surface of Germany was returned as unproductive.

“The striking contrast between the results of agricultural operations pursued singly as the main employments of a people and those which flow from diversified industries are most conclusively and instructively illustrated by the following parallel between a rich agricultural country like Virginia and one of poorer soil, such as Pennsylvania. More than half the people of Virginia are farmers. Only one in five of the Pennsylvanians are engaged in agriculture . . . In Virginia farm lands are valued at 10 dols. 89 cents per acre, while these of Pennsylvania command 49 dols. 30 cent . . . The natural law may be formulated thus—values in agriculture are enlarged by increase of non-agricultural population.”

In 1882 the Department des Forets (France) concluded its report on the planting of the Landes of Gascony with the words:—

“Where thirty years ago a few thousand poor and unhealthy shepherds were walking about on stilts to raise themselves above the unwholesome flats, watching their flocks feeding on the scant herbage found here and there, are now villages with sawmills, wood-working factories, charcoal kilns, turpentine distilleries.”

Mr Ward, British Consul at Bordeaux, says of these forests and their industries:—

“The forests which cover about one-third of this department consist almost entirely of pine-trees (the ‘pin maritime,’) which have to a great extent been planted in recent times in the Landes district, the soil there being unadapted to any other kind of cultivation. The two chief products obtained from these forests, viz., wood and resin, have now become an important and in some instances, the sole source of revenue of the inhabitants of those districts. In the parts distant from towns and other inhabited places it is the production of resin which is prominently resorted to, whilst in others which are nearer to Bordeaux or other ports of shipment or to means of transportation, the production of pit props, rail-

way sleepers, telegraph poles, and wood for fuel forms the chief business.

"The exportation of pit props made from the pines of the Gironde and Landes forests is an important branch of trade between Bordeaux and certain ports both of the west and east coast of England, which are situated in the neighbourhood of coal mines. About 175,000 tons of pit props are now shipped annually from hence to British ports, whilst the annual shipment ten years ago did not reach half that quantity.

"Railway sleepers and telegraph poles are likewise made in large quantities in these pine forests, but mostly for use in this country itself; a quantity of young pines also find their way to England every year in order to be converted into paper.

"Acacias likewise (those only of small size) and one kind of willow are grown largely for the purpose of being made into props for the vines, and two other kinds of willow, '*Salix viminalis*' and '*Salix vitellina*,' are cultivated extensively—the former to be used in basket making, and the latter for making barrel hoops. Both kinds are exported to the United Kingdom; barrel hoops from this district especially are much in demand in Scotch ports engaged in the herring trade."

Some years ago the value of the imports of timber into the United Kingdom was entered at £18,000,000, while other forest products (turpentine, tar, tan extracts, etc.) together with home-produced wood (£3,000,000), brought the total consumption for that year up to £35,000,000 sterling. At the same time from the Consuls' reports and other reliable information the source of supply in the principal forest countries of the world were rapidly on the decline. "The destruction is rapid and cannot be prevented." In twenty years the price of wood must double in the English market.

But even at present prices the State need fear no loss in undertaking the reafforesting on a great and national scale. If the planting of all the four or five million acres of waste lands be at present impossible, much might be accomplished by afforesting a million or even half a million acres in those districts where want of employment is most severely felt. Forty years ago the Department of the Landes was more miserable even than

any part of Ireland is to-day. In addition to the natural sterility, the miasma emitted by the stagnant pools produced disease and death among its inhabitants. But the French Government have done in the Landes, what the British Government should do in Western Ireland. The Landes have been afforested, and where "there was not £40,000 a year worth of value then are forty millions worth to-day." "These large areas were firstly unhealthy; and secondly, very unproductive; except a few sheep, there was nothing else there; there was no agricultural produce. Then the pines grew up, and in twenty-five or thirty years they improved the land so vastly that it paid for the first time to carry on agriculture. They could get shelter for their beasts, the land was drained so far that they could get pasturage, and the malaria had disappeared; that was one result, the other was that the pines yielded a lot of tar and resin; there were distilleries put up, those distilleries paid, and more were set up. There was wood, and while it was small it was made into small bundles and was sent to Paris for firewood, and when it was found that it paid, more came down to earn money by it; the French are very industrious in those small things. Immediately they came down there they found they could make more things out of the wood; they made the small baskets of shavings that you buy everywhere in France: that industry paid, and more were made. Then at last they found they could sell the timber in England for pit props; they introduced an enormous trade in pit props, which is now carried on, but these are not exported to any extent, France alone consumes three-fourths of them; so the committee will see the enormous number of applications of labour that there would not have been if it had remained in Les Landes."*

Ireland may not have the raw materials which will enable her to "grasp at the commercial and manufacturing sceptre of the world," but in the afforesting of the waste lands, in the cattle trade, and in the fisheries, she

* Howitz Evidence, "Irish Industries."

has sources of wealth which can make her prosperous, and can employ all her idle hands. The change in agriculture has deprived the inhabitants of the congested districts of the employment upon which they principally lived; remunerative employment is that which these people particularly require. It is in the neighbourhood of the congested districts that the waste lands are generally found, and it is in such places that afforestation would produce the greatest and most rapid change. Beginning by absorbing the unemployed labour, then creating industry after industry, until the scenes of poverty and desolation have become scenes of manufactures and of wealth—these are but the results which afforestation has already produced in other lands.

It is incomprehensible that while declamation on the question of congested districts has become constant, the example of the Landes and of Germany is forgotten or ignored. Emigration and migration have been by turns suggested and cast aside, but the one expedient which cannot fail, which alone in a country of waste lands without mines of coal and iron can make the labour of the people valuable, is mentioned as a mere experiment or an idle dream. If a better means be devised let us support it, but until it has been shown to us, let us urge upon the Government the reafforesting of the waste lands which will create in Ireland the timber trades, paper manufacture, the forest industries; those industries in fine which support a sixth of the inhabitants of Germany in comfort, and which, within twenty years, would fill Connemara and Donegal with factories and wealth.

DERMOT O'C. DONELAN.

CHAPTER X.

REPORT TO THE NATIONAL EDUCATION BOARD.

DURING this year there has not been material change in the general system of Agricultural education under the Commissioners.

There has been, however, a further development of instruction in dairying through the recognition of the necessity for instruction in better systems of management of the creameries, which during late years have increased so rapidly.

The rapid increase in the number of creameries for associated dairying in Ireland has been remarkable, and the difficulty of procuring managers and operatives for this new industry was very considerable. Indeed in many cases almost complete failure in the working of the creameries resulted through this difficulty, and it must be taken as an omen of future success, that notwithstanding much inefficient management, so much in the way of satisfactory results was produced.

The promoters of the co-operative movement in Ireland must get the credit of having been the means of securing instruction in creameries for Ireland; and through the influence of the leaders of this movement the desirability of appointing an instructor in dairying under the National Board was recognised. The appointment of this officer has now been made by the Commissioners.

The duties of the instructor in dairying are—to visit, and critically examine, creameries and butter factories; to give instruction as to improved methods of dairying, and to report to the Commissioners from time to time upon the condition and prospects of dairying in this country.

A good deal has been written and spoken as to the improvement that might be effected through the introduction of the systems of Danish and Swedish dairies to Ireland.

It must be considered that the circumstances affecting farming in Ireland, as compared with Denmark and Sweden, are different, and that what would be suitable for these countries might be quite out of place here.

There are districts in Ireland in which systems similar to Danish and Swedish dairying would be successful, but to prescribe for the whole of this country a universal adoption of the system of any other country would be inadvisable.

Again, the system of winter dairying, now so largely practised in Denmark, would not be found profitable in certain dairying districts in Ireland where a different system is now successfully practised.

There are districts in Ireland in which the starting of creameries upon the Danish system would result in failure, whilst the adoption therein of the Normandy system upon suitable bases would prove successful.

What is required for dairying in Ireland is a good knowledge of the principles that are involved in the different systems of successful dairy management, that the people may be in a position to put into operation in the different districts of Ireland the systems respectively suited to those districts.

The improvement in Irish dairy produce is very marked, and I look forward to future developments very hopefully.

During the year 1892 the chief dairymaid from the Glasnevin dairy attended the Agricultural Show of the Sligo Agricultural Society, the Ballinasloe Agricultural Society, county Galway, and the Hollymount Agricultural Society, county Mayo.

On these occasions large attendances of the farming classes appeared at the lectures and demonstrations, and I am confident that a considerable amount of information was carried away by those who attended.

The system of itinerant dairy instruction sanctioned by the Commissioners has not developed satisfactorily, mainly because of the difficulty in securing the local arrangements of committees, etc., for carrying it on and for meeting incidental expenses. There must be more

local assistance if this useful work is to be developed. The machinery that existed formerly in local agricultural societies would have helped this movement. It is a work eminently belonging to such organizations.*

The dairy schools at Glasnevin and Cork are in a satisfactory condition, and the attendance of pupils at those schools continues large.

The pupils who go forth from these schools must have considerable influence upon the dairying systems of the country, but in order that a more general improvement may take place, it would be very desirable that information should be brought more within the reach of the people through local centres of instruction. The possibilities of increased income to this country through improvement in dairy practice are very great.

It is satisfactory to know that Irish dairy produce is taking hold of the British markets, and that other dairying countries of Europe are recognizing the improvement in Irish dairy produce.

The question of Agricultural education has latterly engaged attention throughout the United Kingdom, and attempts are being persistently made to bring into operation a system of Technical Education in agriculture.

At no period in the history of industrial education has there been so much earnestness displayed as there is at present in the cause of agricultural instruction in the United Kingdom. Vast sums of money are expended in Great Britain by County Councils. The Board of Agriculture contributes liberally in aid of local efforts, and agricultural instruction in England is well supported generally as regards funds.

The system of agricultural instruction most largely practised is the employment of lecturers who go from district to district for the purpose of delivering courses of lectures upon Agricultural Science. In some cases

* The Agricultural Association will be able to give valuable assistance.

specialists, such as Veterinary surgeons, dairy experts, etc., are engaged. But it seems to be impossible to devise a course of instruction on the science of agriculture which will be of much value until

(a) Instruction is imparted in first principles ;

(b) A classification of persons is made for the purposes of teaching.

Any attempt to bring instruction to a mixed gathering of farmers, labourers, mechanics, and schoolboys, is likely to end in failure.

