[13]

EXPERIMENTS

IN

AGRICULTURE,

Made under the DIRECTION of

The RIGHT HONORABLE and HONORABLE

DUBLIN SOCIETY,

In the Year 1765.

And now Publiſhed at Their Requeſt.

By MR. JOHN WYNN BAKER.

DUBLIN:

Printed by S. POWELL and SON, for the AUTHOR.

AND

Sold by G. FAULKNER, at the Corner of *Parliament-ſtreet*, and the PRINTERS hereof, in *Dame-ſtreet*.

M DCC LXVI.

TO

The RIGHT HONORABLE and HONORABLE

DUBLIN SOCIETY,

THIS

REPORT

OF

EXPERIMENTS in AGRICULTURE,

IS GRATEFULLY INSCRIBED,

By their moſt Obliged,

And moſt Devoted,

Humble Servant,

JOHN WYNN BAKER.

LAUGHLINSTOWN,
Jan. 1766.

The READER is requeſted to CORRECT the following ERRORS, and ſuch others as he may find.

PAGE 6, Line 17, for Macle, read *Marle.*
Page 9, Line 8, for Macle, read *Marle.*
Page 15, Line 14, for Then, read *there.*
Page 42, Line 22, for This, read *His.*
Page 80, Bottom Note, Line 1, for One, read *four.*

To the READER.

IN the Preface to my Report of Experiments for the Year 1764, I ſet out with requeſting the Reader, not to expect in thoſe Sheets, a Syſtem of Agriculture; urging, that a Work of that Kind would be ample Employment for a Man's *whole Life*; and at the ſame Time, in the very firſt Page of the Book informed him, that I only there offered to the Publick a few Experiments, which were made in the Courſe of *one Year*. — Notwithſtanding that, I have been informed of many Perſons who read that Report, that they expected a Syſtem of Huſbandry. How any Man could form ſuch Expectations, I think muſt ſurprize every one, who ſhould only look at the Title Page of that Book, for more ſhould not be expected in a Book, than the Title promiſes.—It might be an eaſy Taſk for a Bookſeller's Slave to undertake a Work of that Kind, becauſe he may be furniſhed with Books enough, from which to extract his Matter, and then give it the Title of a Compleat Syſtem. But I muſt inform the Perſons who expreſſed the above Expectations, that I am ſeeking for *Experimental Matter*, upon which to build a Syſtem; and that they may rely upon it, I ſhall never deal in Pompous Title Pages, to cover the meaneſt of Theft, *Plagiariſm*. And therefore, in this Place, I beg Leave to inform the Reader, that every ſmall Publication of this Kind, which I may offer to the World, will contain no more than a Recital of Experiments in Agriculture for the preceding Year, which I ſhall always relate exactly as they ariſe. Should I live to collect Matter enough, upon which

which to build a Syſtem of *Rational* Agriculture, I may probably venture to offer it to the World; but 'till I give a Book ſuch a Title, I hope no Man will hereafter expect to find a Syſtem in my annual Publications.

The Reader will allow me to requeſt of him, that in his Paſſage through the following Sheets, he will retain upon his Mind, the extraordinary Drought which attended the laſt Seaſon, and then he will never loſe Sight of the Reaſon why many of my Experiments were unſucceſsful; to relate which, in the Judgment of ſome Perſons may ſeem unneceſſary, yet in the Judgment of others it has been thought highly proper for theſe Reaſons. Firſt, Becauſe it ſhews the World we are purſuing our Experimental Enquiries. Secondly, Becauſe it ſhews how the different Species of Plants are affected by the different Seaſons, and that therefore Men are not to be diſcouraged by Miſcarriages which are to be *accounted for*. And laſtly, That if we were not to relate the unſucceſsful Experiments, as well as the ſucceſsful Ones, that the Farmer, whom we wiſh to Aid and Inſtruct, would conceive we were either afraid to relate the Truth, or that we mean only to impoſe upon him, by ſhewing him all our ſucceſsful Attempts, without our Miſcarriages, which he has Sagacity enough to know will ſometimes attend our Endeavours, do what we may.

Some Perſons who do not give themſelves Time to conſider the Principles upon which the Drill Huſbandry is founded, have, as I am informed, in very peremptory Terms pronounced upon it, as being built upon miſtaken Principles, that it is an Invention of Folly, and aſſert that it can never anſwer. To every Man who retains that Opinion, I ſhall only ſay, that if he will allow himſelf to view my Drilled Crops, with his *Eyes open*, that I do believe he will receive ſuch Conviction, as will induce him

to

to have another Faith; and as an Encouragement to throw himſelf in the Way of ſeeing them, I have the Pleaſure to ſay, that many Perſons who had conceived very warm Prejudices againſt the Syſtem, from the taking the Trouble to view my paſt and preſent Crops, are become Proſelytes. And here I ſhall only add, that my Ambition to bring the Name of *Tull* into that Reputation and Credit, which his Ingenuity really merits, cannot be gratified in an higher Degree, than by the Publick looking at my Crops, when any Queſtions reſpecting the Principles and Operations of, or the Inſtruments for this Huſbandry, will be immediately anſwered and explained.

The Friends of Agriculture will allow me to repeat my Solicitations for their Aid, in collecting every Species of Grain and Plant, which may be rendered uſeful to the Farmer; and I ſhall take every Publick Opportunity I may have, of making my Acknowledgments for every Favour I may receive in that, or any other Way, in the Cauſe of Agriculture.

As I know there are many Gentlemen in different Parts of the Kingdom, who are ſo animated in this Cauſe, as to be upon the Verge of entering into Experimental Agriculture, I juſt beg Leave to ſay, that I ſhall be much obliged by a Report of their Experiments, as the communicating to the Publick, Experiments made in different Parts of the Kingdom, muſt certainly tend to the Publick Service.

I cannot allow myſelf to conclude, without repeating my moſt grateful Acknowledgments to the DUBLIN SOCIETY, for the Continuation of their Patronage and Encouragement to my Labours, and to aſſure them, that I ſhall, upon all Occaſions, be ambitious to *deſerve* their Confidence.

ADVER-

ADVERTISEMENTS.

AT the Requeſt of ſeveral Gentlemen, I purpoſe to raiſe as many different Kinds of Seeds as the Seaſons and the Nature of the Soil will permit me. I have already raiſed Seed from the *Red Turnep*, the *white Tankard Turnep*, the *Turnep Cabbage*, and *Borecole*. And this Year I ſhall raiſe *Burnet Seed* alſo.

By Permiſſion of the DUBLIN SOCIETY, theſe SEEDS will be ſold at their Houſe in *Dublin*, by Mr. *Patrick Bryan*, Regiſter to the SOCIETY.—They will alſo be ſold at my Houſe in the Country, and *in no other Place*.

In the FACTORY for making INSTRUMENTS of HUSBANDRY, at *Laughlinſtown*, near *Celbridge*, in the County of *Kildare*, eſtabliſhed and conducted by Mr. *John Wynn Baker*, under the Patronage and Encouragement of the Right Honorable and Honorable DUBLIN SOCIETY, are made the following Inſtruments.

