

T H E
B E N E F I T S
Which arise to a
T R A D I N G P E O P L E
F R O M
N a v i g a b l e R i v e r s .

To which are added, some
C O N S I D E R A T I O N S

O N T H E
Origin of LOUGHS and Bogs; and
a S C H E M E, for the establishment
of a Company, to make the River
Shannon navigable, humbly offered
to the Publick.

By *JOHN BROWNE*, Esq;
AUTHOR of the SEASONABLE REMARKS,
of the ESSAY upon TRADE, of the SCHEME
of the MONEY-MATTERS of *IRELAND*,
and of several other PAMPHLETS, upon
the Affairs of this Country.

Nescio qua Natale solum dulcedine mentem

Tangit & Immemorem non finit esse sui.

Ovidius Exul.

D U B L I N :

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M D C C X X I X .

THE
BENEFITS
OF
TRADING PEOPLE
FROM
The
Noble Rivers
CONSERVATIONS

Origin of the
of a Company
to make the River
navigable, humbly offered
to the Publick

By JOHN BROWN, Esq;
AUTHOR of the Seasonable
of the Essay upon Trade, of the
of the Money-Matters of GREAT
and of several other Pamphlets upon
the Affairs of this Country.

Printed by J. B. at the Sign of the Crown in St. Dunstons Church Lane, London.

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T O
The Revd. FATHER in GOD,
THEOPHILUS,
LORD BISHOP of
ELPHIN.

MY LORD,



WHEN I consider in how
disinterested a Man-
ner you do Good to
Mankind, and how
carefully you shun all those Praises
which are so justly your Due, I
am

am almost deterr'd from Dedicating to your LORDSHIP the following little TREATISE; but such a Custom has prevailed in the World, that the best Things without a Patronage, are laid by, and neglected, and I am not, therefore, without some Hopes, that you may from the same Principle of Benevolence, and publick Spirit excuse me, for prefixing your Name to it, since there is none other more likely to bear it up in the World, and make it useful to Society.

I am very sensible, My LORD, that I have laid my self open to the Imputation of Selfishness, in this my Address to your LORDSHIP: But, My LORD, when your Truth, your Wisdom, your profound Learning, your wonderful Ability in all Kinds of Political Computations, your truly
Christian

Christian Benevolence to Mankind in general, and above all, your Love and Affection for poor *Ireland* in particular, is considered; I hope it will be taken in another Light, and concluded, that I could not, without Injustice to my Country, slip this Opportunity of paying her Acknowledgments to one, who is so willing, and so able to serve her.

But, there is yet, My LORD, a more immediate Reason, why this little Treatise has Resort to your LORDSHIP: The indefatigable Labour and Industry, and the large Expence which you have been at, to find out Means, whereby the draining of our Loughs and Bogs might be rendered more practicable and the easy Way, which you (through your wonderful Skill in all Kinds of mathematical Proportions, and in Hydro-

drostatts particularly) have at last discovered, to render those mighty Wafts, within the very Heart of our Country, useful to the Publick, give it a kind of Right to pin it self upon you, and to claim your Protection. And I hope your LORDSHIP will therefore be so good to excuse this Application, from a sincere Lover of his Country, and,

MY LORD,

Your LORDSHIP'S

Most Obedient,

Most Obliged, and

Most Devoted Humble Servant,

J. BROWNE.



The Benefits, &c.



THE first Efforts of a People betaking themselves to Industry, are always groce and unconcerted, till Experience points out the Defects and Errors of their Managements, and leads them into Order and Method; But as Luxury increases, and the Produce of their own Country, becomes less sufficient to defray the Expence of their foreign Consumption, Necessity, obliges them to look out for Regulations whereby to make a greater Gain upon their Exports, and to suffer a less Loss upon their Imports, in order to preserve a Ballance against the growing Expence; and this, may perhaps be the Reason, why we seldom see the Navigation of Rivers undertaken in a Country till it becomes populous and expert in Trade; for while men can content themselves with the growth of their own Grounds, and make their respective Farms, furnish them with all the comfortable necessaries of Life, there is but
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little Communication or Intercourse between the remoter Parts of the Country in a Commercial way, and consequently little or no occasion for the Expence of clearing the Rivers; but when Trade and Commerce begin to flourish, an Intercourse becomes absolutely necessary, and every one endeavours to undersell his Neighbours, as the surest way of ingrossing the Business: This first begets wheel Carriages of various Sorts, and at last tempts the People to greater Undertakings, and sets them about opening their Rivers, and launching out Barges for the more constant and cheaper Carriage of their Goods to Market.

There is not perhaps, any better Maxim for a trading People to govern themselves by, than that which is comprized in an old *English* Proverb, *viz.* That a light Gain, and a quick Return makes a heavy Purse. For when all is said, 'tis not so much the high Prices receiv'd, as the quick Returns of the Money that enrich the Trader: ----- from this way of Thinking it is, that the *Dutch* have divided their Money into such minute Parts as the 8 Part of a Penny, in order to accellerate its Circulation, and to suffer as little as possible thereof to lie dead in Trade; and from this way

way of thinking also is it, that their Canals and Rivers are so constantly made use of, for their Carriages, and that their Traxcoots and other Vehicles are so regular and exact in their Stages, that the working People should have a daily Vent for the Produce of their Labour, and by the quick Returns of their Money be enabled to carry on their Business upon the slender Stocks of which they are possess'd.

If we consider, what a multiplicity of little Articles are wrought up and put together, and what a number of Hands they must go thro', to compose any one finish'd Piece of our Manufacture, we shall easily see, of how great Consequence this nicety in little Matters, is to the very Essence of Trade and Commerce it self.

For, as the least and most insensible Declination from the level determines the fall of Waters, even so a most insignificant and (what may appear to unthinking Persons) trifling Difference in the Value of Commodities, and the Price of those Ingredients of which Manufactures are composed, either leads us into, or cuts us out from the most extended and beneficial Branches of Trade.