The teaching of branches of Agriculture by specialists may however be looked upon with favour.

In England during the past five years the progress of improvement in dairying through the efforts of the Agricultural Societies and County Councils has been very marked. It has been found too, that lectures upon Veterinary science, and upon the connection between science and practice in dealing with the animals of the farm, have been successful. In these two branches, farmers see an immediate result following the acquisition of knowledge, and considerable improvement in farm practice will assuredly result from a continuance of such instruction.

Education has become a matter of vital importance to the farmer. It must have for an object the preparation of the minds of youths in rural districts for the business of their future lives. The farmer's life is a life of thought and struggle, and each year brings into clearer light the commercial basis of successful farming.

It is a matter for serious consideration how to systematise education so that it may foster and not wither the spirit of observation which appears so natural to early childhood.

In previous reports I have endeavoured to urge the prime importance of instructing our youths in the elements of natural Science ; I have endeavoured to show that such instruction might, in the course of time, contribute materially to the progress of our great national industry.

I have instances before my mind where Irishmen, who

have had training in the sciences that relate to agriculture, have thereby acquired remarkable strength in thought and action. It is not too much to expect that what has improved individuals will when extended improve a population.

Instruction in the minor agricultural industries would be of immense service to Ireland.

Very little has hitherto been done in this direction, and we are altogether behind other countries in the production and marketing of articles of farm produce, usually styled minor, but which for Ireland might well be called important industries.

All over the country a large stock of poultry is held, and amongst the poorest districts we find that poultry and eggs are produced in great abundance.

It appears to me that improvement in the receipts from poultry in the poorer parts of the country must mainly come from teaching the people how to prepare their products for the market; we cannot, by any means, instantly improve the condition of the poultry keepers. The introduction of new varieties of fowls from the yards of fanciers will not bring an income to the poultry keepers of the poor districts in Ireland. This step might even be mischievous.

The systems of poultry keeping, and egg and poultry marketing, must be largely altered before there can be much of an increase to the incomes of small farmers in the poorer districts of the country.

What is primarily required is to show the farming population how they can immediately increase their income by improved management, and that this can be done by accepting as a lesson what is done in districts of Ireland where poultry rearing is successful.

In the counties of Wexford, Kilkenny, and Waterford, there are districts where poultry rearing is highly profitable. This industry has grown up within the past thirty years. Many instances have come to my knowledge where an income of over £20 per annum from poultry management is made by small farmers in districts where careful management is practised. In the north of Ire-

land also, there are districts in which substantial incomes are derived from poultry.

The success of poultry rearing as an industry depends very largely upon the successful marketing of the produce. I know of no industry that could be so much improved in a short time as poultry keeping. And this can be done mainly in relation to the marketing of the poultry and eggs produced, for which instruction is required.

The introduction of "improved" (?) breeds of poultry to districts in Ireland, unless the people are instructed in the best methods of feeding and managing their stocks, will result in failure. The sending of the large Toulouse or Embden geese to the hills of Sligo would result in disaster so long as the people will not improve their system of management; and improvement cannot take place until the people are taught and otherwise helped in the marketing of produce.

The subject of fruit-growing in Ireland has recently attracted considerable attention. Here, again, any attempt to induce farmers to take up fruit growing as a profitable branch of farm industry will result in failure unless the people are instructed in the proper methods of fruit cultivation.

At one time the cultivation of apples was a profitable industry in the county Waterford. Through want of knowledge of the cultivation and management of apple trees this industry has died out. At the present time in the county Armagh apples are profitably cultivated; but it is to be feared that good cultivation is the exception, and that the industry may after some time languish. The old idea that an orchard may be allowed to take care of itself is no longer tenable.

Normandy apple growers take considerable care of the cultivation of their orchards, and they derive good incomes from them. The fruit growing of Normandy is so important that the government of the country issues special direction in case information is required by the apple cultivators. This year the removal of the mistletoe from the apple trees has been directed by the

French government because of injury to the trees from the growth of this parasite.

From observation made over a considerable extent of country, I am of opinion that the growth of apples and other fruits might be profitably undertaken by Irish farmers. I have seen, in the county Donegal, apples that for colour would compare favourably with the best American produce, whilst in flavour, as eating apples or for cooking purposes, the Irish apples are much before the American fruit.

From the nursery at Glasnevin an experiment in fruit cultivation was made at an agricultural school in the County Mayo, which may have the effect of encouraging fruit cultivation in that county.

In the neighbourhood of Swinford the Callow School has a farm whose soil appears to be well suited to apple growing. The Commissioners sanctioned my sending the surplus apple trees from the Glasnevin nursery to this school, and about forty trees of good varieties of apples have been planted in a good position upon the Carlow agricultural school farm. This experiment will be watched with interest; I am hopeful of good results.

The cultivation of vegetables has been frequently proposed as an export industry for Ireland, and in some favoured localities the cultivation of vegetables for early marketing would be profitable for commerce, but an extension of vegetable growing over the whole of Ireland, with the view of supplying English or other markets, is not likely as yet to command the conditions of a successful scheme, owing to the absence in many districts of the facilities for ready and rapid transport.

In some favoured parts of the country the cultivation of early potatoes and the finer vegetables for early marketing would be profitable. The small island of Jersey receives an annual income of almost half a million sterling from the growth of early potatoes.

On the whole, I should feel encouraged to take up this industry, and believe that it would be profitable provided that suitable localities were selected for the

industry, and that means were adopted to educate the people in the best methods of procedure.

The cultivation of early potatoes is, however, an industry which is very liable to fluctuation. The industry in the Channel Islands is already threatened with injury through the competition of other countries.

This is a list of Educational Establishments in Ireland :
The Albert National Agricultural Institution.

Munster Model Agricultural and Dairy National Schools.

NATIONAL SCHOOL FARMS, SCHOOL GARDENS, ETC., UNDER LOCAL MANAGEMENT.

At the close of the year 1892 there were 45 School Farms, 28 School Gardens, 5 Schools in which dairying was taught, and 9 Schools in which poultry management was taught, recognised by the Commissioners.

Dairying and poultry management are extra branches in National Schools. They are paid for at the rate of five shillings for each satisfactory "pass."

Obviously this does not constitute an entirely satisfactory educational equipment to meet the urgent needs of an agricultural community, but it is an existing network of primary establishments, which could be easily extended and developed by a Board of Agriculture for Ireland. There are three Agricultural Schools, Dublin, Cork, and Fermanagh, under the exclusive management of the Board. Considering the means at their disposal, Mr. Carroll's Report is very satisfactory.

CHAPTER XI.

PRIMARY AGRICULTURAL EDUCATION IN ENGLAND.

A Bill for giving Industrial Agricultural Education in Elementary Schools.

WHEREAS it is expedient that due provision should be made whereby children in public elementary schools should obtain practical instruction in the subjects of agriculture and horticulture, and matters pertaining thereto:

2. On and after the *passing of this Act* any school board, or managers of any public elementary school, may provide and maintain means and facilities for the purpose of giving instruction in any of the subjects set out in the schedule of this Act, or in such other analogous subjects as may be sanctioned from time to time by the Committee of Council on Education or by the Science and Art Department; and for these purposes school boards and school managers shall have the power to provide or contribute to the provision of such school gardens, allotments of land, workshops, tools, and appurtenances as may be necessary for carrying out the provisions of the Act, and the expenses of such provision or contribution on the part of school managers shall be deemed to be a contribution to the annual expenses of the school.

Provided always, that such schools shall be subject to the inspection of the officers of the Committee of Education or of the Science and Art Department.

3. *A special grant not exceeding fifty per cent. shall be made by the Committee of Education or Science and Art Department for the expenses of providing such allotments, school gardens, buildings, fittings, tools, and appurtenances as may be necessary to provide instruction under the provisions of this Act. Provided always, that the cost of and full particulars of the same shall be submitted to, and sanctioned by, the Committee of Council or the Science and Art Department.*

4. From and after *the passing of this Act* it shall be lawful for a council of a county or of a county borough out of the sums received in any year under the Local Taxation (Customs and Excise) Act, 1890, and not therein appropriated to police superannuation, to make a grant or loan towards any expenses that may be incurred by a school board or managers of a public elementary school within the county in carrying out any of the purposes of this Act, and for the purpose of supplying educational collections consisting of books, specimens of animals, birds, insects, minerals, and other objects suitable for the instruction given under this Act. Such grants or loans may be made upon such conditions as the council of a county or of a county borough may think fit.

5. The Committee of Privy Council shall make such alterations in the code of regulations as will admit of special instruction in agricultural and horticultural subjects being given in public elementary schools.

6. This Act shall not extend to Scotland or Ireland.

SCHEDULE.

Fruit, flower, and vegetable growing.
 Poultry, bee, and pig keeping.
 Budding, pruning, planting, and propagating.
 Rotation of garden crops.
 Nature and properties of soils.
 Use of manures.
 Knowledge and choice of seeds.
 Structure and life of plants.
 Action of birds and insects on crops.
 Choice and use of simple tools.
 Packing fruit, vegetables, &c., for market.

This proposed legislation ought to be extended to Scotland and Ireland, and provision made to utilize the existing local governmental machinery to carry it into execution.

CHAPTER XII.

ROYAL DUBLIN SOCIETY.

ABBREVIATED REPORT OF COUNCIL, 1893.

FINANCIAL STATEMENT FOR THE YEAR 1893.

THE total income of the Society in the twelve months ending December 31st, 1893, was £18,579 3s. 9d., and the expenditure £19,120 13s., or £541 9s. 3d. in excess of income.

The ordinary income and expenditure for the past five years are shown in the following Table, with the balance for each year:—

Year.	Income. £	Expenditure. £	Balance. £
1889	16,250	13,620	Cr. 2630
1890	18,120	16,435	„ 1685
1891	19,034	17,474	„ 1560
1892	19,412*	18,339	„ 1073*
1893	18,579	19,120	Dr. 541

It will thus be seen that the expenditure which has been steadily gaining upon the income for some years has now overtaken it.

The Science Committee, in their report, deal with the large expenditure on publications incurred last year, the sum spent being more than double the expenditure of the preceding year. Strictly speaking, a large part of this expenditure was in connection with the Society's survey of the fishing grounds of the west coast of Ireland, and would more correctly have been charged to that account had it not been already closed.