The Demands from this Factory, ſo much exceed Mr. *Baker*'s warmeſt Expectations, altho' in its Infancy; that he takes this Method to inform Gentlemen and Farmers, that he ſhall eſtabliſh it as a Rule, to diſpatch every Order he may be favoured with, in their Succeſſion, as they are given in Point of Time; a Method which he is obliged to follow, from the Impatience ſome Gentlemen have expreſſed, at not having their Orders ſuddenly diſpatched. And he begs, Gentlemen will conſider, that Implements finiſhed in the Manner *his* are, muſt unavoidably take a great deal of Time to compleat them: Beſides which, he hopes ſome Allowance will be made for the *Novelty* of the Undertaking,

Undertaking, and the Difficulties which muſt unavoidably attend the getting proper Artificers, and the Inſtructing them in the Conſtruction of Implements; moſt of which are of a *new Creation.* At the ſame Time he aſſures the Publick, that his moſt active Endeavours ſhall be employed in the getting proper Aſſortments ready made, inſtantly to ſupply every Demand, as ſoon as he can collect a ſufficient Number of proper Hands, and can erect Repoſitories for keeping the proper Stock.

The Nature of this Undertaking is attended with ſuch a conſtant Demand for Ready Money, that he hopes, whoever may favour him with their Commands, will not expect any Credit, as the Nature of the Undertaking will not admit of it.

It is requeſted of every Perſon who may ſend any Orders by Letter, that they will pleaſe to ſpecify each Article as deſcribed in this Liſt; particularly in the Article of Ploughs: And alſo, whether they would have any extra Coulters, Socks, Swingle Trees, or Harneſs.

IMPLEMENTS of HUSBANDRY, made in the New Factory at *Laughlinſtown.*

The Drill Plough, upon an improved Conſtruction, for ſowing all Kinds of Grain, Pulſe, Turnep, and ſeveral Kinds of Graſs Seed.

The Drill Harrows compleatly mounted, quite of a new perfect, and ſubſtantial Conſtruction.

The Hoe Plough,
The Single Cultivator,
The Double Cultivator,
} Theſe are for Horſe-hoeing Drilled Crops.

The marking Plough with Carriage and Marker compleat.

The Double Mold Board Hoe Plough.

N. B. The above are for the Drill Husbandry, but the two last are not absolutely necessary.

A Drill Plough of a new Construction, for sowing Drill Crops in the flat Way, at equal distant Rows.

The common Chip Plough, improved and compleatly ironed.

The Block Plough, improved and compleatly ironed.

The Hunting Plough, improved and compleatly ironed.

The Baiting Plough of a new Construction and compleatly ironed.

The *Essex* Plough improved, to work with one Man and two Horses.

The *Lomax* * Plough, improved and compleatly ironed, to work with four Cattle.

The same Plough for two Cattle.

The Garden Plough for one Horse.

The Turn Wrist or Kentish Plough, with or without Wheels.

Mr. *Tull*'s four Coultered Plough.

The Drain Plough, *i. e.* to cut out Drains. This is an entire new Instrument.

The *Hertfordshire* or double Wheel Plough.

The *Oxfordshire* or single Wheel Plough.

The Anchor Plough. This is an entire new Instrument, and will plough above two Acres a Day.

The Scarificator with five Coulters, for taking Moss off Meadow Land, and otherwise improving it.

Double Harrows for *four* Cattle. New Construction.

Ditto,

* I call this the *Lomax* Plough, instead of the Patent or *Rotherdam* Plough, to give the Author of it, whose Name was *Lomax*, his due Merit, for making so good an Instrument.

Ditto, for two Cattle. New Conſtruction.

A large Harrow upon Wheels. A new Inſtrument.

Triangular Plough Harrow. A new Inſtrument.

Triangular Plough Harrow, for one or two Horſes, chiefly for Peas. A new Inſtrument.

Garden Hand Harrows.

Flax Harrows. A new Conſtruction.

Swingle Trees improved and compleatly mounted.

Sledges and Truckles of any Conſtruction, for Ploughs Harrows, Buſhes, Timber, Sacks of Corn, Lead, *&c.*

Waggons, either broad or narrow Wheels, in the beſt *Engliſh* Manner.

One Horſe Carts of any Conſtruction.

Three wheeled Carts, for one, two, or three Horſes.

Larger Carts, for any Number of Horſes.

Bomb Carts.

Small Carts of a new Conſtruction, for Lawns or Graſs Walks, which will not cut the Sod.

Water Carts of any Conſtruction.

Low Back Carrs upon an improved Conſtruction, calculated for the Eaſe of Cattle.

Coach, Poſt-chaiſe, and other Wheels.

Wheel-Barrows of a neat and ſtrong Kind.

Wheel-Barrows of a new Kind.

Wheel-Barrows for Gardens, which will not cut the Walks.

Water Barrows for Gardens.

Weed Barrows for Gardens.

Graſs Barrows for Soiling Plough Cattle, when ſtanding yoaked in the Field.

Sheep Racks of a new and compleat Conſtruction.

Field Gates of any Conſtruction.

Rollers for Corn and Meadow, of a compleat and new Conſtruction.

Spiked Rollers of any Conſtruction.

A Roller for reducing Fallows, be they ever ſo ſtubborn. A new Inſtrument.

Fanners for Winnowing Corn in the Barn. Of different Conſtructions.

Braſs Wire Sieves, for Corn and Seeds.

Hay Rakes of a neat and ſtrong Kind.

Iron Rakes of various Kinds.

Hay Forks.

Hay Pitching Forks.

Three pronged Forks for Dung.

Three pronged Forks for raiſing Stones and Rubbiſh out of Gardens.

Drag Forks for Dung.

Dock Irons for pulling up the Roots.

Brier Dogs for pulling up Briers and Buſhes by the Roots.

Stumping Irons for compleatly taking the Beards off Barley with Expedition.

Engines for cutting Hay and Straw for Horſe Meat.

Ventilators for Hay Ricks. A new and uſeful Inſtrument, by which the Hay may be ſaved without being put in Tramp Cocks.

Bee Houſes and Boxes, for taking the Honey without killing the Bees.

Gears for Plough Cattle, upon a compleat and new Conſtruction, by which the Cattle cannot be cut or hurt.

Traces made in the beſt *Engliſh* Manner.

Manger Collars and Chains for Horſes.

Cribs of a neat and new Conſtruction, for foddering Black Cattle.

Spades of the neateſt Kind, both for ſtrong and reduced Ground.

The Drain Spade and Scoop, for ſinking narrow ſubterraneous Drains.

Mattocks, Picks, and Crows.

Blaſting Tools for Quarries.

The

The Turnep Slicing Engine. A new Inſtrument, *i. e.* for ſlicing Turneps for Black Cattle, by which two Men will ſlice a Ton in an Hour.

The Stubble Horſe Raker. A new Inſtrument, for ſpeedily pulling up and gathering Stubble at one Operation.

An Inſtrument for thinning and horſe-hoeing Turneps, ſown in the Broad Caſt Way.

N. B. Any Bailiffs, Ploughmen or Gardiners who can be well recommended, may frequently hear of good Employments, by applying to Mr. *Baker*. And for the ſpeedier Propagation of the Huſbandry he practices, and for the Convenience of Gentlemen who wiſh to adopt it, he propoſes to undertake the Inſtruction of Ploughmen in the *practical* Part of his Methods of Huſbandry, for the Courſe of One Year, at Ten Guineas a Man; and Bailiffs in *that*, and *his* Syſtem of Book-keeping, at Twenty Guineas a Man: But he will receive no fine Gentlemen.—And leaſt any Ploughmen, or other Perſons, may offer themſelves to Gentlemen, as having been in his Employment, and repreſent themſelves as qualified to introduce the Practical Part of his Huſbandry upon their Farms; he thinks it incumbent on him to inform the Publick, that any Man who ſhall not produce a Diſcharge, ſetting forth his genuine Character, Qualifications, and how long he ſerved, will be an Impoſtor; and to prevent any Gentleman's being impoſed upon by forged Diſcharges, as he has been, he will always have Pleaſure in anſwering any Letters reſpecting ſuch Workmen, or any other Subject which can promote the Cauſe of Rational Agriculture.—— Carpenters, Wheelwrights and Smiths are wanted. Such as can be well recommended as good Workmen, will meet with Encouragement. Proteſtants will be moſt agreeable.—They may ſettle upon the Land.