But I shall confine the Observation at present to the Carriage of Goods to Mar-

ket, and that too with respect to our own Circumstances.

Our whole inland Carriage is at present performed by small feeble Cattle, either in high Loads, which scarcely exceed two hundred Weight; or on truckle Cars, of which, a Horse and Car in Summer-time, when the Roads are dry, and the Cattle strong, may, one with another, carry about 4 C. Weight; but in other Seasons of the Year, there is little or no Land-carriage; for those little Machines are swallowed up in bad Roads: The Cattle (which are in themselves very small) are for want of proper Food and Care unable to encounter the Road, and the Wetness and Uncertainty of the Seasons make it unsafe to send any choice Goods by Carriages so ill defended; so that the whole, or at least, the most considerable Part of the Land-carriage must be hurried on in one Quarter of the Year, and the Consequence is, that on one hand, the Price of carrying to Market, by being so greatly enhanced, becomes a Burthen upon all our Exports and Imports; and on t'other hand, the want of Carriages in the other three Quarters, confining all the Produce of Art and Labour, for so long a time, to the respective

spective Places of their Growth and Production, must necessarily be a great Discouragement to the Industry of the Inland Countries, and a great Clog upon our Trade in general.

I can instance this Misfortune in no matter more obvious to all Capacities, than the late Scarcity of Corn, and I will suppose, that there might have been a great Plenty of Corn in the inland Parts of *Ireland*, whilst the Scarcity thereof in *Dublin* was almost insupportable, or *Vice Versa*, a Plenty at the Sea-ports and a Famine in the Inland Countries. Corn is a bulky Commodity, Cattle are weak, the Roads bad, how should we be the better here in the *Winter* or *Spring*, for such a Plenty in the very Heart of our Country? would it not be easier for us to have our Bread from *Egypt*, than from the Counties of *Roscommon*, *Longford*, &c? and how would it, in the other Case, be possible to relieve the Wants of the Inland Countries by imported Grain, unless the whole People had travelled up to eat it? There are few People, sure, who have seen the Price of Corn in *Dublin*, reduced by an Importation from the *Mediterranean*, but will readily allow it; and what can be the Reason of this, but the
want

want of a proper Communication, and a convenient Vehicle to carry our Goods to Market.

Man is perhaps the only Creature that does not yield to the Inclemency of the Seasons, and lose or recover Strength by the Recess or Approach of the grand Luminary ; and this is due to that Reason and Foresight with which our Creator has been pleased to endow us : By this we are taught to prepare our Hovels, and lay in our Stores, for that which would otherwise be the most helpless and the least comfortable Season of the Year, and by this we are led out early in the *Spring* again, to labour and till the Soil for such another Crop ; so that by his Providence we are qualified alike for Labour and Industry, either in the *Winter* or the *Summer* Seasons, and are therefore the only Carriers to be relied upon. The Frame of our Bodies, 'tis true, does not fit us out for great Burthens, but this Defect is however abundantly supplied by our Craft and Ingenuity : By these, Ships and Barges are launched out, which by the Assistance of a few Hands, can perform the Business of many hundreds of Horses and Oxen : By such Helps as these we have seen the Scarcity of *Europe* for many

many Years furnished by the Labours of the innermost Parts of *Poland*, the River *Vistula* affording them a Passage to the Ocean, and by that to our Markets.

It may perhaps be objected, that tho' the want of a constant and convenient Carriage to and from the inland Countries to the Sea-ports, might be of ill Consequence in Countries that produce more Grain than is sufficient for their own Consumption; yet of what Import wou'd it be to us to have such a Carriage, who never have more Grain in the inland Countries, than serves for our own Consumption, and seldom so little as to let us suffer much by a Scarcity; but we must consider, that nothing reconciles Man (naturally fond of Ease) to Labour and Industry, more than a Prospect of Gain; to what purpose is it for the inland Husbandmen to produce more Corn than they can vend at a saving Price? The *Dutch* from a like Reason, destroy all their superfluous Spiceries, knowing full well, that a Glut of any Commodity, leaves no Gain to the particular Producers of it. Whilst there is no way of carrying to the Sea-ports the Growth of the inland Countries, in such Seasons as they are in Demand, their Superfluities must always

ways occasion a Glut of the **Commodity** so abounding, and leave no **Temptation** for the **Farmers** to follow that **Industry** next **Season**, whilst on the other hand, the **Sea-ports** which generally consume in half the **Year** all the **Grain** that can conveniently be carried to their **Markets**, from the adjacent **Corn Grounds**, must be forced to send out their **Specie** for the other half **Year's** **Sustenance**, notwithstanding any **Plenty** which may be in the inland **Countries**.

So that in reality, for want of a **Water Carriage**, there is no **Incouragement** for the **Husbandmen** to produce more **Corn** than is sufficient for the **Consumption** of their respective **Neighbourhoods**; and whilst we labour under these **Difficulties**, all the **Laws** which we can devise for the **Incouragement** of **Tillage** must for ever fail of **Success**.

I have heard it indeed often objected, that **Magazeens** of **Corn** might be laid in, at the **Sea-ports**, in that **Season** when the **Horses** are strong, before the *Winter* has impaired the **Roads**, or the *Spring* weakened the **Cattle**; but we must consider, that the **Misfortunes** under which we labour as well in **Trade** as in the **Article** of **Outliers**, drains away annually
not

not only all our Gain, but a very considerable Part of our running Cash and capital Stock also, and leave us so bare of Money, that we have not a Stock sufficient for such an Undertaking.