* These items are £129 less than the sums given in last year's Report, being the amount of the Anne Hall Endowment Fund, for which a separate account has been opened.

The increased expenditure upon Agriculture consists chiefly of the following items, viz.:—Spring Show, £792; Horse Show, £287; Sheep Show, £139; Potato experiments, £172. The expenditure upon the Spring Show amounts to 31 per cent. of an increase upon the Show of 1892. The increase arose chiefly from the fact that, owing to the discontinuance of the Winter Show, classes for fat stock and poultry were introduced at the Spring Show.

In the account of the Government Grant for improvement of the breed of horses and cattle in Ireland a balance of £206 is brought forward from the previous year; and a balance of £604 is shown at foot of the account as remaining in Bank at the close of the past year. The greater part of the latter balance had in reality been spent in the purchase of Stallions, but the money had not been paid at the time of closing the account. On comparing this account with the corresponding account of 1892, it will be seen that a sum of nearly £2000, received from the owners of Mares in 1892, has disappeared. This apparent discrepancy is due to an alteration in the mode of administering the Grant. In 1892, the fees were paid to the Society by the farmers, and then handed over to the owners of the Stallions, whereas in the past year, the duty of collecting the fees direct from the farmers devolved upon the Stallion owners.

LECTURE THEATRE.

The proceedings of the Council in relation to the proposed new Lecture Theatre have been reported to the Society from time to time; they understood the erection of the Theatre would be commenced in the spring of 1892, and that the work would be finished early in 1893. The Council regret to be obliged to report that their anticipations have not been realized; notwithstanding the efforts of the Council to expedite the work, no beginning has yet been made.

Under the agreement entered into with the Government seventeen years ago—before the passing of the Science and Art Museum Act—the Government undertook to reserve the theatre, laboratory, and adjoining offices to the Society, or to provide an equivalent. The Government have agreed to the alternative arrangement, and decided to provide the equivalent. No other course is open, because the old building is in a state of dilapidation, and a portion of the New Museum building has been erected upon the premises allotted to the Society, and interferes most seriously with the light of several of the offices adjoining the Theatre. It was to ensure that more than an equivalent should be provided that the Society undertook to contribute £5000 towards the cost of the work. Having regard to these facts the Council are of opinion that they have met the Government in a most liberal and considerate manner, and they expect at least equal liberality and consideration on the part of the Government.*

RAILWAY.

In their last Report the Council informed the Society of the negotiations with the Dublin, Wicklow, and Wexford Railway Company, in reference to the proposed branch line on the Society's newly-acquired ground at Ball's Bridge. Accordingly, on February 6th, the work was commenced, and on April 7th, the first train passed over the line. The construction had thus occupied just two months. The expenditure on this work, as shown in the Society's accounts, was £3622. The exhibitors at both the Spring Cattle Show and the Horse Show showed a desire to take advantage of the very great facilities the

* As in most Irish matters, the Treasury and the Government have been dilatory in their dealings with the R. D. S., which has contributed so much private money to work, which, under a paternal rule, would be undertaken and liberally endowed as a State department.—ED.

line offers. As these facilities become better known the Council expect to see much more use made of the line. The number of exhibitors of implements and machinery who took advantage of the line was comparatively small. A large proportion of these exhibits arrive at the North Wall, and could with the greatest ease be loaded direct into railway trucks alongside the steamers. There is through communication between the lines alongside the steamers and the Society's line at Ball's Bridge. The Society has provided a suitable crane and a carriage dock for the unloading of heavy goods, machinery, etc., but owing to some difficulties of railway management, exhibitors cannot take advantage of these facilities. Their exhibits have to be carted by a circuitous route from the North Wall to Ball's Bridge. It is to be hoped that the Railway Companies will see their way to devising some means by which the existing difficulties, whatever they are, shall be overcome.*

VOTES.

Sums not exceeding the following amounts have been voted by the Council, viz. :—

Purchase of Books for the Library	-	-	-	£200
Promotion of Scientific Research	-	-	-	50
Afternoon Lectures	-	-	-	100
Juvenile Lectures (including Christmas Course)	-	-	-	100
School of Art Scholarships	-	-	-	65
Recitals of Classical Chamber Music	-	-	-	250
Art Industries Exhibition	-	-	-	200
Provincial Agricultural Societies	-	-	-	300
Dairy School, Glasnevin	-	-	-	25
Dairy School, Cork	-	-	-	25
Potato Experiments	-	-	-	100
Farm Prize Competition, Province of Leinster	-	-	-	200
Example Holdings	-	-	-	650

* As usual the Railway Companies languidly co-operate for public utility.—ED.

(F.) The Report of the Committee of Agriculture includes a Report by the Agricultural Superintendent on the first year's administration of the Anne Hall Scheme; proceedings in relation to the Kerry Herd Book; list of votes in aid of Provincial Societies; Report on Example Holdings; the report on the Improvement of Small Holdings; opinion on the Compulsory Destruction of Weeds; Report on Experiments on Potatoes; and Reports on the Spring Cattle Show; the Horse and Sheep Show, and the Horse Breeding Scheme.

The Reports on the Cultivation, Harvesting, and Marketing of Barley; on Potato Culture and Potato Disease; and on the Farm Prize Competition in Ulster, have been issued as separate pamphlets. The second volume of the Society's Register of Thoroughbred Stallions under the Horse-Breeding Scheme has also been issued as a separate publication.

(G.) The Report of the Consulting Botanist.

(H.) The Report of the Consulting Entomologist.

(I.) The Report of the Analytical Chemist.

*Adopted by the Council of the Royal Dublin Society,
March 1st, 1894.*

A deal of useful Educational work has been accomplished by lectures on Dairying and Management of Stock.*

* ANNE HALL SCHEME—REPORT FOR THE YEAR, 1893.

Dairy Lectures in Counties Fermanagh and Londonderry.

The Anne Hall grant to the Counties Fermanagh and Londonderry, to be devoted to the purposes of education in those counties. The Commissioners of Education, under the Educational Endowments (Ireland) Act, 1885, vested the portion allotted to Agricultural Education in the above-named counties, in the hands of the Royal Dublin Society for administration. Nearly £100, varying in a small degree,

On this subject the Agricultural Superintendent states :—

“It is unfortunate so many are satisfied if they realize as much for their produce as their neighbours get for theirs. This is too frequently the height of the butter-maker's ambition. Meanwhile, Denmark and Normandy supply the best English markets, and the Antipodes have established a firm footing in them also. The Irish farmers are more favourably placed than are the farmers of any of the competing countries for the highest class English trade, and it is very regrettable that they do not occupy a more prominent position in the market, though it must be acknowledged that it is improving where pains are taken to produce a better article. Having called attention to some of the weak points which prevented the universal response of those in the districts which were within reach of the several centres, it is pleasing to be able to state that there is no doubt that considerable good has already been done.”

The necessity for immediate action is apparent to improve the existing condition of affairs.

according to the Income Tax, is available yearly for the purposes of Agricultural Instruction in these counties.

Special interest attaches to the Report of the first year's teaching, as it should indicate in no small degree the capacity the two counties interested possess of appreciating and benefiting by Technical Education, and thus reflect somewhat the possibilities of such forms of teaching in other counties.

Dairying and the Management of Dairy Stock was the subject chosen, and as almost all farmers keep a greater or less number of cows, it is one which should be of popular interest. Dairy Instruction has on previous occasions been imparted by means of Travelling Dairies and private enterprise, but this is one of the first opportunities Irish counties have had of receiving Technical Instruction on lines similar to those followed by County Council Education Committees in England.

CHAPTER XIII.

BUTTER INDUSTRIES.—WHAT FOREIGN GOVERNMENTS ACHIEVE, AND WHAT MIGHT BE DONE GENERALLY AT HOME BY ANALYTICAL CHEMISTRY.

COMPETENT authorities assert that while private efforts can effect much good, the butter industry in Ireland can never be placed on a proper footing until an Agricultural Board, with extensive powers and funds, is established in Dublin, with model farms and dairy schools in connection with it in every county in Ireland. This is absolutely required, and has been successfully accomplished on the Continent; for, as showing what can be done in improving butter, "the station at Kiel was turned entirely on the dairying industry with the view of applying science to this branch of agriculture and of getting the best methods into the German dairies. It was found that in Denmark the practice of souring the cream before churning had secured a high reputation in the English market for Danish and Schleswig Holstein butter. It produced the peculiar nutty taste, but the process in its original form had several disadvantages, and was very uncertain in its results.

"Liebig and Pasteur have shown that fermentation is the work of bacteria, and that each fermentation is produced by its own particular ferment. Placing cream to sour is simply inoculating it into the germs of the lactic fermentation which happens to be floating in the air. But the process is obviously uncertain, as ferments other than those required may be the first to enter the cream, and flavours widely different from that desired are frequently the result. The method employed by Von Storch in the Danish station at Copenhagen, is based on the theory that of germs which inoculate cream—other things being equal—those enter into activity first to which the cream is most particularly suited. He, therefore, places a small sample from each cow to acidify, and selects that which

possesses the finest flavour. This is then employed as a ferment for all the cream set to mature, and the desirable germs are in this way given a long start of all the others. A fresh supply of ferment must be prepared every day from the cream of the cow which was selected in the first instance.

“In the agricultural station of Kiel, progress has been carried a step further, and apparently to complete success by the director, Dr. Weigmann, who has succeeded in separating the lactic ferment which causes the agreeable taste of the Danish butter. The bacteriological division of the Kiel station now supplies ‘pure cultures,’ which, according to the recent Dairy Congress in Dublin, are giving the North German creameries an immense advantage over the British and Irish farmers—even in the English market. Attempts have been made, it is said, to apply the system here, but without success. The failure has been attributed to various causes, but a stronger evidence in favour of a properly equipped station, working at scientific questions of agriculture in Ireland could not be imagined, than the failure to introduce an inexpensive process, which is giving the Germans and Danes possession of the English market. The experimental station at Kiel has placed the German farmer in a position to produce from stall-fed cows a better article than Irish farmers can with the combined grazing and stall-feeding of the country.”*

* D. O’C. Donelan.

CHAPTER XIV.

ANALYTICAL AUTHORITY IN IRELAND.