THE

THE

CONTENTS.

INTRO-

INTRODUCTION.

On the 7th Day of *February*, 1765,

The RIGHT HONOURABLE and HONOURABLE

DUBLIN SOCIETY,

Were pleaſed to make the following

ORDER, *viz.*

"THAT the Sum of 200 *l.* be given to Mr. *Baker*, to defray his Expence, and as a Recompence for the Trouble he ſhall be at, in making further Experiments in the Articles already recommended to him, and in all ſuch other Parts of Agriculture, as he may apprehend will be of Uſe to this Kingdom, and that he report the Reſult of his Experiments to the Society."

And on the 25th of *July* following, the Society made another Order, *viz.*

" That it be recommended to Mr. *Baker*, that with " all convenient Speed, he will, among his Experiments " in Agriculture, allot a Portion of Ground (not leſs than " one Acre) for the Culture of Wheat in Drills, Horſe- " hoeing the Intervals; and that he alſo allot another Por- " tion of Ground (the ſame Quantity) for the Culture of " Wheat in broad Caſt; that theſe two Portions of " Ground lie as contiguous to each other, and as much of " the ſame Sort of Soil, as may be, that they be both " ſown with the ſame Seed, and that Mr. *Baker* report " his Obſervations, reſulting from this Experiment, to the " Society."

In Obedience to the Inſtructions conveyed in the above Orders, I have proceeded with the utmoſt Care, to anſwer the Expectations of the Society, by rendering my Experiments more extenſive; but to my great Mortification, and no inconſiderable Loſs, they have not, *all* of them, been attended with that Succeſs, which a more favourable Seaſon would have afforded to my Endeavours, and which I truſt, the candid Reader will attribute to the very uncommon Drought we had in the paſt Summer.

The Order of the Society, on the 7th of *February*, reflected ſo much Honour upon me, by the Choice of Experiments being left ſo much to my own Diſcretion, that I was *Animated* with the Expectations of producing ſuch a Report to the Society, for the paſt Year, as might afford me ſome Credit; as my Experiments were calculated to be Extenſive and Numerous. But all that I have to build the Hope of Approbation upon in this Report, is the *Application* I have beſtowed, and the *Candour* which I ſhall obſerve in relating every Circumſtance.

Grazing ſeems to be, ſo much the Object of the Landholders of *Ireland*, that I apprehended I could not direct my

my Attention more to the Service of the Kingdom, than to the Article of Winter Paſtures *: For at the ſame Time that ſucceſsful Crops of them afford, abundantly more Food for Sheep and black Cattle in the Winter, than any natural Paſtures can do in the Summer, I flatter myſelf another *National* Advantage will ariſe from it: Namely, the important Article of promoting Tillage.

Tillage, at leaſt ſufficient to ſupply her Inhabitants with Bread, ought to be the *firſt* Object of every Nation, but of *Ireland*, more than any other Country upon Earth, for Reaſons ſo obvious, that I need not enumerate them.

The Motives which prompted me, to make Winter Paſtures my firſt Object, were; that they are for the moſt Part, as it appears to me in Practice, the only rational Crops, which lead to the *higheſt* Improvement of Land, even the very pooreſt; and I flatter myſelf, the Event will prove it: The extraordinary Quantities which may be raiſed by a little Care, for his own Profit, will inſenſibly lead the Grazier into Tillage, and when he ſhall be invited to the Culture of Winter Paſtures, of Courſe a Succeſſion of Tillage muſt follow. A Circumſtance, which will increaſe our Quantity of Corn, and conſequently leſſen the Importation of it.

* This is an Object of more Importance, than ſeems to be imagined, by the Generality of People; and I hope the great Attention given to it by the Society in *London*, will juſtify me in having made it one of my firſt Objects, particularly, as my Attempts have been attended with ſuch Succeſs, as to induce that Society to approve and adopt my favourite Plants.

Experiments on TURNEPS.

IN my Report for the Year 1764, it appeared, that my Experiments on Turneps, tended to aſcertain, whether in Drills, or the Common Huſbandry, be the beſt Culture for them. This Year I continued the ſame Enquiry, as I think one or two Experiments, not ſufficient to determine the Choice of the Generality of Farmers, although enough to influence the Minds of Men, who can comprehend, and properly conſider firſt Principles. Beſides repeating the comparative Experiment between the two Methods of Culture, I introduced another on this Species of Plant, which was calculated to diſcover, which *Species* of Turnep, will be moſt profitable to the Farmer. For this Purpoſe, I introduced this Year, upon my Farm, five Sorts, in the Drill and Common Huſbandry:—Namely, the *red* Turnep, the *white Norfolk* Turnep, the green Turnep, the white Tankard, and the red Tankard Turneps.

For this Purpoſe, I prepared twelve Plantation Acres of Land, of the ſame Nature and Quality of that, deſcribed in my Report of laſt Year, p. 39.—My Manures were a Part of the native Earth taken off the head Land*, and mixed with Dung, in the ſame Manner, as was deſcribed in my former Report, p. 10.——Of this Compoſt, I had an Heap, 14 Feet broad, 4 Feet high, and 56 Perch long †, *i. e.* 2439 cubical Yards. The Dung in which, was made upon my own Farm. I ſhould not be ſo

* The Practice of taking Soil off the Head Lands of Tillage Fields is a very good one, for at the ſame Time that we increaſe our Quantity of Manure, and have it ready in the Field it is intended for, we remove the great Inconvenience of the Head-lands daming the Water upon the Fields, by their conſtant Accumulation of Earth, brought by the Plough.

† A Perch in *Ireland* is 21 Feet.

ſo particular in deſcribing the Quantity, were it not with an Hope, of exciting an Attention in the Farmer, to the important Article of making Manure; an Object, in which, the Huſbandmen of this Country, I am ſorry to obſerve, are very negligent.

For the higher Improvement of this Body of Compoſt, I did not neglect to avail myſelf of the Uſe of Snow, as deſcribed in my former Report, the Practice of which I earneſtly recommend.

This Compoſt was carefully turned, in about two Months after the mixing of it was finiſhed, for that will be underſtood to be a Work of Time, becauſe it can only be done, as the Dung ariſes from the Stables, &c.

Many Parts of this great Body of Manure, conſiſted of Peas-ſtraw, which had been uſed as Litter in my Stables, and alſo the Refuſe of the Peas, which my Sheep had eaten, in the Winter of 1764, as was deſcribed in my Report for that Year. I was ſtrongly perſuaded by my Men, not to mix this Straw in the Body of Manure, they urging, that the Straw would not rot in many Months, and that it would therefore, be a great Impediment to the Work, when we ſhould come to put out the Manure: But, contrary to their Expectations, when I came to turn this Body of Compoſt, I found the Peas Straw perfectly rotten.— Indeed, if Peas Straw be thrown into an Hole, where it ſhall be immerſed in Water, and that little or no Air can approach it, Putrefaction will not come upon it, for a conſiderable Time: From this Experience it is I apprehend, that many Farmers, without conſidering the Cauſe, have been led to believe, that Peas Straw, will not make ſo good Dung as the Straw of the white Corns; but the Fact appears to me quite otherwiſe (which is my Reaſon for dwelling upon this Subject;) for if an Hundred

Weight,

Weight, or any other given Quantity of Wheat, or any other white Corn Straw, ſhall be burned, the Aſhes which ſhall be made from it, will be lighter than Cobwebs, lighter even than burned Paper; and from their Nature and Texture, can have but a very ſmall Proportion of the Alkaline Salts, which are more or leſs obtainable from all vegetable Subſtances. Whereas, if Peas Straw be treated in the ſame Manner, there will remain an Aſhes of a much firmer Texture, and from which, a greater Quantity of the Alkaline Salts may be obtained, than from the other; which in my Apprehenſion proves it to be better adapted to the Purpoſe of making Manure, than the Straw of any white Corn.