But though we should really have a sufficient Stock of Money amongst us, yet the Farmer, unless compelled by Necessity, would always keep his Corn for the *Spring* and *Summer*, when the Scarcity of the Seasons usually raises its Price in the Country ; and the Buyer, to make his Proportion of the Gain, would, in all Probability, be as fond to keep the Corn so bought, for the scarcest Season in the Sea-ports ; so that the Corn bought under these Inconveniencies, aggravated by a long and expensive inland Carriage, and a heavy Weight of Interest, could scarcely be afforded in our Sea-ports cheaper than that imported from the innermost Parts of *Poland*, where the Benefit of a Water-carriage contributes so greatly to ease its Exportation.

But it is not even the Cheapness of the Carriage that makes navigable Rivers so great a Benefit to a Country, as the constant Means they afford of carrying the Produce of the inland Countries to the Sea-ports, and the Commodities brought

in by Trade back again in return to the inland Countries.

For when a Tradesman can readily send every Week, or every Month's Work to Market, the quick Returns of his Money serve him in the Place of a large Stock, and enable him to sell so much the cheaper. If a Master of a Work-house can send every Month's Work to Market, he may probably have his Return in a Fortnight after, so that his Money lies dead but six Weeks; whereas if he can only send once a Year, his Money lies dead fifty two Weeks, and he must have therefore Eight times as much Money to keep the same Number of Hands at work for fifty two Weeks, when he makes but one Sale a Year, as he would require to keep them at work, could he have a Return every six Weeks; and there cannot possibly be a heavier Load upon our Manufactures, nor a greater Discouragement to our Trade and Industry in general, than such a Misfortune.

For if 100 £. Stock could keep fifty Men at work round the Year, at a six Weeks Return of the Money, the Interest of that would be but 7 £. but it would require 800 £. Stock to keep them at work round the Year at one Return only,
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the Interest of which *per Annum*, is 56 *l.* and the Difference being 49 *l. per Cent.* is chargeable to the want of a regular Communication between the inland and Maritime Parts of the Country ; but we must consider also, that there are many Persons, who can command 100 *l.* that can't even raise on all their Credit 800 *l.* and while there is this Imbargo, if I may so call it, on the Growth and Manufactures of the inland Countries, all Persons of small Stocks must, for that very Reason, be cut out from setting up Manufactures and Work-houses.

But tho' our Zeal for the publick Good and the Prosperity of Trade and Commerce in general, should not be so strong as to stir us up to the navigation of our Rivers, I am yet very much surpriz'd, that the particular Interest of those Gentlemen, whose Estates border upon Rivers and Loughs, does not ingage them in the Undertaking, for the Recovery of those large and valuable Tracts of Ground which are cover'd with Water, and rendered useless and unprofitable to them ; it may not therefore be improper to bestow a few Paragraphs on the Origin of Loughs and Bogs, and the manner in which they may be affected, by the Navigation of our

Rivers, in order to show those Gentlemen how nearly their Interest, in particular, is concerned in the Project.

Let us therefore suppose, that a Vessel receives at the Bung, as much Water only, as it leaks at the Tap; in this Case, the Water is regularly carried off, and none remains in the Vessel; but if either the Tap is contracted or the Inlet enlarg'd, so that more Liquor is received than issues, the exceeding must then remain in the Vessel, and cause a Flood or Rising of the Liquor; and tho' we should again reduce the Inlet to an Equality with the Leak, the Flood which was caused by the former Exceeding, would however still remain; because there would yet be no Passage for any more Liquor to issue than was received at the same time; so that to reduce the Flood in the Vessel, it will be necessary to enlarge the Tap, and suffer more Liquor to issue than is received, that there may be room for a part of the Flood to pass off with the Liquor received. And this may serve to explain to us how Loughs have been first, in many Places, occasion'd, and how they are still continued.

For, when a Stream of Water is equal to the Channel in which it flows, it is carried off as fast as it falls, and the Banks
are

are therefore never overflow'd; but when by any Accident the Channel becomes too shallow for the Current, the Water having no longer Room sufficient to empty it self by, is thrown back on the adjacent Grounds, by which Means it causes a Flood.

Now when this Flood is no more than what in a Course of dry Weather may be drained off by the Channel, the Flood falls in *Summer*; but when by means of the low Situation of a Country, a great Tract of Ground happens to be laid under Water, so that the Channel is not sufficient to drain it away, before the returning *Winter* fills it up again, the Flood in this Case becomes a Lough or Lake, and must continue such, until the Obstruction which threw it back is removed, and the Channel made large enough to drain away the Exceeding along with the ordinary Current of the River.

Obstructions in the Channels of Rivers are either natural or artificial: Natural Obstructions are either Rocks which have lain in them from the Beginning, or Sand-banks which through a neglect of clearing the Channels, have been formed by the ordinary Course of the River;
for

for all running Waters, in Proportion to their Rapidity, carry along with them some greater or lesser Quantity of Clay or Gravel, which they have washed from their Banks, or tore up from the Bottom of their Channels, by the Weight of their Cataracts, till the River expanding it self loses of its force, and drops it again; by which Means it happens, that in a Process of Time, large Quantities of Clay and Gravel are heaped up in certain Parts of the River, and become Barrs and Obstructions to its Passage.

But the artificial ones are Mill-races and Weirs, to which I would have added Bridges, had not the Necessity of such a Communication made them intirely necessary; these are generally form'd in one Year, whereas the others are the Work of Ages; and yet I appeal to all those who have had the Misfortune to see them laid in their Neighbourhood, if any thing makes them a more tolerable Evil than the others, unless it be that they are easier removed; for these as well as the Bars or Sand banks, obstruct very much the Passage of the Waters, and throw them back on the adjacent Grounds, forming in some Places Loughs or Lakes,
and

and in others Floods, which though of a less Duration, are often however as pernicious to the Lands, by swelling them into Bogs and Mosses.

It is not to be doubted, but the Places on which all our Bogs have grown, were formerly firm Grounds, since we find at the Bottom of all such Bogs, as have yet been dug or drained, Pieces of Timber, and Roots of Trees, upon which the Marks of the Hatchet, and even of Fire remain to this Day, and I am for the following Reasons very fond to believe, that their Original is not altogether so far back in time as is generally thought, for the following Reason.

