

~~example of failure to discharge a primary duty than that which is presented by the extent to which, under the direct sanction and regulation of law and executive authority, temptations to indulge in the most insidious and fatal vice of our time and nation have been scattered most freely and recklessly just where they have done, and must do, the most injury."~~

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No. 4.—*The Arterial Drainage of Ireland.*

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[Read Friday, April 18th, 1902.]

WHEN I mention that a sum of £961,235 14s. 7d. has been expended upon Arterial Drainage in Ireland, and that the annual instalments paid in redemption of principal and interest amount to £31,944 9s. 8d., I think the Statistical Society will be astonished to learn that, although the subject is intimately connected with the Land Laws of the last twenty years, no effort has been made to adapt the system of 1863, faulty though it is, to the changed circumstances of the country, except a very small Act passed in 1892, the 55 and 56 Vic., chap. 65, to which I will refer later.

The astonishment will be the greater when I add that not only has there been grievous waste of money due to the faulty procedure, but that the work is practically at a stand still, and that this large sum is in risk of being wasted by the rivers being allowed to return to their original condition.

My object to-night is to call attention to the defects and to make some suggestions for improvements; but it is evident from the apathy with which the subject has been regarded that very little is known about it, and it will, I think, be proper to commence by giving some explanation of the system as it at present stands.

In the first place we have to deal with the peculiarities of Ireland. A large portion of the country is exceedingly level, as every one is well aware, and the centre portion is the flattest, the hills fringing the coast in Wicklow, Kerry, Galway, Mayo, Donegal, Antrim. The result very naturally is that the rivers generally are slow and but little below the ordinary level of the country, so that the drainage of separate farms and fields is practically impossible owing to the absence of fall, unless the various main channels are sunk or cleared in the first instance.

No individual proprietor, it was felt, could attempt such large works as would be necessary for this purpose, and it was decided

to institute a system whereby "Districts" could be formed and supplied with what was somewhat peculiarly termed "arterial" drainage. The expression is a very bad application of a medical or surgical term, as the main drains are veins, not arteries, drawing their supply from the capillary tubes, represented by the smaller drains constructed by each individual owner for his own lands. The false analogy to arteries has not been without effect in hiding the necessity for farm or thorough drainage to take advantage of the cleaning or improvement of the main channel.

The result of the decision to form Drainage Districts was embodied in the Drainage and Improvement of Lands (Ireland) Act, 1863 (26 and 27 Vic. c. 88), which still remains substantially unaltered.

Under this statute the proprietors of a river basin were empowered to form themselves into a "Drainage District," and when this was done, the Board of Works, after holding an inquiry into the plans and estimates laid before them by the Promoters, obtained for them a "Provisional Order," constituting the first Drainage Board.

The Board then appointed a secretary, engineer, and solicitor, and employed a contractor to carry out the works, borrowing the necessary funds from the Board of Works, which they were empowered to do by the Act of 1863.

When the works were completed the Board of Works made up the account of expenditure, and published an "assessment award," by which they assessed each proprietor in the lands included in the District with his acreage share of the expenditure, to be repaid by instalments spread over a certain number of years, and representing both principal and interest, exactly like the tenants' instalments of purchase money repaid to the Irish Land Commission.

I am summarizing the procedure very shortly, and in some respects dealing with the procedure laid down by the Act of 1863 rather than with the actual practice. For instance, the Act manifestly contemplated the Proprietors of a District meeting together and appointing an engineer to prepare plans, etc., but as a matter of fact the "Drainage District" was often, if not invariably, got up by an engineer, very much as a speculation. He prepared the plans in the first instance at his own risk, persuaded the proprietors to adopt them, and when they had been approved of by the Board of Works and the Provisional Order had been obtained, the Drainage Board appointed him engineer to carry out the works, he receiving the usual five per cent. upon the contract price as his remuneration. It was, perhaps, unavoidable that this course should have been adopted having regard to the fact that the proprietors would be very slow to go to the enormous expense of preparing plans for the approval of the Com-

missioners of Public Works at their own cost, but it undoubtedly tended to throw the work into the hands of speculative engineers.