With the Body of Compoſt already deſcribed, I manured about ſeven Plantation Acres. The reſt of the Field I manured with Shell Macle and Maiden Earth, which I drew about three Quarters of a Mile.

Under theſe great Preparations, I promiſed myſelf the Pleaſure, of having ſuch a Set of Experiments, under the various Species of Turneps already named, as might do me ſome Credit, and the Publick ſome Service. But Seaſons are not to be commanded; the late Summer was attended with ſuch a Drought, as I believe no Man remembers ever to have happened before. This Fact cannot but be upon the Mind of every Perſon, and the Conſequences are too ſenſibly felt by the Publick, in the high Price, of the few Productions which the Earth afforded laſt Summer. My Land ſhared the ſame Fate as that of other Perſons, only that it was in a greater Degree than the Generality of Land, becauſe the Quarry is ſo near the Surface; the Soil in ſome of the Fields was as ſolid as a Rock; but this Field, from its having been well reduced, was a perfect dry Powder. Under theſe Circumſtances, I had no Succeſs with my Turneps, they came up, but to my great Mortification, they were a miſerable Crop.

Under

Under this great Diſappointment, and the Preparation which this Field had, it was in fine Condition for Winter Corn, but I *withſtood* the Temptation of ſowing it, in order, that I might have it ready prepared next Summer to receive the various Experiments, which I wiſh to make in a more extenſive Manner, than the Nature of my Farm, hath hitherto admitted, and therefore I have paſtured the Turneps, have ploughed the Field, and intend it to remain under Winter Fallow.

Experiments on Cabbages.

My Attention was alſo, a good deal bent to the Purpoſe of extending my Experiments on Cabbages as a Winter Paſture for Cattle, in which I intended to be very large; and for that Purpoſe I reſerved one of my Fields which was under Turneps and Cabbages laſt Year, as deſcribed in my Report, free from a Crop, that I might have it in Readineſs, for my intended Experiments on Cabbages.

Some of my Cabbage Seeds, I had ſown in *Auguſt*, 1764, in order to have Plants ready in the Spring, and others I ſowed in proper Time in the Spring, by which Means I was well furniſhed with Plants.

Beſides the Field which I intended for my general Experiments on Cabbages, I had prepared a ſmall Piece of Ground, which I had manured with Shell Marle, in order to aſcertain whether it would anſwer as a Manure for Cabbages, as well as it had done the Year before for Turneps.

On the 23d. of *March*, I had this Ground planted with late *Dutch* Cabbage Plants of the Autumn ſowing, in Rows *three Feet* aſunder, and the Plants two Feet aſunder in the Rows.

The

The Ground was tilled with the Spade, and therefore it was, that I had it in my Power, to put down the Plants, ſo early as the 23d. of *March*, notwithſtanding the Severity of the Weather, and extreme Wetneſs of the Land.

The exceeding high and cold Winds, Froſt and cold Rains which followed for a long Time, kept the Plants very backward, ſo that they grew very little 'till the Beginning of *May*, when the Drought began. At that Time, I had the Intervals dug with the Spade, as a Subſtitute for the Horſe-hoe, and repeated the ſame Operation in *July*. The Plants grew 'till near that Time, but afterwards were very ſlow in their Progreſs, for the Ground was penetrated by the Sun in ſuch a Manner, that very ſoon after the ſecond Digging, it had Clefts in it, of an incredible Size. Thus it was impoſſible for the Plants to make any great Progreſs in their Growth.

This Piece of Ground was ſheltered from the South by Trees, notwithſtanding which, the Drought had the powerful Effect I have deſcribed; how much more muſt Ground be affected by the Heat and Drought, which had no ſuch Protection, will be eaſily imagined; and indeed, which I felt to my great Loſs and Mortification.

In *Auguſt* we had ſome Showers, but they were ſo inſufficient to the extreme Dryneſs of the Land, that the Plants received very little Benefit from them:—But the Rain which fell on the 31ſt. of *Auguſt* and 4th of *September*, brought them forward; ſo that what were left (for many of them were ſtolen by my Neighbours, altho' I gave them many thouſand Plants in the Spring, with an Hope of preſerving my Experiments from Plunder) became tolerable Plants.

In

In *November* they were beginning to decay, which I obſerve the Autumn ſown Plants will do, ſooner than the Spring ſown ones.—On the 28th of *November* I cut an hundred of them as they came in the Rows, and one with another they weighed *eight Pounds*.

Theſe Cabbages, in ſuch an uncommon dry Seaſon, growing to the Weight of eight Pounds, one with another, on poor Ground, manured with *Shell Macle*, proves what a valuable Manure that is, and conſequently, that it will be a great Treaſure to any Man who can find it in Quantity upon his Land.

Theſe Plants it may be remembered, are deſcribed to have been put down in Rows *three Feet* aſunder, and the Plants *two Feet* from each other in the Rows, ſo that every Plant occupied ſix Feet of Ground, which being the Diviſor of 70560 (which are the Number of Feet in a Plantation Acre) ſhews, that by ſuch a Diſpoſition of the Plants, an Acre will contain 11,760, which being multiplied by 8, as being the Weight of each Plant of this Year's Growth, ſhews that an Acre will produce 94080 Pounds, which make 42 Tons.—This is ſuch a Quantity of wholeſome and fattening Paſture for the earlier Winter Months, as I think ſhould excite an Attention to it in the Farmer and Grazier.—How much greater the Produce might have been, had the Seaſon been favourable, the Reader will imagine.——But let it not be forgotten, that theſe Plants were of the *Autumn* ſowing, and that they were put down *early* in the Spring.

In my Report for the Year 1764, I ſpoke pretty fully of the Uſe of theſe Kind of Plants to the Farmer, and was pretty full in my Calculations, as to the Number of each Species of Cattle, any given Quantity of Cabbages

will maintain, and therefore, I need not enlarge upon thoſe Particulars here, but refer the Reader to that Report.

The Field which I allotted for my general and more extenſive Experiments on the general Species of Cabbages, as was before mentioned, conſiſted of ſome Acres, and was therefore too great an Undertaking to be managed by the Spade, as the Experiment I have already deſcribed was.

The continual Rains which fell in *March* and *April*, rendered the Land ſo wet, that it was in vain to attempt the plowing of it in either of thoſe Months, for the Purpoſe which I intended it. Thoſe two wet Months were ſucceeded by the extreme Drought, which ſo incruſted and conſolidated my Ground, from its particular Quality, * that it became exceedingly ſtubborn and ſtrong.

On the 11th of *May* we had fine Showers, on which Day, I planted out about an Acre and an half of the Autumn ſown Plants, in ſingle Rows, on Ridges of five Feet breadth, and the Plants in the Rows two Feet aſunder. From that Day, to the 28th of *June*, we had no Rain, ſo that I deſpaired of theſe Plants coming to any thing. Again, in *Auguſt* we had ſome light Showers, but no uſeful Rain till the 31ſt. Under theſe Circumſtances, the Plants came on very ſlow, and never looked healthy; however, the latter Rains brought them on a little. They were Horſe-hoed in *June*, and again in *Auguſt*, in the ſame Manner as thoſe of laſt Year.