The learned Prelate, to whom I have the Honour to dedicate this Essay, in the Course of his Experiments on the Nature of Bogs, and Manner of draining them, which are like to prove so useful to his Country, has taken the Height of his Bog at *Abbert* (which contains about a thousand Acres of Ground) before he began his Drains, and after a Years working at it, having probed it to the Gravel, he found that the Surface of the Bog had fallen eight Foot, and that there still remained twenty Foot of Bog, so that before

fore the Drains were began, the Bog had swelled 28 Foot; but in the Prosecution of his Work, after the Bog had subsided 8 Foot, he found a Tobacco-pipe 8 Foot deep in one of his Drains, and the Bog being at this time but 20 Foot high, the Pipe at 8 Foot deep, had two fifths of the Bog grown over it; so that supposing the Bog in all its parts to have equally subsided, this Pipe must have lain before the Drains were opened two fifths of the whole 28 Foot deep, which is something more than 10 Foot 2 Inches.

Now it is not probable that we had Tobacco-pipes in this Kingdom before the Discovery of *Virginia*, by Sir *Walter Raleigh* in 1584, which is but 145 Years ago, and consequently this Bog must have swelled 10 Foot in 145 Years; so that if it grew always at the same Rate, it can't be very much above 406 Years since it first began.

There is a very great Analogy between the Origin of Loughs and Bogs; for it will be found upon a serious Discussion, that as Loughs are occasioned by Obstructions in the Water-courses, so Bogs are generated by the Interruption of those little Drains, which used to carry off the super-

superfluous Water, and keep the Lands dry.

Mr. *Mariot*, a Member of the Royal Academy of Sciences, in his Discourse on the Origin of Fountains and Rivers, gives us an Account of an Experiment, which was made by his Directions, for discovering the Quantity of Rain that fell in a Year; and all the Rain which fell on the Surface of a Cistern for one Year, being carefully measured, it appeared, that it would make a Column of Water, equal to the Surface of the Cistern on which it fell, of 17 Inches high; and he tells us also of another, who having made the same Experiment for three Years successively, found it to be something more than 19; but he makes his Calculation however, at a Medium of 15 Inches only; and by comparing the Quantity of Rain, which at that rate falls in one Year, on the Grounds, which are drain'd by the River *Seine*, till it comes to *Paris* (which he supposes to be a Tract of 60 Leagues long, and 50 Leagues broad) with the Quantity of Water that passes through *Port-Royal* at *Paris*, in the same Space of Time, he finds that there falls on the Countries drained by that River, six times more Water than is carried off

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by the River; so that the other five Parts are either exhaled by the Heat of the Sun, or kept in the Pores of the Earth, for Support of Plants and Vegetables, or sunk Deeper into its Bowels to feed Springs and Fountains.

I must confess I have never made any Experiment of this Nature my self, neither do I know of any that has been made in *Ireland*, but it is highly probable, and indeed Experience and the nature of our Situation and Climate may strongly persuade us to believe, that an Island so much more remote from the Influence of the Sun, and so much more subject to Rains and Snows, by the almost perpetual Westerly Winds that blow the Exhalations of the great Western Ocean upon us, must receive in the Year considerably more Water, and part with in Exhalations very much less than *France*, and consequently, that either our Rivers must carry off a greater Proportion of the Water, which falls on the Surface of our Island, or else leave the Surplus in the Pores of the Land. Let us suppose therefore, some Era of Time, when our Rivers were sufficient, and only sufficient to drain off the superfluous Water.

I have already shewn, that a neglect of clearing the Channels, and a prevailing Custom of erecting Weirs, Mill-races and Bridges have much retarded the Course of our Rivers, and thrown the Waters back on the adjacent Grounds; this was the gradual Effect of Time and Mismanagements; but every Obstruction however, which was given to the Course of our Rivers raised their Level or Surface in some Degree; and every Rise or Elevation of the Water in the Rivers, lessened the Fall from the Grounds to the Water-level, and increased the Resistance to the Drain or Water-fall in Proportion to the acquired Altitude of the Water in the River; so that every Obstruction, whether natural or artificial, which was given to the Course of our Rivers prevented in some Degree the draining of our Lands, and left still more Water in the Pores of the Earth, than they contained before such Obstructions were formed, and every Year adding to the Obstructions in the Rivers, added also to this little Increase or Stagnation of the Waters in the Earth, so that after such a Space of Time, as must have intervened between that Era, when we have supposed the Rivers sufficient to drain the Lands, and

this our Age, when multiplied Obstructions have so overflowed our Grounds, it is no wonder if this Island has in many Places swelled into Bogs and Mosses; but it may be expected that I should give some more particular Account how these Dropsies have been occasioned in some Parts more than in others, and it will be necessary therefore, in order thereto, to show how the Channels which formerly drain'd the Lands, were obstructed and stopped, and by what Accident, the Grounds were more immediately swelled into Bogs.

It is the nature of most Trees to shoot their Roots between the Mold and the Gravel, and it is remarkable, that the growth of a Tree, never, or but very imperceptibly indeed, lessens the Mold out of which it grows; so that it must either take all its Nourishment from the Clay or Gravel, which being a very close compacted Body is capable of a great Expansion, when properly diffused, and secreted through the Roots of a Tree; or from the earthy Particles, which fall down with the Rain.

The Trees which are most frequently found under our Bogs are Fir and Ew:
The

The Leaves of most other Forrest Trees fall in *September* and *October*, when they are scattered about by the Winds, and having but very little Substance in them, are washed away by the succeeding Rains; but the Ever-greens shed their Leaves in a calm Season, and the first, particularly, have so much Turpentine and Rosen in them, that they are preserved, till the Grass, growing, matts them together, and holds them from being washed away by the *Winter* Rains, till rotting in Heaps, one upon another, they stop the Fall of the Waters, and make the swelling Wood-lands moist and swampy; but the Grounds, by this Accession of new Matter, change their Nature, and send up Reeds, Rushes and Moss, which rotting also, like Sponges, detain the Water within their Pores, and swell the Lands into Bogs at last.