SOME five and forty years ago in the days of the Museum of Irish Industry, many problems of technical importance were taken in charge by those two distinguished chemists, Sir Robert Kane, F.R.S., and Dr. Sullivan, the late President of Queen's College, Cork. In a great measure the work they undertook was connected with the improvement of agriculture much in the direction of the now celebrated field experiments carried on for the last fifty years by Sir John Bennet Lawes, F.R.S., and Dr. J. H. Gilbert, F.R.S., at Rothamstead. They had been inspired with the spirit of scientific inquiry and experimental research in the Universities of Germany, where the fame of Liebig attracted students from all parts of Europe. Whatever good might come out of such work could only be the result of years of continuous labour, though from time to time many useful problems of immediate interest and importance to the country were sowed.

Such work could not continue without funds, and supplies appear to have been discontinued by the Treasury, so that whatever work they accomplished was sacrificed.

At the present time such problems are still found to require solution. They are submitted sometimes to one authority and sometimes to another, but there is no continuity in the work. Occasionally the professional advice sought is expected to be given gratuitously, at other times it is remunerated.

All matters connected with the chemical analysis of fertilisers and feeding stuffs, disputed analyses of food and drugs, questions relating to agricultural chemistry, and to sanitary matters, should be placed in charge of a central authority to report and advise the various Boards, such as a Board of Agriculture, the Local

Government Board, the Board of Works, and the Board of Trade, and the Registrar-General's office. Such an office has recently been created in London, and the official is styled Principal Chemist of the Government Laboratories.

A clause under the Fertilisers and Feeding Stuffs Act of 1893 is mandatory as to the appointment by the Lord Lieutenant of a Chief Agricultural Analyst for Ireland, with duties similar to those of the Official Analyst under the Board of Agriculture in England. No such appointment has yet been made, notwithstanding the urgent need of scientific direction of investigations, and advice on matters relating to agriculture and sanitation. No doubt, merely analytical work is of great importance, but something more than this is required. Recent outbreaks of swine fever have been attributed to inferior feeding stuffs, and this is a case when a searching investigation is necessary. The Land Commission has been busy with the potato blight, and the value of the sulphate of copper treatment; this, again, is in the nature of scientific research. For years past all samples of food and drugs about which there has been any question, have been sent to Somerset House for analysis. Samples of milk arrived in a state of decomposition, and were put through the process of analysis, as if the change in the milk had not effected its chemical composition. On the result of such analysis a conviction and sentence for fraud might follow, or the fraudulent adulteration might go undetected, and the dishonest tradesman receive an official certificate of honesty.

This defect in the administration of the Adulteration Act was brought to public notice by the Society of Public Analysts.

The question of butter and its adulteration as affecting one of the staple trades of the country is of great importance. According to the evidence of Sir Charles Cameron, a change was noticed in the quality of the butter coming to the Dublin market, and a sample sworn in Court to have been purchased by a wholesale dealer

from a farm and unmixed with other materials after it was warehoused, was certified to have been adulterated with Margarine. This certificate was upheld by the accuracy of the analysis being confirmed.

Obviously the inference is that Margarine was put in the churn, and that this is the newest method of adulteration. Until lately, Margarine was shipped to Holland to be churned up with new milk and returned to England and Ireland as butter. The adulteration of butter with water is likely to injure the Irish butter trade to a much greater extent than a simple restriction of the amount of water the butter shall contain. Many absurd statements have been made in the recent trials in Manchester to justify the addition of water to butter to the extent of 20 per cent.

In such a momentous matter as this, an independent chemist accustomed to prosecute investigations, particularly in the way of testing the chemical processes, would be able to advise upon the standard to be adopted. In any such inquiry it would be necessary to confer with practical butter-makers.

All those points in direct connection with the various products and methods of production prove the necessity of a competent analytical authority in Ireland acting under a Board of Agriculture in Ireland.

The Council has also endeavoured the improvement of culture on small holdings, instituted experiments to test the relative values of some kinds of potatoes, also spraying as a preventive of potato disease. Their Shows are famous, and need not any lengthened paragraph, being so well known as probably the best managed Shows in the United Kingdom, held in premises unequalled for size and convenience. The Horse Show holds, and maintains the world's record. The Council matured and marked out in 1892-3 a horse-breeding scheme and published a register of Thoroughbred Stallions certified to be free from hereditary disease and suitable for improving the Breed of Horses under the Horse Breeding Scheme, 1894.

The Council have also endeavoured to improve the breeds of all live stock and poultry. They issued reports from Consulting Botanist, and on Economic Entomology, and of the Chemical Analyst. They also instituted a Farm Prize competition.

In awarding the Prizes the Judges were instructed to especially take into consideration the following points:—

General Management with a view to profit.

Productiveness of crops.

Quality and suitability of live stock.

Management of live stock.

State of gates, fences, roads, and general neatness.

Suitability and repair of buildings and out-offices.

Suitability and repair of farm implements.

Mode of book-keeping (if any).

Management of the dairy and dairy produce if dairying is pursued, and the rearing of calves.

It is evident that the farms we visited are in a prospering condition, consequently, it may be considered by some unnecessary to make suggestions with regard to alteration or improvement of systems; but it must not be forgotten that the British farmer is being more heavily competed with every year, and it is absolutely necessary not only to be up with the times, but a little before them if possible.

It must be borne in mind that the farmers entered for competition were *the best* in the country. The following paragraph from report says:—

LABOUR.

“As has been indicated before, the amount of manual labour bestowed on the land is not great; in fact, about as little is done as is consistent with a prosperous husbandry. The ploughing is usually well done. As there is no corn drilling, there is little need for skill in the manipulation of other implements used in the working of the land. We were pleased to see that the very clumsy national digging tool, the loy, is giving way, on

the farms of the more intelligent farmers, to the more rational and convenient modern short-handled spade. Also that the long-handled dung or digging fork was being ousted by the short four-pronged fork which every other country practising enlightened farming has adopted. Where most of the few acts of husbandry practised are carried out with the spade or fork, there is not much to be said in the matter; but from long practice the men show a certain skill in the use of the spade. The stock men usually show a fair amount of skill in their work, and take an interest in the animals submitted to their care."

Pamphlets have been printed dealing with the culture of potatoes, barley, grass, etc., with useful results.

CHAPTER XV.

THE COMPULSORY DESTRUCTION OF WEEDS.

MR. James Talbot Power recently presented to the Agricultural Section of the Royal Dublin Society a memorandum on the desirability of legislating in order to check the growth of weeds in Ireland.

It was some time ago reported by the late Professor Baldwin that in some parts of the country he had ascertained there were ten tons of weeds growing with one ton of potatoes.

In Co. Cork both oats and barley may be seen completely choked with weeds, in fields side by side with land carefully cleaned. There does not appear to be a sufficient cultivation of grass lands in Ireland, if one may judge from the thick growth of thistles and rag-weed, and absence of manure.

In England a landlord will not let a farm to a tenant who will not clean his land or farm it properly, but in Ireland legislation has made the tenant part-owner, and

the landlord has no power over the occupier in this respect. There is no reason to think that this view was entertained by Mr. Talbot Power, for it did not appear to receive any expression in his memorandum, the object of which was to protect a careful farmer from the effect of negligence in his neighbour.

A case has been submitted for the opinion of Counsel upon the subject of the Compulsory Destruction of injurious Weeds. The opinion thereon, as follows, has been placed at the disposal of the Royal Dublin Society for the benefit of its members:—

“As I understand that the Royal Dublin Society are anxious to have any light which can be thrown on the subjects referred to in the above case, I have made an exhaustive search for any indications from whatever source of a recognition of such rights as I apprehend are assumed to exist.

“The principles of the English Common Law governing the legal obligations of an occupier or owner of land towards his neighbours in this connection appear to be clearly settled by the judgment by which the rights of an adjoining owner are restricted to an immunity from any detriment to the enjoyment of his property consequent on other than a natural user of the neighbouring lands. Thus there may be no remedy, even if damage result from something having its origin on such adjoining lands. No action is maintainable if the operation of natural laws be the sole cause. Lord Coleridge then laid down that there can be ‘no duty as between adjoining occupiers to cut the thistles, which are the natural growth of the soil.’ This case is clearly distinguishable from those of the class in which the intentional planting of poisonous trees, which overhung the neighbouring lands, constituted the wrong. There being no legislation on this subject affecting Ireland, the above case is one by which any test case in this country would be decided, and therefore it may be taken for granted that an occupier of lands has no legal rights as against an adjoining owner in respect of loss resulting to him from the blowing of thistledown and the seeds of other weeds on to his property. Under the Roman Law a restriction upon the unlimited growth of trees was imposed with a view, no doubt, of securing an efficient supply of light and fresh air to agricultural

crops, for the provisions only applied when the tilled land in the hands of other owners immediately adjoined that on which trees over thirty feet in height were growing.

"The information at my disposal as to the instances in which this subject has been dealt with by foreign Governments is as follows:—

"In France, by a law dated the 24th December, 1888, and entitled, 'Law concerning the destruction of insects, cryptogams, and other vegetations injurious to agriculture,' prefects of departments are instructed to prescribe the measures necessary to prevent or arrest the injuries caused by the insect, etc., when these injuries occur in particular districts and assume, or threaten to assume, the character of an invasion or plague. The advice of the General Council of the department must be obtained before the prefect can issue an order, except in the case of urgent or temporary measures. The order prescribes the period of application of the measures and the special method of their application. It cannot, however, be executed until it has received the approval of the Minister of Agriculture. Proprietors, tenant-farmers, rate-payers, usufructuaries and commoners (persons having a common right to the use of land) are bound to carry out the measures prescribed in the prefect's order on the lands they hold and cultivate. They are also bound to permit the local officials to enter upon their lands for the purposes of inspection and destruction of insects and injurious plants. The State, communes, and public and private bodies must conform to the same obligations in respect to lands in their occupation. In the event of failure to execute the prescribed measures within the period fixed by the Order, the offender is liable, upon prosecution before a Justice of the Peace, to a small fine for the first offence, and to fine and imprisonment for subsequent offences.

"The only known instance of an order based on that law is that issued by the prefect of the department of Eure et Loire in December, 1891, respecting the compulsory destruction of the mulberry to prevent the spread of rust, or of mistletoe on fruit trees.