On the 4th of *December*, they were all taken up, in order to prepare the Ground for another Purpoſe. They were ſmall,

* See my Report for 1764, p. 39.

ſmall, and what I call a failing Crop. They weighed five Pounds one with another, which upon an Acre, amounts to 35280 Pounds, *i. e.* 15 Tons and 15 hundred Weight.

Theſe Plants were, I believe, the late *Dutch* Cabbage, but they were ſo ſtunted, and ſo covered with Vermin, that they never ſhewed their natural Shape.

My Views were much more extenſive, for as my Experiments for the Year 1764, proved the Field Culture of Cabbages to be a profitable Winter Paſture for Cattle, my Attention was directed this Year, to aſcertain which Sorts will be the moſt profitable for the Farmer and Grazier to propagate; and therefore, on the 18th of *March*, I ſowed 15 Sorts of the Cabbage Kind (for tho' not all really Cabbages, yet they all come under the Title *Braſſica*) with an Hope of giving the Society great Satisfaction in this Particular; but from the Seaſon, I was in a Manner totally diſappointed, and therefore I ſhall only give two or three general Obſervations which I made upon theſe Experiments. *viz.*

The different Kinds of Savoys, the Red Cabbage, Borecole, and Turnep Cabbage ſtand the Froſt, better than any of the other Kinds, which ſeems to indicate their being the beſt ſuited for the Paſture of Cattle in Winter. And of all the Sorts, the Turnep Cabbage, and Red Cabbage, I obſerve, are leaſt liable to be ſtolen, and therefore ſeem the better adapted to the Farmer's Purpoſe.

The Turnep Cabbage, even under all the Diſadvantages already named, weigh one with another, about three Pounds. Moſt of the other Sorts are fine for the Table, but the Quantity inſufficient for the Purpoſe of feeding Cattle.

A Circumſtance occurred a few Nights ago, *i. e.* in *December*, which I think I ought to mention. About twenty Head of my Black Cattle broke into my Cabbage Field, where they devoured a great deal of theſe quarter-grown Crops, but they eat at leaſt three Times more of the Turnep Cabbages, than they did of all the other Sorts. Amongſt ſuch Variety, it ſeems in Favour of the Turnep Cabbage, that the Cattle ſhould prefer them to all the reſt.

My Want of the expected Succeſs this Year, in the Culture of Turneps and the various Cabbages which I introduced in my Fields, has been productive of an Objection which I own very much ſurpriſed me: not from the Strength, but really from the Weakneſs of it: becauſe it proves, that when Men cannot find a ſolid Baſis, upon which to build Objections, that they will riſk their Judgment, by laying hold on Shadows to ſupport them. It has been urged, "that if the ſucceſsful Culture of theſe Kind of Plants depend ſo much upon favourable Seaſons, that they are not worth the Farmer's Attention." With the ſame Reaſon I might urge, that the various Species of Grain and Plants, which have ſo generally failed this Year, are not worth cultivating, which, in other Words, would be to ſay, that Oats, Barley, Peas, Potatoes, and many other Things are not worth the Farmer's Attention; nay even Wheat, under ſuch Reaſoning, would be liable to Objections, becauſe even *that* will ſometimes fail, let the Farmer do what he may; but I ſhould be aſhamed of making Objections upon ſuch Principles.

Experiments on Beet.

Beet is a Plant which is ſaid to ſtand the Winter, and therefore I thought it might not be improper for me to introduce it amongſt my Experiments, for which Purpoſe I procured

procured the Seeds of the green, white and red Beet, which I ſowed at various Diſtances, on different Soils, on the 27th of *March*. A great deal of it failed, however, ſome of each Sort ſucceeded; but at preſent it ſeems not to be worth, either the Pains or Ground which it requires, for I find that which is ſown in the beſt Ground, is by much the moſt luxuriant, tho' Mr. *Miller* ſays it does not require over rich Ground. No Doubt, the dry Summer was againſt it.

In Order to form ſome Judgment, whether it was worth my while to repeat my Experiments upon it, I turned a Cow into the Place where it is, amongſt other Things, and ſhe eat Trefoil, Sanfoin, and common Graſs, all which were with the Beet, but ſhe did not taſte the Beet, ſo that I have no great Expectations from it.

Experiments on Burnet.

The Root of Burnet, is in Shape like that of Lucerne, and is what is generally called a Tap rooted Plant; but it has alſo many lateral Roots. The Roots being of this Kind, and that I find, where a Plant happens to ſtand ſingle, it affords an Head of great Magnitude, by throwing out an infinite Number of Branches, from a great Number of ſmall heads, (if I may be allowed ſo to ſay) which altogether ſpringing from one Root, compoſe the *great Head*, which really affords an incredible Quantity of Paſture. For theſe Reaſons, I was induced to attempt the tranſplanting ſome of my Burnet.

It being a Tap rooted Plant, I began by pruning the Roots, and tranſplanted ſome in this Way, on the 12th of *March*, intending to tranſplant moſt of the reſt, without pruning the Roots; but in Truth, I found it ſo tedious and troubleſome to put the Roots down without pruning, that

that I planted only one Row in that Way, which was on the 23d of *March*, when I ſaw the Plants which I had put down on the 12th, were growing very well, and therefore I had no Fear in purſuing the moſt convenient Method; which is to prune the Roots, and which may be done very freely without Injury to the Plants.

The Weather was ſo very ſevere, I could not proceed regularly in this Work; ſo that I tranſplanted at different Times in *March*, in ſuch Days as the Men could ſtand out, and notwithſtanding the Snow, Sleet, and cold Rains which fell upon thoſe Plants, I don't think I loſt half a Dozen, out of many Thouſands which I put down; but they grew luxuriantly, tho' they did not afford ſo much Graſs as that which I ſowed the Year before, neither could it be expected the firſt Year. That which I ſowed the ſame Month in which I tranſplanted the above, produced no Graſs for cutting this Year at all, as will appear preſently. In the Middle of *July*, I cut this tranſplanted Burnet, the Seed being ripe, of which it afforded more than could be reaſonably expected; and it is now, the 1ſt of *January*, in a very flouriſhing State, in ſo much, that altho' the Rows were put down two Feet aſunder, and the Plants in the Rows ſix Inches from each other, yet the Rows almoſt meet. How much more luxuriant this tranſplanted Burnet would have been laſt Summer, had the Seaſon been favourable, will be eaſily imagined, but I own the Growth it did acquire much ſurpriſed me.

It perhaps will be expected, that I ſhould give further Reaſons than thoſe I ſet out with, for tranſplanting it and cutting the Roots; they are theſe. The Superficies of the Earth, at leaſt that Part of it which comes within the Power of Tillage, is always in (Extremes excepted) a more flexible State than the under Strata, and therefore the Roots of Plants can penetrate it much eaſier; it is for the moſt

moſt Part more replete with Food for Vegetables. This Plant deſcends one capital Root to a great Depth; ſmall horizontal ones paſs from its Sides; theſe bring Home the Food to the great Trunk, if I may ſo call it, Part of which Food goes to the Support of this great Root, and the reſt to that Part of the Plant which is above the Surface. By this Means, I do conceive, *that Part* of the Plant which we want, is deprived of a certain Portion of the Food which is collected by the ſmall Roots, and conſequently the Quantity of animal Paſture is leſſened. I conceive then, that if the great leading Root is checked, that the Food which would otherwiſe go to its Support, will go to the Head and Branches of the Plant; nay more, for where the great Root is cut off, then an additional Number of horizontal Roots paſs from it and ſtrike into the upper Soil, and conſequently collect more Food, than can be collected by a leſs Number, which new Supply, will ſtill go to the Nouriſhment of the ſuperior Parts of the Plant, and conſequently afford us an *Increaſe* of Paſture.