But Bogs are often occasioned in Lands, where no Woods have grown, by the mere Stagnation of Water within the Pores of the Ground; for when a Scope of Land is so incompass'd with rising Grounds, that it is drain'd only by subterraneous Passages to the Rivers, in this Case, whenever these Channels, through any Accident, happen to be obstructed, and thereby become

come insufficient to keep the Lands dry, the Mold grows moist and stubborn, and instead of Grass, sends up Sedge and Moss, which being sour and unpleasant to the Cattle, is left by them, to rot in Heaps like the Fir Leaves, and in process of time swells also into Bogs and Mosses.

There are many other Accidents which occasion a Stagnation of Water in the Pores of the Earth, and by that means dispose it to become Bog, tho' the most considerable of all (without any manner of doubt) is the Obstructions and Floods in our Rivers, as we may see, by the vast Tracts of Bog that lie bordering upon them every where; but when once the Lands are thus disposed to become Bog, they receive a very considerable Increase from the earthy Particles, which being exhaled by the Sun, fall down upon them with Rain, and are intangled in that spongy Matter.

It is almost incredible, what a Multitude of terrene Particles are contain'd in the Rain-water: And yet it would almost be impossible to account for such a prodigious Increase of Matter as we see in Bogs without that help, for when we find that the Mold, or vegetable Matter which covers the Clay or Gravel, and which

which in Places where there have been no Woods, could not in its healthy and natural State be much above 6 or 8 Inches deep, is swelled to thirty, and in some Places to many more Feet ; and when we also find that this Swelling or Excrescence, when the Water is drain'd out of it, nay when it is dried or baked, contains in it such a vast Disproportion of Matter from the Mold out of which it swell'd, we must necessarily conclude, that it has receiv'd a great Accession of Matter from the earthy Particles that have fallen upon it with the Rain, in a long Succession of Time ; and which it has by the Texture of its Parts confin'd within its Pores.

But this will appear more plainly, when we consider the following Experiment, that was made by the ingenious *Van Hellmont*.

I took, says he, a parcel of Mold, which I dried so well, that there remain'd in it no Humidity or Moisture, and having weighed it, I found it to be 200 Pound weight ; I placed it then in a Stanch earthen Vessel, and placed therein a Sally Plant, which weighed about 5 Pound, I cover'd the Vessel with a tin Plate, perforated with many Holes, so
that

that it could receive nothing but the Rain-water, and having exposed it to the Weather, I suffer'd it to remain for five Years, at which time I took out the Plant, and weighed it, and its weight was 169 Pound 3 Ounces ; but having dried the Mold which remain'd in the Vessel, and weigh'd that also, I found, that it weighed but two Ounces less than it did at first, so that without making any Allowance for the Leaves which fe'll from it in four *Autumns*, the Tree increased from the mere Water 164 Pounds. Now it appears very plainly, that the Rain which fell on the Surface of this Vessel, in the space of five Years, carried along with it as many earthy Particles, as was equal to the Increase of Matter in the Plant and Mold, or 164 Pound weight, which at a Medium of the five Years, is close upon 33 Pounds *per Annum*.

It is a great Misfortune, that this Gentleman was not so kind to give us the Surface of his Vessel ; for by that we might be enabled to account more particularly, for the Quantity of Earth which our Bogs receive yearly from the Rain ; but 'tis plain it could not be a very large one, since it was an Earthen one, and contain'd only 200 Pounds weight of Mold.

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sent Evils, of which there is so just and so universal a Complaint, but prevent also the Growth or Increase of others, in the time to come.

It may not be improper, before I depart from this Subject, to observe, that how great soever the Misfortune is of being thus over-run with Bogs, there seems to be this Advantage in it however, that it has disposed and fitted our Country for the easiest Navigation in the World, as may be instanced in the Bog of *Allan*.

This Bog has spread itself from within half a Mile of the River *Liffey*, near *Landenstown*, in the County of *Kildare*, all along the Country, to the very Banks of the *Shannon*, and made all that vast Tract of Ground one great Flat; so that by cutting one large Canal through it, from the *Liffey* to the *Shannon*, with the Assistance of three or four Locks only, it may at a very small Expence be made the finest inland Navigation of any in *Europe*; and at the same time, all that immense Tract of Ground, which at present is absolutely useless and unprofitable to its Proprietors, may by the same Expence be drain'd and reclaim'd.

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'Tis true, that such an Undertaking would be absolutely impracticable, had not the Bishop of *Elphin*, in his Experiments on the Bog of *Abbert*, discovered the most useful Method of working by Water. For in the ordinary manner of working, without that Assistant, the Mold or Turf which was dug out, was first laid upon the Surface of the Bog, at an extravagant Expence, which still multiply'd it self upon the Undertaker, the deeper he sunk into the Bog, and the Expence of spreading this Matter out upon the Bog, and carrying it off from the Banks, for fear of breaking them down, by so great a Load, was always a considerable Aggravation of the Charge; whereas, in his Lordship's Manner, we are only to seek for a sufficient Head of Water, which is seldom or never wanting in Bogs, and having open'd a small Drain of four or five Foot, or thereabouts, which may be wrought in most Parts of the Kingdom at 3*d.* or 4*d.* the Perch at the dearest, we have then no other trouble than to dig our Drain very near full of Turf, without throwing any of it up, and when that is done, to let in the Water from the Head, which by its weight raises the Turf in the Drain, and sets

it afloat ; so that where the Head of Water is sufficient for the undertaking, the Work of a Million of Men, may be done by the mere Operation of the Water, and the Contents of a large Drain sent to travel off, to the Ocean, never to return again ; But when we have the Drain thus clear'd, the Water is to be stop'd at the Head, and the Men put in to dig the Drain full again, for the Water to scoure it out as before ; and thus there is no Labour imploy'd on any thing but digging the Bog, which is so soft, that with well-contriv'd Utenfils, a Man may in a Minute dig or cut away 15 or 20 cubick Feet thereof.