"By the Code Rural of Belgium, Article 12, sect. 1, the destruction of insects, thistles, and other plants injurious to agriculture may be prescribed by Royal decree. On May 2, 1887, a Royal decree was issued, instructing governors of provinces to take the necessary steps for the destruction of

thistles and other plants injurious to agriculture. To this end they are authorized to issue decrees making it obligatory on all persons holding or occupying lands to destroy thistles and other injurious plants. When such persons fail to carry out the prescribed measures, the authorities are empowered to enter on the lands and do what is necessary at the cost of the owner or occupier, who is also liable to a fine or imprisonment. The remaining provisions are almost identical with those of the French law.

"In some States in America laws are in force for the destruction of cryptogams and other noxious growths; *e.g.* a law of New Jersey of 23rd May, 1890, authorizing the officials of the State Experiment Station to enter on any land for the purpose of destroying cryptogams injurious to vines and other plants.

"A course which might recommend itself to the Society would be to have an Act passed declaring the growth to maturity (*viz.* to a point short of shedding seeds) of certain noxious weeds, to be a nuisance within the provisions of the Public Health (Ireland) Act, 1878; and to make use of the provisions of that Act, the machinery of which seems admirably suited to the purpose, in order to secure the abatement of such a nuisance. Sections 108 *et seq.* deal with inspection, information, penalties, orders of magistrates, etc. The sub-sanitary officer is generally such a person as would be well qualified to be an equally efficient inspector of such a class of nuisances; and the application of the fines recovered under the Act would probably more than cover the additional expense incurred by the sanitary authorities. Possibly the programme of Government legislation for the coming session will (when declared) be found to contain some measure to which the enactment could be attached."

It would appear that the ancient Romans were careful; and the modern French, Belgians, and Americans are bestowing greater attention as to the destruction of weeds than does the present-day British legislature.

CHAPTER XVI.

CONGESTED DISTRICTS BOARD FOR IRELAND.*

CONSTITUTION OF THE BOARD.

The Act for the improvement of the Congested Districts in Ireland [54 & 55 Vict., c. 48, part II.], received the Royal Assent on the 5th of August, 1891, and by the 34th section of the Act the Congested Districts Board for Ireland was constituted. It consists of ten members in all—that is to say, two *ex-officio* members, five other members to be appointed by Her Majesty, and in addition temporary members not exceeding three in number, and they also are appointed by Her Majesty. One of the *ex-officio* members of the Board is the Chief Secretary, or, in his absence, the Under-Secretary to the Lord Lieutenant; and the other *ex-officio* member is a Land Commissioner, who is nominated by the Lord Lieutenant to especially represent Agriculture and Forestry. The Board is to continue in existence for twenty years from the 5th of August, 1891, and thereafter until Parliament shall otherwise determine.

AREA TO BE DEALT WITH.

For the purpose of defining the Congested Districts it is enacted in the 36th section of the Act that—

“Where at the commencement of this Act more than twenty per cent. of the population of a County, or in the case of the County Cork of either Riding thereof, live in Electoral Divisions of which the total rateable

* This Report is considerably abbreviated.

value, when divided by the number of the population, gives a sum of less than one pound ten shillings for each individual, those Divisions shall form a separate County (in this Act referred to as a Congested Districts County.)”

MONEYS FOR THE PURPOSES OF THE BOARD.

(1.) The chief item of the Board's income is the sum of £41,250 a year, being interest at $2\frac{3}{4}$ per cent. per annum on the sum of £1,500,000, referred to in the Act as “The Church Surplus Grant.” The Board is also empowered, subject to certain conditions, to apply part of the principal of this Grant for the purposes of the Act.

(2.) The Irish Reproductive Loan Fund, amounting to about £66,000 in securities, cash, and outstanding loans, was placed at the disposal of the Board, subject to the proviso that the moneys shall be applicable only to any county where the Fund might have been applied before the passing of the Act—that is to say, in the counties of Cork, Galway, Kerry, Leitrim, Mayo, Roscommon, Sligo, *Clare*, *Kimerick*, and *Tipperary*. In the last three counties there are not, however, any districts that are congested within the meaning of the Act.

(3.) Portion of the Sea and Coast Fisheries Fund amounting to about £18,000, has also been transferred to the Board, and this sum is applicable to districts in the maritime counties of Donegal, Leitrim, Sligo, Mayo, Galway, Kerry, and Cork.

(4.) The Board is authorized by the Act to accept any gifts of property, real or personal. Since the passing of the Act, the Board has received as a gift the sum of £2,500, portion of the unexpended balance of the Irish Distress Fund. This gift has been appropriated by the Board to the completion of the Bealadangan Causeway in Connemara.

POWERS OF THE BOARD.

The Board is empowered to take such steps as it thinks

proper for improving congested districts, in connection with the following subjects or matters, namely:—

1. Agricultural development.
2. Forestry.
3. Breeding of live stock and poultry.
4. Sale of seed potatoes and seed oats.
5. Amalgamation of small holdings.
6. Migration.
7. Emigration.
8. Fishing and matters subservient to fishing.
9. Weaving and spinning.
10. Any other suitable industries.

In short, the Board's efforts are to be directed as regards agriculture, towards increasing the size of small holdings and towards improving live stock and methods of cultivation; and in the second place towards aiding and developing all industries, including fishing. Further, it is enacted that agriculture and industries in their various branches may be aided and developed by indirect as well as by direct means.

It is impossible to mention all the various indirect methods by which agriculture and industries may be assisted in poor and remote parts of the country, but, first, perhaps, in importance comes the establishment of such means of communication (whether by railway, steamship, or otherwise) as will enable goods to be imported and exported at rates sufficiently low to make trade possible and profitable to producers and consumers in remote congested districts.

OFFICES AND OFFICIAL STAFF.

The house No. 23 Rutland-square, Dublin, was taken and furnished out of moneys voted by Parliament as an office for the Board, and the first formal meeting of the Members was held on the 2nd of November, 1891. Application was then made to the Lord Lieutenant and the Treasury, with reference to the employment of officials for carrying out the projects of the Board, and

by the 1st of January, 1892, arrangements were sanctioned for the appointment of a Secretary, Assistant Secretary, and a small staff of Clerks.

The salaries of officials and the administrative expenses of the Board are payable out of moneys provided by Parliament, and not out of the funds allocated by the Act for the improvement of Congested Districts.

PROCEDURE OF BOARD.

It was decided that four Committees should be appointed to make inquiries and report to the Board, from time to time, as to all applications and questions connected with the four main departmental subjects of *Land, Industries, Fisheries, and Finance*, or the management of the Board's receipts and expenditure. A Committee was appointed to consider and report on all contemplated *Works*, such as piers and roads.

CHAPTER XVII.

PRESENT CONDITION OF CONGESTED DISTRICTS.

PRACTICALLY all the inhabitants of congested districts in Ireland are in possession of small plots of land, so that the development of agriculture and the improvement of the breeds of live stock and poultry, are of primary and universal importance. Sources of income vary in different districts. In many localities the results of sea-fishing are as valuable as the produce of the land. In other districts wage-earning in England, Scotland, and elsewhere is an indispensable source of livelihood. Weaving, knitting, sewing, kelp-making, sale of seaweed, sale of turf or peat, sale of illicit whiskey, donations from relatives in America, occasional employment at home, are sources

of income of greater or less importance in different localities. Residents along the seashore have many advantages arising from fishing, from gathering seaweed for kelp and manure, and from cheap carriage by sea for flour, meal, and other commodities; but, on the other hand, peat for fuel has often to be brought from a great distance by those living on the seashore, and rough grazing for cattle and sheep is frequently not available there. People dwelling inland either depend almost altogether on their farms, or else they regularly migrate for some months of the year in search of employment in England and Scotland, or even America in rare instances. In some inland mountain glens where the inhabitants have very small patches of land tilled in primitive and unskilled methods, where their cattle and sheep have deteriorated in breeding and diminished in numbers, where little effort is made by the men to earn money through migratory labour or otherwise—in such mountain glens are to be found those people who endure the most comfortless and cheerless lives of all the inhabitants of congested districts in Ireland. In “a good year,” they are little more than free from the dread of hunger, while a complete or partial failure of their crop involves as a consequence proportionately greater or less suffering from insufficient food.

The farms, or rather holdings, are small in extent, and from 2 to 4 statute acres are planted with potatoes and oats. The rents for these plots vary from a few shillings to £6 a year, but in most cases rights of turbary and rough commonage grazing are appurtenant to the holding without further charge, and frequently the right to cut or gather seaweed for manure and kelp-burning is also enjoyed. The methods of cultivation are usually primitive and bad, there being no rotation of crops: drainage is insufficient: there is an inadequate supply of suitable manure: and the weeding of crops is neglected. The breeds of live stock are worn out and of little value, and the kinds of poultry too are capable of much improvement.

The disposition or inclination of the people as regards

industry is of vital importance to the success of our efforts. Suggestions and projects may be wise and good, but nothing can come of them except failure, unless perseverance in hearty work is shown by people who have rarely had an adequate motive for steady hard work. The income at the Board's disposal is only at the rate of a few shillings a year for each family in the Congested Districts, so that prosperity is not to be conferred through money payments by the Board: it must be earned by the people themselves, for the Board's Funds are only sufficient to provide instruction and opportunities for those who are willing to struggle hard to improve their condition.

CHAPTER XVIII.

OPERATIONS OF THE BOARD FROM THE 5TH AUGUST,
1891, TO THE 31ST DECEMBER, 1892.

Agriculture in its various branches, *Sea Fisheries*, and *Industries* of different sorts are the occupations in connection with which the resources of the inhabitants of the Congested Districts are to be aided and developed by the Board, and under these heads, and also in reference to the construction of some *Works* of utility.

I. AGRICULTURE.

Agriculture, taken in its limited sense to mean the science and practice of the cultivation of land, and a number of other kindred subjects, are dealt with by the Land Committee of the Board, namely:—

- (a.) Agriculture.
- (b.) Forestry.
- (c.) The improvement of the breed of live stock and poultry.
- (d.) The supplying of suitable farm seeds.
- (e.) The amalgamation of holdings.
- (f.) Migration, and
- (g.) Emigration.