The Burnet which I ſowed on the 1ſt of *May*, 1764, and which is mentioned in my Report for that Year, I mowed on the 22d Day of *February*, as appears in ſaid Report, except one of the three Feet Drills. The Growth of the various Experiments, from that Day to the 12th of *May* was really incredible, for the Burnet was on that Day 24 Inches high. The Drill with three Feet Intervals which I did not cut in *February*, was 33 Inches high, and ſo thick, that it would not have been eaſy to force one's Way thro' it. I meaſured the Diameter of the Crop of this Drill, taking it two Feet high from the Ground, and it was on the ſaid 12th of *May* 34 Inches.

I intended to have weighed the Produce of each Experiment, as it may be remembered, I ſowed the Burnet four different Ways; but in Truth, by the Time the Seed was ripe,

ripe, which was the Middle of *July*, the Crops of the different Experiments were ſo entangled and lodged, that I could not ſeparate the different Parcels, not even the Drills with two and three Feet Intervals, the Quantity was ſo very great. I really believe, I ſhould not ſay too much, if I eſtimate it at the Proportion, of 30 Loads of Hay to an Acre.*

I am very apprehenſive, that when Burnet is intended for Hay, it ſhould not be ſuffered to ſtand to ripen the Seed, as from the prodigious Luxuriance of it, I fear it will always lodge; beſides which, the Stalks grow very thick, and therefore, the Hay which is made of them cannot be good, and when it lodges, an Abundance of the Leaves drop off, and the Parts next the Ground turn black, for theſe Reaſons, when it is intended for Hay, I do conceive the beſt Time to mow it, will be when it is in full Bloſſom.

Whoever means to ſave the Seed muſt handle it very carefully, as with the utmoſt Care, a great Deal of it will ſhed; otherwiſe, I ſhould have weighed the whole Produce of my Experiments together. When the Seed is thraſhed out of it, there remains few or no Leaves, for the Thraſhing reduces them to Duſt, and very little more than mere Stalks remain, which rendered it unneceſſary for me to weigh the Produce after Thraſhing, as it was greatly diminiſhed. This ſeems to be another ſtrong Reaſon for not ſuffering the Seed to ripen, when the Crop is intended for Hay. However, I muſt not omit to add, that I gave theſe Stalks to my Horſes, of which they eat very freely, notwithſtanding they were Night and Day at Graſs.

Mr. *Rocque*, the Perſon who introduced this Plant into the Field, for the Winter Paſture of Caſtle, ſays it will produce

* For the Information of the Readers in *England*, it may be proper to ſay, that a Load of Hay in *Ireland*, is 400 Weight.

duce two Crops of *Seed* in a Year. I find the firſt Produce is pretty conſiderable, but the ſecond with me, was not worth Notice, and therefore I did not cut my Burnet a ſecond Time. Perhaps this Climate may not be ſo favourable for ripening the Seed as the one he is ſituated in, which is within three or four Miles of *London*.

One more Obſervation I muſt not omit to make upon the Circumſtance of my Burnet lodging in the Manner I have deſcribed, which is, that if I had not mowed it till *April*, inſtead of *February*, that perhaps it might not have lodged in the Manner it did.

I began ſowing Burnet in *March*, when I began to tranſplant and continued ſowing at different Times, till the latter End of *September*, but the long Drought prevented its making any Figure at all; tho' that which I tranſplanted in *March*, and that which was ſown laſt Year, grew very faſt, even in the hotteſt and dryeſt Weather, when all natural Graſs was burnt up, and when indeed, very few other Things grew at all.

I ſowed ſome in Rows two Feet aſunder, and had the ſingle Grains of Seed dropped in the Rows ſix Inches aſunder, in order to compare the Produce with that which I tranſplanted at the ſame Diſtances; but a great deal of the Seed failed, however, ſome of it is growing, and I ſhall compare the Produce, Plant by Plant next Year, which will, I think, finally determine whether tranſplanting or ſowing be the beſt Culture for it.

Burnet, reſiſting the ſevereſt Weather in Winter the Manner it does, is moſt certainly a great Recommendation of it, and its growing in the dryeſt Weather, even when all or moſt other Plants are at a Stand, is an important Object, in which Reſpects, it merits all the Encomiums which have been given of it.

The Culture of it is eaſy, and it is very luxuriant. The only capital Thing which remains now to be aſcertained is, whether it will fatten, or even keep Fleſh upon Cattle in the Winter; if it will effect even the latter, it perhaps will be one of the greateſt Acquiſitions to the Farmer and Grazier, which has been made for many Years. In Order to aſcertain this Fact, I ſhall introduce ſome Acres of it upon my Farm as ſoon as poſſible for the Purpoſe of making that important Experiment.*

My Burnet is now, (in *January*) altho' under very hard Froſt, as green, and healthy, as if it was *May*. And it is an undoubted Fact, that it does Vegetate in the Winter, altho' it is but in a ſlow Degree.

Experiments on Lucerne.

It may be remembered, that laſt Year I did not tranſplant my Lucerne, 'till the 28th Day of *April*. This Year I began earlier, as I apprehended that was too late. On the 27th, 28th, and 29th of *March*, I tranſplanted more Lucerne, without paying any Regard to the different Sizes of the Roots, as I had done the Year before. The Plants which I uſed this Year were one Year old. The Ground in which I tranſplanted this Year, had been under drilled

* A Reverend Clergyman in *England*, to whom the Publick are much indebted for his conſtant and zealous Attention in the Cauſe of Agriculture, I obſerve in ſome of his late Papers pronounces that his Horſes will not eat the Burnet. I own this alarmed me, becauſe the Luxuriance of the Plant promiſes a great deal. I juſt now (as I am correcting the Preſs) the 6th of *May*, directed my People to cut a Drill of my tranſplanted Burnet, and to give it the Horſes, my Clerk's Expreſſion was, that they devour it. My Indiſpoſition prevents my attending the Purſuit of this Experiment, that, and the Want of Room, obliges me to defer the further Obſervations upon this Matter, for my Report of this Year.

drilled Turneps the Year before, and was very fit for the Purpoſe in every Reſpect, except that of the Quarry being very near the Surface.—It may be remembered that in my Report of laſt Year, I mentioned my having ſown it on Ground, not more than ſix Inches above a Quarry, where it ſucceeded very well, which induced me to attempt the tranſplanting of it in the like Ground, where I believe it will alſo anſwer: For that which I tranſplanted laſt *March*, afforded two Crops, tho' they were inconſiderable; the ſecond by much the beſt. It may be remembered, that in my former Report I ſaid the tranſplanted Lucerne makes no great Figure the firſt Year.—I tranſplanted ſome alſo in *March*, in Ground which had been manured the Year before with Shell Marle, moſt of the Plants are alive, and grew a little, but they afforded no Crop worth cutting, tho' let it be obſerved, that it is always neceſſary to cut the Crop, be it ever ſo ſmall, otherwiſe it becomes hard, and appears like a ſmall Shrub without Leaves, of a Straw Colour, and is very diſagreeable in its Appearance, but nothing more pleaſing when it is green.