Now the Bog of *Allan* has several Rivers that run either through it, or by its Sides, and which as they were, no doubt, the first Cause of that mighty Waste, may by his Lordship's new Method, be made the Means of reclaiming it again, and rendering it useful, at the same time, to the Proprietors, and to the Nation in general ; for the Head of these Waters are so high, and the Current so strong, that to talk largely of the Expence, a Canal of 45 Foot wide, from the *Liffey* to the *Shannon*, might be made, by their Assistance, for 10 or 1500 Pounds.

I must not omit to observe here also, of how great Service this Method of working by Water, may be to the Navigation of the *Shannon* it self; and I must also, let my Readers know, that the Revd. Prelate whom I have already taken the Liberty to mention, and to whom the Nation is so greatly indebted, for his unweary'd Application for the publick Good, has taken the trouble, in the Year 1723, which was the driest we have perhaps ever known, and when there was scarce any running Water under the Bridge of *Athlone*, to fathom all that River, from *Athlone* to *Killalloe*; and and to examin all its Floods and Shallows, and that he constantly found a prodigious Depth of Water, both above and below the Shallows, and discover'd, that all the Shallows, except two, which were imbarass'd with large loose Rocks, were only great Heaps of Sand and loose Stones, which by the Current of the River, and the driving of extraordinary Floods were forced up and deposited there.

Now these Heaps of Sand and loose Stones, by large Scrapers or Rakes, may at a very small Expence of Labour, be kept in such a constant Agitation, that
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the running Water, without any further trouble, may carry them off into the Depths below, and so make a free and open Passage, for Barges and other Vessels to pass, without the Expence of so much as one Lock, from the Bridge of *Athlone*, to the Rock of *Killalloe* ; and at the same time, relieve all the Banks of the River in that Space, from thole Floods, which at present, make them useless to their Owners.

But as the Order and Direction of this useful Work, falls more properly under the Consideration of the Undertakers, whose Business it will be, to seek out for the cheapest and most advantageous Methods of proceeding. I shall not venture to say any more on this Head, but proceed to observe, (if this (as indeed I think it is) be a true State of our Case) what an unfortunate and infatuated People must we be, who (tho' possessed of the best water'd Country of any of our Neighbours, and encourag'd to the Navigation of our Rivers by an Act of Parliament, whereby, the making of them useful to the Commonwealth, is rendered highly advantageous to the particular Undertakers also) are yet so supine and negligent of our own Welfare, as to sit down under a
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Load of forty nine *per Cent.* more than we should have Occasion to bear, and to suffer the best and most fertile of our Grounds, I mean, the Banks of our Rivers, not only to remain useless, and unprofitable, but to be swallow'd up, before our Faces, for want of removing those Obstacles, which stop the free Course of our Rivers, and overflow them.

We see what great Fortunes some of our Neighbours make by Turn-pikes, where Water-carriages are wanting; and how fond they are of undertaking the Repair of the Roads, for the Toll which they are intitled to, tho' such Tolls are but for limited Terms; and we see how considerable a Number of Barges there are ready for Carriage, on all their navigable Rivers, tho' they have no other Encouragement, but their ordinary Hire; and yet, tho' we are by Act of Parliament, intitled to considerable Tolls, for all Goods carried, by such Rivers as we make navigable; and tho' such Tolls are to the Undertakers, their Heirs and Assigns for ever; there has, however, no such Undertaking been set on Foot in *Ireland* hitherto, except that of the River *Liffey*, which was rather, to give

a Specimen of Mr. C----L---o's Art, (in order to encourage to such Undertakings) than any thing else ; as may appear, by the Narrowness of the Locks, and the Channels, as far as he carried it: But he has, however, succeeded so far, that he has made it manifest, to the meanest Capacity, that even the *Liffey* (a River the most liable to sudden Overflowings, and then the most rapid of any, and a River the most abounding with Cataracts) may be made useful and navigable, for Barges of several hundred Tuns burthen.

The same Gentleman has also proposed, at his own immediate Expence, to make the River *Shannon* navigable, as far as *Athlone*, he being secured by a reasonable Subscription, to be repaid on the Perfection of the Work ; his Scheme was printed, and is, I believe, commonly known ; I shall, therefore, only add, that it served but to shew how true it is, that *every ones Business is no ones Business* ; the Subscription was to be wholly for the Good of the Publick: There were no particular Advantages proposed to the Subscribers ; and for that reason, a Project, advantageous to the Nation in general, fell to the Ground,
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for want of being made more immediately so, to the Disbursers of the Money.

Those Undertakings, in which the general Welfare is concerned, are seldom successful, unless, either, there be a Fund raised, by Act of Parliament, for carrying them on, or else, proper Encouragement given, by Tolls, to the particular Undertakers of the Work. The Encouragement given in this Case, by our Act of Parliament, is the Tolls on the Goods carried. But this can be no immediate Help to the Undertakers, the Reward being only to arise from the Perfection of the Work, when the Rivers are made free, and open; and some Men may, therefore, think, so distant a Prospect, very little worth a present Expence; but if we consider, that by making only the River *Shannon* navigable, one third of the whole Carriage of *Ireland*, in all Probability, would immediately, or in a very few Years, be turned that way; and if we consider, that a Stock of 11000 *l.* would, not only open the River, but furnish it with a reasonable Number of Barges also; what a Purchase must the Tolls, for ever, and the Water-carriage of so great a Part of

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our Exports and Imports be, for so small a Sum.