At one of the very first meetings of the Board it was arranged with the Agricultural Department of the Irish Land Commission that, under the control of the Land Commissioner nominated on the Board to especially represent agriculture and forestry, it should carry out such agricultural and kindred operations as might from time to time be delegated to it by the Board.

Since the passing of the Act much has been done by the Board in its agricultural department, considering the difficulty that naturally attends upon the execution of novel work by new official machinery.

For the coming year, however, arrangements are being made to try to improve the system of cultivation, which is of the most primitive kind in the districts with which the Board has to deal.

In the Union of Swinford the Royal Dublin Society has, for the last two seasons, employed an instructor, whose duty it has been to teach the people the best system of cultivating portions or plots of their holdings, and to encourage them by gifts of seed and by giving premiums to those who were most successful and attentive in carrying out the directions of the Instructor. It has, therefore, been arranged that experiments should be made this year in at least two districts.

Various other projects for developing the practice of good agriculture have been considered, and the importance of the subject can hardly be over-estimated. We believe we are not exaggerating the fact in saying that throughout the congested districts, as a rule, the produce of farms might be increased from one-third to one-half. The effect of increasing the supply of home-grown food or of farm produce to this or any considerable extent, has caused the Board to determine to make every effort to develop agriculture.

II. FORESTRY.

During the period of distress, consequent on the partial failure of the potato crop in 1890, the Irish Government were anxious to acquire land in some of

the distressed districts partly as a means for providing relief works, and partly for the purpose of trying an experiment in Forestry under the adverse circumstances that prevail on the western seaboard. About 960 acres, at Knockboy, on the Connemara coast, in the County Galway, were placed at the disposal of the Government, who purchased the landlord's interest, and thus became owners in fee-simple. These lands were handed over to the Agricultural Department of the Land Commission, under whose superintendence a sum of £1,970 was spent in draining, fencing, and roadmaking, and in planting 90 acres, which gave much useful employment. On the 1st January, 1892, an assignment of the lands was made to the Board, which has, during this year, expended a further sum of £1,427 in carrying on the works. Up to last spring about fifty acres were planted as a main plantation with sycamore, ash, elm, beech, birch, poplar, alder, larch, Scotch fir, spruce, and silver fir, and about forty acres as shelter belts, with sea-buckthorn, alder, elder, Scotch fir, sycamore, poplar, and willow. All these trees have thriven remarkably well, with the exception of silver firs, and it is not intended to plant any more of this variety. At present 200 more acres are being planted, and it is estimated that the cost of planting per acre will amount to £4, 10s. The value of this experiment is not only that if the trees grow in this exposed situation close to the shores of the Atlantic, it will demonstrate that much of the waste lands of Ireland could be turned to profitable account, but it will also afford much useful employment in the locality during the progress of planting; it will train up many to the knowledge of forestry, and its uses; and it will give the Board an opportunity of distributing, either without charge or at a nominal price, such trees as are suitable for shelter planting to be carried out under the directions of a skilled forester employed by the Board. Already a beginning has been made in encouraging the planting of shelter belts of trees. Some 350 holdings in the parish of Kiltimagh, in the Union of Swinford, Co. Mayo, have been planted with small shelter plantations

under the supervision of the Board's Assistant Forester, who states that the people seem to take great interest in the operations. During this year about 650 holdings will be provided with shelter plantations by the Board.

If at some future time successful planting could be carried out over a sufficiently large area in Ireland the establishment of the numerous profitable industries connected with wood might be hoped for. This possible benefit is, however, we fear, very remote, as up to the present the Board has found it almost impossible to learn of any lands in a congested district that, besides being free of grazing or other rights, are suitable as regards extent, aspect, and position.

At Knockboy it is further proposed to plant during the coming season some ten acres of osiers, in the hope that basket and creel making may be introduced as one of the industries of Carna.

III. LIVE STOCK AND POULTRY.—AMALGAMATION OF HOLDINGS.

The Board found it desirable, as soon as the service season ended, to bring the stallions from the several districts where they had been located to a central *depot*. By having the stallions in a central place where they can be seen, it was also thought that such an interest would probably be created in horse-breeding in the West of Ireland that a demand for the produce of these horses might be anticipated, greatly to the benefit of the western peasants. With this object the Board have acquired a holding in the neighbourhood of Dublin where buildings for a stud-farm are in process of erection.

The effects of introducing improved breeds of horses and donkeys must be gradual, but the Board has every reason to hope that within a reasonable time the type of animals in the West of Ireland will cease to deteriorate, as has been the case for many years, and that thenceforward a steady improvement will be observed.

The regulations under which Bulls are distributed,

will be continued on nearly the same principles as were adopted last season. It is hoped that many districts will be dealt with where the people last year were backward in taking advantage of the Board's offer to sell bulls to suitable persons at about a third of their cost payable in two annual instalments.

Sheep.—It was considered wise to commence the experiment of improving the native breed. With this object, 151 Blackfaced Scotch rams were purchased. About half of this number have been located in a district in the County Donegal, and the remainder in a district in the County Galway, where they have been placed at the disposal of the people free of charge, upon the condition that the inferior rams should be got rid of, and that only the imported Blackfaced Scotch rams should be used.

The people in each of these districts have shown themselves most willing to carry out the arrangements of the Board and to take advantage of the imported rams.

A further number of twenty Cheviot rams have also been purchased for special localities in the Counties Galway and Donegal, where that breed was considered to be the most useful.

Arrangements are now being made for selling young boars of the large Yorkshire breed to suitable persons residing in the congested districts, for three pounds each, payable in annual instalments, on the understanding that the boar's services are to be available for a low fee, and that the boar may not be sold or removed without permission. Great care is now being exercised in the selection of boars, of which eleven have been purchased. Contracts have been entered into for the supply from the herds of well known breeders, at a future date, of suitable boars subject to rejection if disapproved by the Board's Inspector.

Poultry.—A scheme was adopted early in the year 1892 for the improvement of poultry by means of distributing, on certain conditions, pure-bred cockerels in substitution of all male birds in the possession of cottagers.

Amalgamation of Holdings.—During the present month, after protracted negotiation, an agreement has been almost concluded for the purchase of portion of an estate in the interior of the County Galway for £7,500, in order that some grazing lands might be divided among the occupiers of some neighbourhooding small holdings.

In many cases negotiations for the purchase of land for Migration purposes are in progress, with more or less prospect of purchases by the Board, but unexpected legal difficulties have arisen in respect of which the opinion of the Irish Law Officers of the Crown has been taken, and the position of the Board is now being reconsidered.

No steps as regards Emigration have been taken, nor is any action at present contemplated.

CHAPTER XIX.

SEA FISHERIES AND INDUSTRIES.

THE sea-coast of the congested districts may, in considering how best the fisheries can be developed, be divided into two divisions, in one of which are the counties from Donegal to Galway inclusive, along the west coast, where transit for fish and where marketing facilities are defective; while in the other division comprising Kerry and Cork, transit both by rail and by steamship is far better than in the north, and therefore, a much more profitable market already exists in Kerry and Cork than in the northern congested districts. Speaking generally, the Kerry and Cork fishermen need landing accommodation for boats more than market facilities, while as regards the coast north of Galway the establishment of a market is the chief necessity, though at the same time piers and boat-slips are much wanted at some places.

It should be borne in mind that there are two distinct kinds of fish trade, that in *fresh* fish, and that in *cured* fish. The fresh fish trade requires quick and regular means of carriage to the English markets; and expensive plant—such as ice-hulks, ice, and packing boxes—is also necessary. The cured fish trade on the other hand involves the erection of fish-curing sheds and stores, the hiring of fish-curiers, and the purchase of salt; but in the case of cured fish, there is not any necessity for rapid or regular transit to market, as a steamship or even sailing vessel can be chartered occasionally to take pickled or dried fish to market. For pickled or salted mackerel and herrings, barrels or boxes have to be used, but dried ling and cod are tied together and shipped in bundles without any covering.

A fresh fish trade on the west of Ireland is only possible where fish can be quickly despatched from a railway station at the water's edge on the west coast, and thence brought without delay to a steamer trading from an eastern Irish port to one of the English or Welsh ports. That the price, in England, of coarse fresh fish, such as cod, ling, and haddock, does not warrant an export trade from places in Ireland from which high rates of carriage are inevitable. In such localities, however, it is hoped that a cured-fish trade can be profitably established.

Unfortunately the Irish market is of little value for any large supply of fish, but upon the completion of some of the railways now in process of construction, it will, no doubt, be possible to establish with inland districts a trade of some value in fresh fish.

Efforts to aid Fresh Fish Trade.

Having regard to what has been above stated with reference to the necessity for rapid transit in the fresh fish trade, the Board thought that Galway Bay afforded the most suitable field for attempting, on a tolerably large scale, the establishment of a fresh mackerel and fresh herring trade with England. But while the

transit facilities were encouraging, nothing less than *the creation of the local industry* was the task awaiting the Board, if any benefit were to be conferred upon the inhabitants of the particular district, who, it must be remembered, were unacquainted with the management of large boats and the kinds of nets that are used. It seemed that the wisest course of procedure would be the subsidising of trained crews from other parts of Ireland to prove to the local fishermen what earnings might be theirs, and also to instruct some of the Connemara and Aran people in the management of large boats and nets, for the purchase of which the Board is willing to make loans to suitable persons. Arrangements were accordingly made with the crews of seven Arklow boats, the Board giving each crew a bounty of £40 for undertaking the risk of fishing on untried grounds far from home. An ice-hulk with a cargo of ice was moored in Killeany Bay, Aran Islands, and a steamer was engaged to take boxes of iced fish from the ice-hulk to Galway Dock, whence a special train service to Dublin was organized by the Midland Great Western Railway of Ireland.

The Board entered into an agreement to market the mackerel at a fixed rate of commission, it being also arranged that he should pay the fishermen the English market price, less by a deduction of 7s. a box to cover the cost of ice-packing, carriage, and English salesman's commission. The ice-hulk and boxes were provided by the Board, who purchased the ice, and defrayed all the cost of labour except the wages of a Manager.

In addition to the seven Arklow crews, two boats were fitted out for training crews from the parish of Carna, in Connemara, and two English built boats at the Board's disposal for the benefit of crews from Clifden parish, also in Connemara. A "hooker," or large sailing boat belonging to Aran Island also joined the little fishing fleet, which accordingly consisted of twelve boats.