I find, that when the Roots are more than one Year old, they are very troubleſome to tranſplant, for the tap and lateral Roots are very large, and altho' we prune them ever ſo much, they will be jagged and rough; a Man can Prune but One at a Time, when he may prune a Dozen or more Plants of one Year old, at one Cut of his Knife; and therefore, Plants of one Year old are moſt convenient to tranſplant, tho' I find the large Ones will grow as well, and will produce more at firſt, when they are put down with Care.

The Experiments which are mentioned in my Report of laſt Year, afforded but three Crops this Summer, for even the Lucerne was injured by the great Drought. In deſcribing the Produce of theſe Experiments, I ſhall continue the ſame Numbers to the reſpective Experiments,

which I made Uſe of laſt Year, as will appear in that Year's Report.

	C.	Q.	lb.
N°. 15. One Perch of the Drills 3 Feet aſunder, produced on the 4th of			
June only	0	1	20
Auguſt 27th.	0	1	3
October 10th.	0	1	17
	1	0	12
N°. 16. One Perch of the Drills 2 Feet aſunder, produced on the 4th. of *June*	0	1	23
Auguſt 27th.	0	1	7
October 10th.	0	1	19
	1	0	21
N°. 17. One Perch of the Drills one Foot aſunder, produced on the 4th. of			
June	0	2	12
Auguſt 27th.	0	0	24
October 10th.	0	1	4
	1	0	12
N°. 18. One Perch of the Broad Caſt, produced including many Weeds, on the 4th. of *June*	0	3	14
Auguſt 27th	0	0	18
October 10th. ſo poor it could not be cut	0	0	0
	1	0	4

It

It will be found in my former Report, that the Lucerne which was tranſplanted laſt Year was divided into ſix Experiments, on Account of the different Sizes of the Roots, and on Account of my pruning ſome of them, and not pruning others, but my Attention being interrupted for a few Minutes, when the Experiments were cutting the firſt Time this Year, cauſed the Produce to be mixed, by my Directions not being obſerved, and therefore I *now* introduce the whole as one Experiment, to compare the Produce with the Lucerne which was ſown the ſame Year. In ſuch Places as the Plants failed laſt Year, I put down others in *March*.

	C.	Q.	lb.
One Perch of this tranſplanted Lucerne, the Rows being three Feet aſunder, and the Plants ſix Inches in the Rows, (ſave where they failed) produced on the 4th. of *June*	0	2	3
Auguſt 27th.	0	1	15
October 10th.	0	1	19
	1	1	9

I ſhall now reſtate the Produce of theſe different Experiments in one View, and reduce the Whole in their exact Proportion to an acreable Produce, by which we ſhall at one View, be able to form a tolerable Judgment of the different Methods of Culture.

		C. Q. lb.	T. C. Q. lb.
N° 15.	3 Feet Drills, one Perch produced	1 0 12	
	which on an Acre would be		8 17 0 16
N°. 16.	2 Feet Drills, Do.	1 0 21	Do. 9 10 0 0
N°. 17.	1 Foot Drills, Do.	1 0 12	Do. 8 17 0 16
N°. 18.	The Broad Caſt, Do.	1 0 4	Do. 8 2 3 12
The tranſplanted		Do. 1 1 9	Do. 10 12 3 12

In my Report of laſt Year, I expreſſed myſelf very doubtfully of the Culture of Lucerne in the Broad Caſt Way, and did apprehend, it was impoſſible for it to be of a long Continuance, and the above Experiment, which has not been quite two Years ſtanding, I think proves it beyond Contradiction; and I have been lately informed, that Mr. *Rocque*, who is the Advocate for, and Practicer of that Culture, plows up his Lucerne every third Year, and ſows the Ground again; a Circumſtance which I foretold, as will appear, by referring to my Report of laſt Year, Page 84, and 106. And *my* Broad Caſt Lucerne is now ſo crowded with natural Graſs, that I fear I muſt be obliged to dig it all up in the Spring, tho' I wiſh to have it ſtand a third Year, and for that Reaſon I ſhall endeavour to clean it.

We ſee what a great Difference there is between the firſt Cutting and the ſecond, in the Broad Caſt, in Point of Produce, and that when the Drilled afforded a third Crop, the Broad Caſt would afford none at all. From whence ſhould this manifeſt Difference ariſe, but from the Broad Caſt Plants wanting that Food, which the natural Graſs robs it of, and with which we ſee the Drilled is furniſhed by our tilling the Intervals.

The

The Drills with two feet Intervals we ſee are ſtill ſuperior in Point of Produce to the three Feet, but the Proportion is not ſo great as it was the firſt Year. The Drills with Intervals of one Foot, we ſee are only equal this Year to thoſe with three Feet, tho' laſt Year they produced conſiderably more. So that we plainly ſee, the Plants which are under the Drill Culture are improving, as I expreſſed my Expectations of in my Report of laſt Year, p. 85. But we ſee how much ſuperior to any of them, is that which was tranſplanted; a Circumſtance which ſtill reflects great Honour upon the ingenious M. *De Chateau Vieux*, who I entreat, my Readers will always remember, was the firſt Perſon who attempted the Culture of Lucerne, by Tranſplantation.

The Difference between the Produce of the Drills with two feet Intervals, and thoſe with three Feet, appears not to be much; and as the two Feet cannot be ſo conveniently Horſe-hoed as the three Feet; in my Judgment, the Drills with three feet Intervals is the beſt Culture, ſo far as relates to the *ſowing* Lucerne; but the third Year's Crops, will, I hope, reduce this Point to a Certainty.

I cannot omit to mention an extraordinary Produce which I had this Year from one ſingle Plant of Lucerne at one Cutting, it had been tranſplanted the Year before, and the great Quantity of Paſture which it ſeemed to have, induced me to cut and weigh it by itſelf, and the Quantity was *one Pound and eleven Ounces*, at which I was indeed very much ſurprized, and the more ſo, becauſe I do not know of any extraordinary Advantages with which this Plant had been favoured, unleſs any accidental Quantity of Manure had dropped by, or near it. But this Produce from one Plant upon *my* Land, induces me to ſuppoſe, that Perſons who have Land ſuited to the Culture of Lucerne, might have almoſt every Plant to produce as much

much. If ſo, an Acre would contain 47040 Plants, by putting them in Rows three feet aſunder, and the Plants in the Rows ſix Inches, and the Produce at the Proportion of one Pound eleven Ounces to a Plant, would be 35 Tons 8 Hundred and $\frac{3}{4}$ Weight, upon an Acre, and that at *one Cutting*, how much greater it would be, when two or three Cuttings more are added, is plain. But we muſt not expect every Plant to ſucceed alike. However, this Accident, (for ſo I eſteem it) I own has ſo rouſed my Attention to Lucerne, that I ſhall not be ſatisfied, 'till I have brought ſome of my Ground to produce a very great Crop, ſince by the Quantity this Plant afforded, we ſee, that it is not eaſy to know where the limitation of the Produce of Lucerne will end.

Since I wrote this, I have looked into the Account M. *De Chateau Vieux* and his ſeveral Correſpondents give of their Lucerne, and their Produce of *dry Hay*, has been from 12 Ounces to two Pounds from a Plant in a Seaſon, which exceeds the Produce of my Plant. But let us ſuppoſe from their Experiments, that one with another, the Plants ſhall produce only *one Pound* of dry Hay, an Acre containing 47040 Plants, will at that Rate, afford 21 Tons of Hay, which will be 105 of our Loads. Under theſe Circumſtances, it is not to be conceived, where the Produce will ſtop, when we conſider theſe Gentlemen ſpeaking of two Pounds of Hay from a Plant. In Truth I begin to think we know very little more of the Culture of Land, than the Name of it; and have no Doubt, but that our Poſterity will be of that Opinion, for I am perfectly perſuaded, that one Acre of Land brought to the higheſt Improvement, will produce more, than Five, nay I believe than Ten, in the general Way of treating it. Enthuſiaſtick as this Prognoſtication may appear, (and I dare ſay by many will be ſo called) I can truly ſay, that every Day's Practice confirms me in this

Opinion,

Opinion, and which I live with an Hope of proving in ſome Degree, even upon the unkind Spot on which my Fortune has placed me.