There has been so much already said, about the Feasibleness of the Undertaking, that there is no Occasion for an Inlargement upon it, in this Place ; I shall only add therefore, that since the Advantages which would arise to the Publick, are obvious to every Capacity, and since the Benefit to the Undertakers, and their Families, are so likely to be considerable, it is an Undertaking, which is highly deserving of our most earnest Endeavours ; And if this Paper has the good Fortune, to be the Means of Establishing a Company for that Purpose, I have no manner of doubt, but by their Council, a few Years will put them in Possession of a very considerable, and the cheapest Estate, which has ever been purchased in *Ireland* ; I mean, the Tolls, and Water-carriage, of one of the noblest Rivers in *Europe*, the River *Shannon*.

And that it may not for ever remain a Reproach to the People of *Ireland*, that being furnished by Nature, with one of the finest Rivers in the World, and that being in Possession of an Act of Parliament, whereby, the making of it useful

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to the Publick, may be of great Advantage to the particular Undertakers, they shall yet suffer it to remain of no Account to either, I make bold to offer to the Publick, a Scheme, for the Establishment of a Company, and a reasonable Stock for the Undertaking, which is so contrived, that every Person concern'd, shall have an Influence in the Company, in Proportion to the Interest he has in it, and that, with such a Regard to the Welfare of the whole, that neither can the designing Man injure, or circumvent his Brethren, nor the tardy become a Remora, to delay or postpone the Business, in which, I am far from designing any particular Advantage to my self, excepting only, the Honour of being instrumental in bringing about, an Undertaking so advantageous to my Country.

It is, therefore, humbly Proposed,

I. THAT a Book shall be opened at *Daniel Kennedy's House*, in *Athlone*, and another, at the *Old Globe Coffee-House*, on *Essex-Bridge*, in the City of *Dublin*, on the first of *January* next.

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and continue so, until the Sum of 11000 *l.* *Sterl.* be subscribed (that being the Sum thought necessary for the Undertaking) but that when ever that Sum is subscribed, the Subscription shall be closed, and an Advertisement thereof given, in some of the publick Papers, with Notice when the first general Court shall meet.

II. THAT the Stock shall be divided into eleven Shares, and made payable in five Years, Half-yearly, by even Moyeties, upon the 25th Day of *March*, and 29th Day of *September*, Annually; but that upon Failure of Payment in three Months after any of the Days of Payment, on which the same should be made, the Share or Interest of such Person, so failing, as aforesaid, shall be vested in the Company, and by them posted for Sale, with twenty Days Notice, or Advertisement, in some of the publick Papers, to be sold to the fairest Bidder, by Cant, at the Market-house of *Athlone*, upon the Day so limited, or published for the same, the Money arising from the Sale thereof, to be paid to the late Proprietor; and that the Buyer thereof, shall stand in the Place which the said Proprietor had in the Company.

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But that any Person, at any time before such Forfeiture incurr'd, may sell out, or transfer his Share, or Interest in the general Stock, without consulting the Company; and that every Purchaser of such Share or Interest so transferred, from the time that such Sale or Transfer is registered in the Books of the Company, shall stand in the Place of the Seller, be liable to all the Penalties and Forfeitures, and intitled to all the Advantages, which the Seller should any ways be intitled to, had he continued a Member of the Company.

III. THAT the whole Stock (being 11000 £, and consisting of eleven equal Shares) shall be distinguished by First, Second, Third Share, &c. and the Subscriber or Representative of every Share, shall have a Vote in the General Court; but that as there may be many Persons, who don't think proper to subscribe so large a Sum as one whole Share, and who would yet willingly come in for fifty Pounds; it is proposed, that the Subscribers of Sums under one thousand Pounds, shall be constituent Parts of such Shares as they subscribe into, and shall each of them have Voices, for the chusing of a Representative
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or Director for such Share, from amongst themselves, to represent them in the general Court, according to the Sums subscribed by them respectively: That is to say, the Subscriber of fifty Pounds, shall have one Vote, the Subscriber of one hundred Pounds, shall have two Votes, and so on, in Proportion to the Sums subscribed. And, that, whereas on the other Hand, there may be some, who are willing to subscribe more than a thousand Pounds, in like Manner it shall be with them, that is, they shall have one Voice in the general Company for the first 1000 *l.* and for every fifty Pounds over and above that Sum, they shall have a Vote, for the Choice of a Representative in the general Court, for such Share, as such broken Sum or Sums are subscribed into.

IV. THAT the eleven Directors or Representatives shall, annually, on the 25th Day of *March*, by Majority of Voices, chuse three, from amongst themselves, to be Governors of the Company; and that these three, during their Government, shall be resident or generally resident at *Athlone*, unless they are called out, or sent on the Occasions of the Company; and if any Dispute or Difference

Difference, shall arise between them, touching the Affairs of the Company, the same shall be determined by Majority of Voices. That in the Hands of these, shall be the executive Power, and that they shall have the Authority, upon any Imergency or Difficulty, to call a general Court of all the Directors; but that tho' there should be no such Imemergency, the Directors must however attend (either Personally, or by Deputy, under Hand and Seal, duly attested) at a general Court, every Twenty-fifth Day of *March*, and Twenty-ninth Day of *September*, for ever. That to these general Courts the Governors shall report, what Progress they have made, what Money they have received, or paid out, and what Schemes they have formed, for the Prosecution of the Work, or the Advancement of the general Interest; and that the general Court, or the Majority (if there should be a Division) shall give such Order or Direction touching the same, under their Hands and Seals, as to them shall seem meet, which Order or Direction, shall be carefully observed, by the Governors, during the Intervals between such general Courts. That the Governors shall be allowed a Clerk,

Clerk, or Register, to state and regulate their Accounts: That such Clerk shall be chosen by the general Court, *Durante bene placito*, and accountable only to them, for any Fault, Mismanagement, or Disobedience in his Office.