The Arklow boats arrived at Aran on the 22nd of March 1892, but, owing to the low temperature of the

sea, no mackerel were caught until the 6th of April, on which day, however, 6,000 mackerel were despatched to the English market. The weather during much of the season was stormy and unfavourable, but on the 18th of May, 73,350 mackerel were sent to Galway, and were forwarded thence by two special trains. During the season of ten weeks, the Arklow boats made on an average £316 per boat, and the local inexperienced crew under the charge of trained skippers earned about £70 per boat, although they were not ready to fish at the beginning of the season. The total number of mackerel caught was 299,480.

The result of the experiment, although it was costly, is most encouraging. The fact is proved that mackerel can be caught in Galway Bay in the spring of the year, at a time when they fetch very high prices; and there is reason to hope that it will be profitable to continue to send such fish to the English markets, if satisfactory arrangements can be made for the reduction of the heavy cost of carriage.

Efforts to aid Cured Fish Trade.

Far more widely-spread and important results are expected at most points on the west and north-west shores of Ireland from a trade in cured fish than in fresh fish. Hitherto pickled mackerel for the American market were the only cured fish exported from the west of Ireland, and the Irish mackerel did not obtain high prices owing to the inferior manner in which they were cured. Ling, cod, glasson or coal-fish, and also herrings, have always been pickled or salted for local consumption, but too roughly and unskilfully to be marketable in England, Scotland, or abroad.

Fifteen places have been selected by the Board on the west and north-west coast of Ireland as sites for fish-curing stations.

Other places along the coast have also been suggested as suitable sites for fish-curing stations, and it is probable that the operations of the Board in this direction will be extended if their present efforts are successful.

The S.S. "Fingal" has, during the past year, been chartered for seven months, and a fresh charter has been agreed to for a further period of twelve months, as, in the opinion of the Board, the development of the fisheries would at first be much assisted by having a steamer for inspection duty, and also for affording occasional facilities to fish-curing stations by the carriage of salt for curing purposes or of dried fish.

Instruction in net-mending has been arranged for at the Aran Islands, Co. Galway ; at Tip, near Belmullet, Co. Mayo ; and at Burtonport, Co. Donegal. Boilers for "barking nets" will be available at the Aran Islands and at Inishcoo. It is intended that instruction in net-mending shall be widely diffused. At Aran the arrangements are under the joint management of this Board and of the Board of National Education. It is also contemplated that the Board should assist in starting a net-mounting factory for supplying nets to the fishermen of the congested districts.

The Irish Reproductive Loan Fund and the Sea and Coast Fisheries Fund have not yet been placed at the actual disposal of the Board, and the delay results from the fact that arrangements have not yet been sanctioned for the appointment of two clerks to discharge the routine official duties in connection with the issue of loans. Since the passing of the Act on the 5th August, 1891, the duties in connection with these funds have been discharged in the name of this Board by the Board of Works and the Inspectors of Irish Fisheries. To both of these departments we are very much indebted for their friendly action in continuing to administer the funds.

To complete the general view of the sea fisheries of the United Kingdom, the following particulars as to Imports and Exports, supplementary to those given in previous years, are subjoined:—

(a.) Imports.

	1892.		1893.	
	Quantity.	Value.	Quantity.	Value.
Fish, Cured or Salted :	Cwts.	£	Cwts.	£
Norway	285,371	303,911	330,591	328,256
France	65,189	225,504	75,624	352,724
British N. America .	255,386	526,353	217,286	469,244
United States . . .	157,338	404,826	180,743	450,223
Other Countries . .	261,104	359,579	233,366	281,102
TOTAL	1,024,388	1,820,173	1,037,610	1,881,549
Fish, Fresh (not of British Taking) . .	1,526,229	939,827	1,278,160	800,404
TOTAL, Fresh & Cured	2,550,617	2,760,000	2,315,770	2,681,953

The general result for the sea fisheries of the United Kingdom for 1893, according to these figures, and which are exclusive of some English salmon not returned, and of all Scotch and Irish salmon, would be:—

		Value exclud- ing Shell Fish.	Value includ- ing Shell Fish.
		£	£
Fish landed in {	England and Wales	4,827,000	5,171,000
	Scotland	1,623,000	1,698,000
	Ireland	282,000	297,000
TOTAL		£6,732,000	7,166,000

N.B.—Compare value with England and Wales.

It will always be understood, of course, that all the above figures are of landing values only. Nothing is included for the earnings of other fishing industries connected with the carriage of the fish to market, curing, and like operations, by which the value of the fish as landed is frequently much enhanced before it reaches

even the wholesale market. In comparing these figures with estimates of the value of the fishing industry of the United Kingdom, in which other items are included, the difference of the basis should always be borne in mind. If the value of the fish were to be taken at a later stage of the industry, the annual amount, instead of being only a little over seven millions, might easily be put, with no great inaccuracy, at double these totals.

III. INDUSTRIES.

The aiding and developing of spinning, weaving, knitting, and other industrial handicrafts must be recognised, after even a little reflection, as being the most difficult duty that has been entrusted to the Board, both as regards the selection of fields of work, and the carrying out of schemes for affording assistance.

One principle of a negative kind has been adopted, namely, that the Board will not undertake the ownership or management of any industrial enterprise. The terms and conditions upon which industries may be assisted are numerous, varied, and altogether dependent on the circumstances of the case, and the nature of the co-operation that may be available.

Foxford Spinning Factory.

Ballaghadereen Knitting Factory.

Foxford and Ballaghadereen Factories.

Skibbereen Dairy Co.

The Carna Industrial Fund.

Instruction in Carpentry.

Shirt and Underclothing Manufacture.

Yarn Spinning and Tweed Weaving.

IV. WORKS.

Piers, Roads, Bridges, etc.

Miscellaneous improvements in communications.

Telegraphic cable to the Aran Islands.

CONGESTED

Return showing approximately the Receipts and Payments
on the 5th August, 1891, to

RECEIPTS.	AMOUNT.		
	£	s.	d.
Interest on Church Surplus Grant	57,840	0	0
Fees received under the Scheme for Improving the Breed of Horses	365	0	0
Repayments under the Scheme for Improving the Breed of Horned Cattle	286	0	0
Donation from Irish Distress Fund	2,500	0	0
Miscellaneous Receipts	523	0	0
<hr/>			
	£61,514	0	0

N.B.—Although a sum of only £32,686 was actually expended up to the 31st December, many cases entered upon.

RECEIPTS.	AMOUNT.
AGRICULTURE—	
Scheme for Improving the Breed of Horses . . .	£ 5,097 s. 0 d. 0
Do. Horned Cattle . . .	2,440 0 0
Do. Poultry . . .	355 0 0
Do. Sheep . . .	679 0 0
Do. Swine . . .	8 0 0
Forestry works at Knockboy, County Galway . . .	1,427 0 0
Stud Farm Buildings . . .	21 0 0
Planting of Trees and Quicks at Kiltimagh . . .	126 0 0
FISHERIES—	
Development of Spring Mackerel Fishery in Gal- way Bay . . .	1,469 0 0
„ „ Herring „ „ . . .	202 0 0
Purchase of Smack for giving Instruction in Fishing . . .	223 0 0
Curing of Cod, Ling, Haddies, etc.	1,556 0 0
Purchase of Nets and Gear to be lent to local Fishermen	988 0 0
Subsidy to Galway Bay Steamboat Co.	762 0 0
Hire of Steamer to superintend the Board's Fish- ing operations	1,449 0 0
Scheme for giving instruction in net mending . . .	117 0 0
Fitting out and manning two Fishing Boats lent to Board	397 0 0
Storage Expenses for Board's Property at Galway . . .	37 0 0
Fitting out Connemara Boats	50 0 0
„ Aran „	40 0 0
Charter of S.S. "Evelyn" to attend on Fish Curing Stations	166 0 0
Purchase of Greencastle Yawl as Model Fishing Boat	16 0 0
Grant to Committee for supplying Woollen Cloth- ing at cost price to Fishermen	10 0 0
Miscellaneous—Purchase of Huts, Maintenance of Ice Hulk, etc.	327 0 0
INDUSTRIES—	
For development of Weaving at Foxford and Ballaghadereen, viz. :—	
Loan, £10,000	
Grant, 6s	10,006 0 0
PIERS, ROADS, BRIDGES, Etc.—	
Bridge and Causeway at Bealadangan	1,305 0 0
Landing Stage at Inver, Broadhaven	15 0 0
Local Inquiries and Inspection Duties	3,398 0 0
	£32,686 0 0

1892, yet projects involving a very large further expenditure have been approved of, and in

CHAPTER XX.

BOARD OF WORKS.—DRAINAGE.—LAND COMMISSION.—
MAIN AND THOROUGH DRAINAGE.

THE number of loans sanctioned for works, of which thorough drainage forms the principal part, since the commencement in 1847 to the 31st March in this year, is 8,173, for £3,708,002, and of this number 18, for £3,335, were approved during the year ended 31st March, 1893.

Now it ought to be the duty of a government to carry out arterial drainage at the National expense. It is a matter of the first importance to Ireland, because until a proper and efficient system is safeguarded by the State, obviously many large tracts of country will remain unproductive. Unless the great main drains the country, rivers great and small are deepened and watched with engineering capacity, naturally the efforts of individuals must fail.

There is an excellent model of the surface of Ireland in the National Museum in Kildare Street. The middle of the country is depressed like the centre of a saucer. Consequently the flow of our principal rivers is sluggish over most of their courses, and their tendency is to silt up their beds. This prevents the superfluous moisture in the soil from being carried off as it would otherwise be. A thorough dredging of the beds of the larger rivers would naturally enable them to perform their functions of furnishing an outlet for the flow of superfluous moisture to the seas. Clearly this duty could be undertaken and performed, as it is in other communities, by a National rate; but the administration would need watchful care. However, the imposition of local and personal rates need some revision, as the financial pressure should be somewhat equalized. The following Table shows how the matter stands:—

Irish Land Commission reports, of which some three dozen were issued in the year 1893. They dealt with accounts, judicial rents, proceedings, rules, purchase of land, return of sales.—Agricultural department, return of average prices, orders, etc. Those reports, as dealing with subjects germane to an agricultural department, are practically similar with those already supplied,—the Registrar-General's and Congested Districts reports.