It may be mentioned here that the same defect, that is to say, holding an inquiry into the plans before the Board or Company was incorporated, led to the first Tramway Act being an absolute dead letter till it was thoroughly amended.

This was in itself a very glaring defect, but there were various others, all of them of considerable importance.

The second defect—it was not so important then as now—was that the only persons recognised by the Act were “proprietors,” who were defined practically as owners in fee or fee-farm. No tenant, whether by lease or yearly, was recognised in the statute.

In conformity with this principle, the repayment rate was assessed only upon the “proprietors.” There was provision made in this Act for assessing a portion of the award upon leaseholders, but yearly tenants were not even mentioned, they were at the time liable to arbitrary increase of rent, in theory at least, and hence no machinery was required.

It may excite some remark, even among those acquainted with the eccentricities of the Land Law Acts, that not a single one of them has even referred to the effect of these Drainage Charges upon Judicial Rents. The whole system has been absolutely swept away, the Commissioners “value the land as they find it,” but arterial drainage does not of itself improve land; no drain affects land for more than, say, forty feet from it; consequently, the landowner’s expense in forming the channel is confiscated, or else is awarded to the tenant, in respect of his “thorough” drainage.

We now come to the third defect. The repayment rate was assessed only upon the land not more than five feet above the original level of the main channel. The effect of this was, of course, to throw the heavy expense of the main channel upon a small body of owners, who were the proprietors of the worst land. It is, one would think, simple common sense that the surrounding country, for miles around, in such a level country as Ireland, benefited by the improvement; the five feet limit is altogether too restricted.

The result of this last and great defect was that according to the calculations of the Commissioners of Public Works, arterial drainage has cost the unfortunate proprietors an average price of £7 1s. 6d. per statute acre on the area of land charged with the repayment, equivalent to an annual instalment of 5s. 6d. per English, or about 8s. 10d. per Irish acre. When we see rents cut down to £1 per Irish acre on land far superior to the marshy districts where arterial drainage is needed, it must be seen what a burdensome import a drainage charge must be when calculated on the absurd “five feet” area.

There is no other expression to use but that the system is absolutely unworkable. It never was good when the landlord could look forward to his improved position in the future as the result of his outlay, now that he has the drainage charge to pay and the tenant gets the benefit, it is worse than injustice as regards the "five feet" area owners: it may almost be called plunder.

The next blot, the fourth in my catalogue, is the system of remunerating the engineer. The course generally adopted was to pay him five per cent. on the amount of the contract. I have the highest regard for the engineering profession, and the engineers of the United Kingdom are a magnificent body of men, but I think such a system offers many temptations to carry out works of enormous magnitude, far larger than was needed by the requirement or sanctioned by the resources of the districts.

In fact in addition to the preliminary steps tending to throw the work into the hands of the speculative engineer, the mode of remuneration gave a direct interest in increasing the expenditure. I must guard myself from the statement that this actually took place; I only say it lay open to the objection.

The last defect, and I have had personal experience how serious it can be, lay in the system of acquiring land for the drainage work. This is about the weakest part of a very ill-digested statute. The Act laid down the dictum that if the Board required land for their drainage works, the procedure employed by Railway Companies, that is to say the Lands' Clauses Consolidation Act, 1845, as amended by the Irish Railway Acts, 1851 and 1860, was to be resorted to.

This system involved the appointment of an arbitrator with a draft and final award, and finally a traverse of the award at the Assizes, if no agreement were come to.

To do the framers of the Act justice I do not think they understood what they were doing. They probably thought that the river was public property, and that the only purchases would be of mills rendered useless by taking away the water-power. They most likely never thought of diversions into the straight bed of a new channel, so as to cut off curves, and they almost certainly forgot that in law the land under a river belongs to the property on each side, not to mention the banks which were to be cleaned up and trimmed.