V. THAT in twenty Days after the Subscription is filled, and Advertisements thereof, given in the publick Papers, there shall be a general Assembly held at *Atb-lone*, and in this Assembly the Subscribers of broken Sum, or Sums under 1000 Pounds, shall chuse their Representatives; and when that is done, the Directors, or Representatives so chosen, and the Subscribers of whole Shares, being eleven in all, shall chuse the Governors, and the Clerk, and give such Orders, for the Prosecution of the Work, as to them shall seem meet, as aforesaid; and that this shall stand for the first general Court, as if it were held on the Twenty-ninth Day of *March*, from which time forward, the general Court shall be obliged, under a certain Penalty, regularly to meet every Twenty-ninth Day of *September*, and Twenty-fifth Day of *March*, for ever; and all Money produced

ced by Tolls, or otherwise, from the general Undertaking, shall, at these Courts, be fairly accounted for, and that every Sharer, or Subscriber into any Share, shall be paid his Dividend of the gain, according to his Subscription, or Share in the original Stock.

VI. THAT for the more exact Regulation of Transfers and Payments, the Clerk, or Register of the Company, shall keep in his Book, an exact Register of all the original Subscriptions, with the Persons Names who subscribed them, and the Payments made upon them, and shall give Duplicates of such Payments, and Subscriptions to the Subscribers, or Assignees of the Subscribers; and that in case of Sale, or Transfer of any Share, or Subscription, the said Clerk shall register such Sale, or Transfer in his Book, and shall give the Purchaser, to whom such Sale, or Transfer is made, a Certificate of the same, with a Receipt, as aforesaid, for so much as is paid in, of the said Subscription; and shall take up and cancel the old Certificate, on the issuing of a new one; so that there may be no Certificate existing, at any time, but one Sett.

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VII.

VII. THAT no Person shall subscribe a larger Sum than two thousand Pounds; and that no Subscription shall be taken under fifty Pounds.

VIII. THAT all Purchasers of whole Shares, from the time when such Purchase is registered, as aforesaid, shall be, not only intitled to the Profits of the Stock, but shall also become, by such Purchase and Registry, a Director, with the same Powers and Priviledges, as if he had been the original Subscriber of the Money.

IX. THAT if any Director, Subscriber, or Purchaser of a whole Share, shall be minded to sell a Part of his Share or Subscription, the Share of which he was possessed, shall, from the time of such Sale, no longer be a whole Share, but the Purchaser, or Purchasers thereof (if more than one) from the Time when such Sale is registered, shall have a Right, jointly with the Seller, to chuse a Representative for such Share, so broken, in Proportion to the respective Interests, which they have therein, by such Sale; that is to say, a Vote for every fifty Pounds;

Pounds ; but that such Choice of a Representative, for such Share so broken, shall be made and registered twenty-four Hours at least, before the next ensuing general Court, under the Penalty of forty Shillings, for every fifty Pounds, which they respectively have in said Share.

X. THAT if any surplus there should be of the Stock subscribed, when the Work is finished, the same shall be laid out, by the Company, in the building of Barges, for managing and setting forward the said Water-carriage ; and that the Profits arising from such Water-carriage, shall equally be divided between the Proprietors, in like manner, and Proportion as the Tolls are to be divided.

XI. THAT at the first general Court, every Subscriber shall pay down one Gale, or tenth Part of his Subscription, on Pain of Forfeiture, as aforesaid.

But that whereas it may be thought necessary by the Company, to send into foreign Parts, for Persons skilled in this Sort of Business, before the Work is begun ; by which, or by any other Delay, a considerable Sum of Money may remain

main dead in the Hands of the Company, it is proposed,

XII. THAT a Bank shall be held by the Governors, in the Town of *Athlone* : Notes issued for Money, and Remittances made to all Parts, at as cheap an Exchange as is taken by any Bankers in the City of *Dublin*; which will in all Probability be of great Advantage to the Company, that Town being in the Center of the Kingdom, and therefore more convenient than any for inland Dealers, who will find it very commodious to take the Company's Notes, when they can exchange them for Money again, with less trouble than the Notes of any more remote Bankers; and that for the greater Credit of such Bank, no Settlement or Deed whatsoever, shall be a Bar against the Notes by them issued; and that all the Profits arising upon that Business, shall also be divided amongst the Subscribers, in such Manner and Proportion, as the Tolls are to be divided in the foregoing Scheme.

XIII. THAT whereas by this Undertaking, several Lands are likely to be recovered from Loughs, and several other Lands

Lands freed from those Floods, which at present make them useless to the Proprietors, Application shall be made to Parliament, for such Amendments of the Bog Act, as may intitle the Company to some certain Chiefery out of such recovered and reclaimed Lands, in Proportion to the Benefit done them by the Undertaking.

XIV. THAT the Company may, at any of their general Courts, alter, amend, or annul any of these Articles, giving three Months previous Notice thereof, in such of the publick Papers as shall be fixed upon by the Company, to advertise for them.

Note, That Books shall be prepared, and opened, at the said *Daniel Kenedy's* House in *Athlone*, and at the said *Globe Coffee-House*, in *Dublin*, on the first of *January* next, to receive the said Subscriptions; and that all necessary Attendance shall be given for the forwarding of so useful an Undertaking.

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to be made from the proceeds, which are
to be made from the proceeds to the
Application shall be made to Par-
liament for such Amendments of the
Act, as may be made by the Company to
some certain Charters, out of such re-
covered and reclaimed Lands, in Propo-
sition to the benefit done them by the
Undertaking.

XIV. That the Company may, at
any of their general Courts, alter, re-
mend, or amend any of these Articles, gi-
ving three Months previous Notice there-
of, in each of the Public Papers as shall
be fixed upon by the Company, to ad-
vertise for them.

XV. That Books shall be prepared,
and opened, at the said Bankers, ready's
to be in London, and at the said Glass
Coffee House, in Dublin, on the first
of January next, to receive the said
subscriptions; and that all necessary Ar-
rangements shall be given for the forwarding
of so much an Undertaking.