Loans to Tenants for Improvement of Holdings.

LAND LAW (IRELAND) ACT, 1881, SECTION 31.

Under section 31 of the above Act, which provides for loans to occupiers of land for improvements proposed by themselves, the number of loans sanctioned since our last report was 535, amounting to £47,300, the sum issued being £42,645. This gives the total of loans sanctioned under section 31 since the commencement to 31st March, 1893, as 11,230—amount £966,237, the instalments issued amounting to £813,155.

The number of applications for loans lodged during the year 1892-1893 was 937, being an increase of 101 over last year. Of this number 47 were received from occupying owners.

Vast tracts of country are deluged every winter season, and practically water-logged, by reason of the want of a proper system of general Arterial Drainage. If the country of the Lowlands in Holland had been under the charge of an Irish Government, it would be a filthy unwholesome marsh, instead of a dwelling-place for an industrious people. This plain illustration shows what may and can be accomplished by the State for its people.

CHAPTER XXI.

HOW SCIENTIFIC AID IS AFFORDED TO IMPROVING
TENANTS IN GERMANY, THE HOME OF AGRICUL-
TURAL BOARDS.

BACTERIOLOGY, which has effected this improvement in dairy farming, is now working out another problem in agriculture which in the near future may lead to a complete revolution in the system of tillage farming. Potash, phosphoric acid and certain nitrogenous substances are the important elements of plant fertilisers; both the former are cheap, while the nitrogen is the expensive constituent of plant food which the farmer has to provide for his crop. Peruvian guano, for instance, principally depends for its value upon the nitrates which it contains, and according to Wagner, the nitrogen in the cheapest nitrogenous manure cannot be sold under from 50s. to 70s. per cwt. "The chemical known as nitrate of lime is the most important plant food contained in the soil, and this commanding influence on plant growth is a consequence of its supplying the plant with nitrogen in an immediately available form, wherewith to build up the albumenoids of the protoplasmic contents of the living cells, which are the plants' manufacturing organs, and eventually to supply the nitrogenous ingredients of the matured plant or grain." Nitrogen, however, forms seven-eighths of the atmosphere, and is in large quantities in the soil itself, but in forms which are not directly assimilable by plant roots. If some means, therefore, could make this limitless supply cheaply available, tillage farming would at once be placed in a condition far more favourable than at present, and, perhaps, turn some of the grass lands once more into corn. The first step in this direction seems to have been accomplished.

"It is well known that nitrogen manures have very direct effects on increasing the produce of wheat, of barley, and of oats, of turnips, of mangolds, and of

potatoes. Leguminous crops, however, not only as a rule accumulate much more nitrogen, and contain much more in the dry substance than the crops above named, but nitrogenous manures have comparatively little effect in increasing the produce of such crops. They are, however, improved by phosphoric acid and potash, which, as already stated, are the cheap elements of plant fertilisers. If the roots of a healthy leguminous plant be examined they are found to have small lumps or nodules, which were suspected to contain a ferment, and which it was believed supplied the nitrogen to the plant. In 1883 the first progress was made by Helriegle in Germany, who carried out a series of experiments with leguminous plants grown in pots of soil consisting of a small quantity of ashes of the same kind of plant and washed quartz sand. Though the conditions of growth were identical, some made but little progress, while others showed remarkable luxuriance, and it was found assimilated large quantities of nitrogen, although none was present in the soil. On them the root nodules had formed, but none were present in those of meagre growth. In the next series of experiments all infection of the soil was carefully avoided, and the growth in every case was slow and meagre. A few drops of water in which the nodules of similar leguminous plants were washed was now added to every second of the experimental vessels, and there was in them at once a rapid development. The growth continued to the end, a large amount of nitrogen was taken up and assimilated, and on examination of the roots it was found that only in these cases had the root nodules been formed. Other experiments served to establish what had become apparent, that the nodules on the roots were the work of microbes received from outside, and that the microbes or ferments had procured the nitrogen which was taken up by the plant. It has also been ascertained that the microbes of the several leguminous plants are not all identical. Thus inoculation of the soil with the microbes of the pea and vetch had little or no effect on the lupin and saradella. Further it was

found that when a crop of one kind of the leguminous family begins to languish in any soil, another kind will grow there luxuriantly, which after some time will begin to indicate a falling off in vigour. This is explained that the microbe of the plant has exhausted the soil of some particular element which is necessary for its growth. Another theory which is strengthened by Winogradsky's experiments on the nitrogen which is formed in the soil in the case of sideration (fallowing) is that other microbes, injurious to the first, make their appearance after some time.

About 1886 the German experimental stations took up Helriegle's investigations on the fixation of nitrogen with the view of finding the exact quantity which might be collected by the several members of the leguminous family, and how far this might be utilised in actual farming. Lupins contain 21 stones of nitrogen to the Irish acre, which is equivalent to about 28 tons of stable manure; lucerne, 11 stone; esparcette, 10 stone; sandvetch, 24; red clover, 9·6; white clover, 4·5. A number of experimental farms have been in operation for the last four years, the reports from which indicate that another important advance in farming is being worked out by them, and by the application of science to agriculture. The botanists of the Russian, Austrian, and American agricultural stations are searching the plant life of their various countries for new members of the leguminous family. Some kinds of wild vetch are said to be giving good results, and Ramm mentions 23 different plants of the leguminosæ, with which very complete experiments have been carried out. Professor Wagner gives an account in an article entitled "Wie ist der stickstoff am billigsten zu beschaffen," (How is nitrogen to be procured in the cheapest manner,) of the Weilerhof farm, which is one of those employed in the solution of the nitrogen question. "Other than a few draught horses, there are no farm animals. Cattle food is not produced, and the stable manure is a mere trifle. Nitrogen necessary for the grain crops, turnips, and potatoes is provided by the new process with crops

of various kinds of vetches and peas, which are sown in the corn stubble, and manured with potash and basic slag. I have witnessed in the harvest of 1890 five tons of organical dry substance, containing not less than 23 stones of nitrogen to the Irish acre, more nitrogen, be it remarked, than was necessary to produce a crop of turnips or of corn. Luxuriant oats and barley was grown on the land the following summer." In other places a three and four course rotation is being tried—the first year or two years, leguminous crops, next rape, turnips, or potatoes, last year corn. A small addition of Chili saltpetre has been found necessary for potatoes, but in several of the experimental farms the simple method of a leguminous crop alternating with corn has given remarkable returns even on lands of secondary quality. Generally the process, it is believed, will lead to a large development of stall-feeding and dairying, and, taken in connection with the results of the bacteriological section at Kiel, may increase to a serious extent the German competition with the Irish and British farmer.

We have not now the space to follow Winogradsky's experiments on the nitrates developed in the soil by the microbes of sideration (fallowing) and the possibility of these ferments being made a source of nitrogen for the growth of farm crops. We shall only pause to express the wonder which we feel that in a country absolutely dependent on agriculture, not a shilling of public money is being expended on agricultural investigation.*

* D. O'C. Donelan.

CHAPTER XXII.

THE AMERICAN IDEA AND SYSTEM.

It is unnecessary to enter into further wearisome details as to the rudimentary character of Irish proceedings, so in order to show the elevated standard upheld by a formidable competitor in America, the concluding paragraphs of the report of the Secretary of Agriculture for 1892, is reproduced as an example of what could and should be done by government for agricultural Ireland:

“This Department is a Department for the people, and every man who feels moved to ask a question or apply for information, however commonly known, is entitled to a courteous answer giving such information, and not referring him curtly to the ordinary avenues accessible to every intelligent reader or student. In the nature of the case these letters cover every possible known subject, and the correspondence entailed by them is one of the burdens which it is not desirable to unload; but the necessity for this class of circulars or bulletins need in no perceptible degree modify the policy of this Department to keep substantially within the limits of its own work in its publications. This work, however, it must be understood, is not always necessarily original work of which all elements were heretofore unknown. Compilation of facts, classifying of information, adjustment of data, are just as much the work of the Department as the finding of a new remedy, a new plant, a new pest, or a new process. Hence the Department would be untrue to its obligations, would emasculate its virility, if it should abdicate any of its functions for research or investigation, and every path that it is authorized to tread should lead to the widest horizon of publicity.

“Finally, in order more effectually to carry out the foregoing suggestions, it is manifest that the Department should be more thoroughly equipped, even in the

lines of limitation laid down. It should have a collection of cereals from all climates, classified, arranged, and studied by competent men ; it should have models of all fruits, prepared with such discrimination as should show the effect of climate on their growth ; it should have a complete collection of wools and other fibres scientifically arranged ; it should have such a collection of every known product indigenous or adapted to all or any of our soils and climates ; it should have a complete collection of all agricultural implements, arranged so as to show the development and historical progression of inventive genius as applied to agriculture ; it should have a complete collection of soils, with their chemical analyses ; it should have preserved in its museum or archives the visible result of every chemical analysis and every experiment, so far as it is possible to make it visible ; it should carry to completion an exhaustive biological survey of the country, with special reference to the distribution according to climatic conditions of plants and animals, with a study of their adaptation to our varying soils and climates ; it should have complete and reliable statistics of every agricultural product in the United States and of all competing products in foreign lands ; it should count every hoof and estimate the value of every domestic animal ; it should be in constant touch with the markets at home and abroad ; it should know every pound of butter and cheese produced, and should be thoroughly versed in the processes for the best, the greatest, and most economical production of the same ; it should know the locality and the spread of every pest and disease, and should thoroughly understand the remedies for and means of exterminating the same ; it should have a sufficient force and sufficient means to carry into effect every operation and duty assigned to it ; it should be equipped with persons competent to explain on the platform and to put into its publications the fullest, amplest, and latest information with reference to any agricultural speciality or interest in the United States. In other words, the Department of Agriculture should be so amply endowed with

material, money, and men as should make it an authority on all agricultural questions, capable of assisting in every laudable way the experiment stations and colleges and all voluntary organizations, clubs, and associations. It should be a mine of information to the press; should be so established in the confidence of the people that these same people, in their respective localities, acting through their organizations and speaking through the press, would appreciate with growing interest the effort of their national agent; and should always be able and ready to co-operate with every other agent, to the mutual advantage of all."

THE END.