The result very naturally was that every leaseholder, yearly tenant or occupier of every kind along the course of the works immediately saw his way to a claim of some kind or other, and the expenses became enormous. I need scarcely dilate upon them, but I will mention a conclusive instance. I was acting for a drainage board, and the arbitrator framed his award on the basis of £20 per Irish acre for the occupation interest of the tenant in

the banks of the river. The land was practically useless for agricultural purposes, and yet this Board was served with upwards of 70 notices of traverse of the award for the Assizes.

Under the Statute the Board would have been liable to the increased price estimated by a sympathetic jury of tenants, not proprietors, with £20 costs in each case, which alone for the 70 traverses would have come to £1,400.

Fortunately, I succeeded in settling all but a very few, but the unfortunate Board was treated like a Railway Company working for a profit.

I have now to mention the Act of 1892 (55 and 56 Vic., c. 65), the only amending Act. Its provisions are practically three—First, it provides that if a fee-farm grant on which a drainage charge is secured be terminated, the drainage charge is to attach to the fee-simple interest. Second, it provides that “occupiers” may form a Drainage District; and third, the Board of Works are given power to apportion the “maintenance rate” between owner and occupier. As a remedy for the defects I have mentioned, it is of little or no importance.

I have now touched upon some of the main defects of the system, and I have to call attention to some particulars of the Drainage Districts as taken from the published Report of the Commissioners of Public Works.

The number of Drainage Districts formed in Ireland, counting a few double districts, such as the Upper and Lower Inny as one, amounted to just 60. The area of flooded or injured land is returned by the Commissioners as 128,638 acres 1 rood 28 perches, costing £7 ls. 6d. per statute acre, the total expenditure amounts to £961,235 14s. 7d., but, deducting the cost of reconstructing bridges and some other works repaid by the Grand Juries, the sum of £910,510 19s. 6d. is the net sum advanced to and repayable by the proprietors, whose annual instalments amount to £31,944 9s. 1d.

Against this the Commissioners estimate the increased value of the lands at £37,622 6s. 5d. per annum, but this is a pure assumption, and in saying this I have to repeat what I already stated that arterial drainage does not of itself improve land, but only enables occupiers to improve it by thorough drainage. It is, perhaps, necessary to explain this to an audience not composed of those practically acquainted with such matters.

In draining land the drains have to be placed at such a distance apart as will enable the water that falls on any part to reach the drains. This necessarily varies according to the soil. In retentive, almost waterproof clay the drains must be close together; in gravel and sand they may be further from each other, but, speaking generally, the extreme distance at which a drain will affect land is fifty feet; in more retentive soils much less.

It follows from this that an artery drain only affects at the utmost fifty feet on each side, unless it is supplemented by subsidiary drains. I think this explanation will make the matter clear, and it will at the same time explain the fallacy at the bottom of the Land Commission procedure in "taking the land as they find it."

I do not wish, however, to enter upon any controversial matter in this paper; the question is a very difficult one to decide, and I will return to the statistics.

The Drainage Districts vary greatly in size and also in expense, omitting the "Suck," which was special. The Lough Erne is the weightiest in price, costing £181,557 16s. for 15,327 Or. 36p., statute, but the Inny, in Westmeath, with an area of 11,675 2r. 7p., cost £92,496 5s. 6d., and the Rathangan, in Kildare, with an area of 8,864a. 2r. 3p., cost £77,607 6s. 9d. The most expensive of all per acre was the Lerr, £16 8s. 11d.; the cheapest, the Garristown and Delvin, only £1 9s. 4d. per acre.

I am purposely omitting the Suck River, in Galway, the largest of all the Districts, as the circumstances in that case were peculiar, and the expenses were placed one-half on the occupiers and one-half on the so-called proprietors.

Finally, and I wish to call attention to this fact, although a great portion of Ireland still requires drainage, there is only one Drainage District returned as in course of construction, the Carrigrohane, in the County of Cork.

I now approach the question of suggestions for improvements. I have acted as legal adviser for several Boards, and curiously enough, have measured the lands and assisted in the survey of one, while as an agent I have had a little experience of thorough or farm drainage, but still I touch upon the question with the greatest diffidence, the framing of an amended code has already been considered by various Commissions, notably by the Royal Commission on Public Works of 1887, Parliamentary Paper, C—5,038 of that year.

In my humble judgment the Report of this Commission is one which hardly bears the stamp of having been framed by gentlemen who had any practical knowledge of the working of the Act of 1863, indeed the Chairman was the great Sir James Allport, of the Midland Railway. The Report contains excellent theoretical suggestions, but does not much affect the practical difficulties I have experienced. It deals with the question of "Proprietors," but does not touch the small area of assessment, the encouragement of large works, or the absurd method of obtaining the necessary lands.

However as nothing was done in consequence of the Report, he usual course in such cases, it hardly affects the position of

matters at present, except to show that the system of 1863 was condemned many years ago.

There appear to me to be four defects of considerable importance, which I will name at once :—

- 1.—The confinement of assessments to small districts.
- 2.—The preliminary inquiry.
- 3.—The remuneration of the Engineer
- 4.—The mode of purchasing the land.

1. I think the first defect, the confining of the charge within what I have termed the five feet area, can best be cured by spreading the instalment rate for repayment over whole baronies or even counties. It would enable whole districts to be dealt with instead of individual streams like the Inny, the Rathangan and the Lerr, and the burden would not be felt. I do not go into the question whether there should be a graduated scale according to the benefits obtained. I only wish to sketch in broad outlines.

3. The next defect is the Preliminary Inquiry. Under the present system the Commissioners of Public Works have the formal plans submitted to them prepared with much elaboration ; I am not very much of an engineer, but I think that what is needed when a project is mooted is to ascertain by an examination of the district, whether there be any physical advantages or disadvantages to assist or hinder operations, and to my mind this could be done far better by an examination of the land, at a comparatively small expense, than by preparing elaborate plans. What is wanted is more of the nature of the preliminary examination with flying levels taken by the first pioneer who lays out the line of a new railway, than an elaborate plan complete in all respects.

4. As regards the engineer, I think he should be paid by salary ; it should be to his interest to keep the costs of the works low. Hitherto in many cases we have had works of far too elaborate a character and of far too great a capacity. There is an old story of a member of Parliament hurrying to Westminster and offering his driver “ a shilling for every minute *under* ten ! ” It explains my view of the engineer’s position exactly. As regards cost, I have to point out that what in Ireland is called “ thorough drainage ” is necessary to supplement arterial drainage. This costs a very considerable sum ; it varies very much according to the nature of the soil and the depth of the drains, but after taking these into consideration, I place it at £5 per statute acre for an average.

5. I come now to my fifth remedy, that for acquiring the land. The present procedure is adapted for a commercial undertaking worked for a profit. I look upon arterial drainage as being as

national a benefit as a county road. No one ever dreams of purchasing land for a county road; the rule prevails that the road is a benefit, even though it takes up the land, and I think the arterial drain stands on the same footing.

Hence, I would drop the whole of the complicated system of awards and traverses, and would simply take the land just as I would for a county road, allowing the owner to prove damage, if he could, as is done in the formation of a road.

I have now ended my suggestions, but I have some further points to mention:

1. There is first the question of maintenance. This is a very important question. There is no doubt that, even now, there is considerable difficulty in getting Drainage Boards to maintain the works already constructed.

2. Another thing badly wanted is a workable system for forcing a troublesome neighbour to clear up his water course. There is an Act of Parliament in existence under which he can be compelled to do this, but it thrusts a neighbour into the necessity of legal proceedings, always to be avoided, if possible, and few have the courage to face the odium sure to arise against a man who does this. I have had personal experience of it recently in two places.

My general plan would be to reconstruct the whole system of drainage, and assign it, construction, assessment and maintenance, to the County Councils.

I have now finished my remarks. I believe in drainage. I believe that Ireland needs it badly, and I have made my remarks upon the existing system from no feeling of bitterness, but simply in the hope of attracting attention to this important subject.