However, I ſhall for the preſent conclude this Subject with only obſerving, that Lucerne producing in ſuch a Summer as the paſt, *eight* and *ten* Tons of Paſture upon an Acre, when all natural Graſs was burnt up, (I do not call the Produce of the forced Meadows about *Dublin*, natural Graſs) ſeems to be a great Recommendation of this Plant to the Landholder, and I cannot omit to add, that I am fully perſuaded, a much greater Produce might have been obtained upon Land, ſuited to the Plant, which mine is not, (for a Deſcription of which ſee my laſt Year's Report) p. 39.

Experiments on Sainfoin.

It ſeems to be agreed, that this Graſs is a Native of *France*. By the *French* it is called *Sain*, becauſe they have found it to be wholeſome Food for Cattle; and *Foin*, I underſtand, ſignifies Hay. We are apt, *improperly*, to call it *Saintfoin*, as ſome Writers ſay. We alſo call it *French* Graſs. Everlaſting Graſs. And in ſome Countries, it is called *Sanctum Fœnum*, Holy Hay. In *England* it is generally known by the Name of *Saintfoin*, and by ſome it is called *Cock's-Head*.

In my Report of laſt Year I took no Notice of this Plant, neither did I intend it, until I ſhould have a Specimen of ſome Acres of it, both in the Drill and common Huſbandry; but the Appearance of a little Patch which I have, was ſuch laſt Spring, that I ſhould think myſelf deficient in Point of Duty to the Society and the Publick, if I were to omit the mentioning my Obſervations upon it this Year.

I confeſs this was my firſt Attempt with *Sainfoin*, and I find it to be a Graſs, which really ſeems to promiſe infinite Advantages to the Farmer, and therefore, I hope early mention of it, will induce ſome of them to begin the Culture of it.

I have ſeen it in ſome Parts of *England* under the common Huſbandry, but never obſerved it to make any extraordinary Figure; and in Truth, I had no Conception that it would make any great Appearance in the Drill Way; but indeed, had I not before had a very implicit Confidence in the Writings of Mr. *Tull*, the Appearance of my Sainfoin this Year, would certainly have brought me to believe in him and his Syſtem, for he is very warm in the Culture of it under the Drill Huſbandry.

On the 30th of *April*, 1764, I ſowed a little Sainfoin in Drills, with Intervals of three Feet. On the 17th of *May* it began to appear. A very dry Seaſon ſucceeded its coming up, which undoubtedly checked the Growth of it, as the Writers ſay it will; and probably, that was the Reaſon why mine made no Figure laſt Year, for it did not arrive to above ſix Inches high, but what there was ſtood the Winter very well; it ſhot forth early in the Spring, and on the 12th of *May* made an Appearance which ſurpriſed me, for it was on that Day 21 Inches high, and ſo thick, that it would have afforded in each Drill a full Load to a Scythe; and if I had been poſſeſſed of a Quantity of it, I ſhould have begun to cut it in *April*, to feed my Horſes and Black Cattle; an Object which would ſurely be of infinite Advantage to the Farmer, Paſture being very ſcarce at that Seaſon.

I did not cut this Crop in its ſappy State, but I let it ſtand to ripen the Seed, and therefore it was not cut till the 19th of *Auguſt*, when the Graſs of one Perch weighed 107 Pounds,

Pounds, which I apprehend is conſiderably leſs than it would have been, had it been cut when in full ſap; beſides which, if it be cut in *April* or *May*, it will afford another Crop, but in what Proportion I cannot yet determine, but I will aſcertain that Fact next Year. I muſt not omit to add, that when Sainfoin ſtands to ripen the Seed, that the Graſs becomes hard and pipey, and therefore, in that State, cannot be a good Paſture.

One hundred and ſeven Pounds multiplied by 160, as being the Number of Perches in an Acre, ſhews, that an Acre will produce at one Cutting 17,120 Pounds, which is 7 Tons, 12 Hundred 3 Quarters and 12 Pounds, and that in the dryeſt Summer that perhaps any Man living ever ſaw; how much greater might we not expect it to be in a favourable Seaſon? probably at the two Cuttings, twice the Quantity.

The Advantages which this Graſs ſeems to promiſe, are, the early Crop it affords, that it will continue many Years, that it is an excellent Food for all Sorts of Cattle, both as green Paſture and Hay; and that it will afford (as Writers of the firſt Credit ſay) infinitely more than any natural Paſture; ſome do not ſcruple to aſſert 20, 30 and forty Times as much, on any given Quantity of Land, as the ſame Kind will afford of natural Graſs.

Mr. *Tull* ſays, * a ſingle Plant under the Horſe-hoe will afford half a Pound of dry Hay. Now in the Way I have diſpoſed ſome Plants, as will appear preſently, a plantation Acre will hold 47040 Plants, which affording only half a Pound of Hay each, amounts to ten Tons and ten hundred upon an Acre, which is 52 and an half of our Loads. But M. *Diancourt* † deſcribes his Sanfoin at two Years old, as having

* p. 166. † Duhamel, p. 346.

having Heads of two Feet Diameter, and that one Plant, not the largeſt, produced 23 Ounces of Hay, which upon the ſame Number of Plants on an Acre, as already mentioned, would be a Produce of 30 Tons, 3 hundred and 3 Quarters, which would be above 150 of our Loads. So that we ſee by the Accounts theſe Gentlemen give, we may really expect for extraordinary Care, ten and fifteen Times a greater Produce in Sainfoin than we can obtain of natural Graſs. However, it appears that mine was in no Proportion to theirs in Point of Produce. Probably as the Plants become older, they will produce more, and I ſhall faithfully ſtate the Quantity.

Some Writers ſay, that Sainfoin will grow on any poor Ground; an Aſſertion, many are too apt to make, in other Particulars, becauſe I preſume they have not wrote from Practice. Growing is not ſufficient; when the Farmer ſows his Ground, his Plants ſhould proſper; and I have always found they will not do that upon poor Land, for which Reaſon I ſhall never ſow or plant Sainfoin, upon any other, than ſuch as ſhall be perfectly free from Weeds, well reduced, and rich; on ſuch Land, it will certainly turn to great Profit. It is univerſally agreed, that it will ſucceed to Admiration over a Quarry, it being urged, that the Roots penetrate into the Crevices of the Rocks. That which I have is upon a Quarry.

The ſucceſsful Culture of this Plant, ſeems to depend upon its being ſown alone, and not too thick, for where it is thin, it is really incredible to ſee what luxuriant, ſappy Branches it throws out, but if they are ſuffered to ſtand too long, they become hard and pipey. As the Roots deſcend very deep, dry Land is beſt ſuited to it, for if they approach Water, the Plants will die. For theſe Reaſons I have been induced to tranſplant ſome of it, firſt, that I might have the Plants at exact and regular Diſtances, and by trimming the Roots,

Roots, as I do the Lucerne and Burnet, to prevent their approaching any Lodgments of Water which may be under the Land. I tranſplanted them in Rows three Feet aſunder, and the Plants ſix Inches aſunder in the Rows. They are all alive and in Health.

As from what I have ſaid of this Plant, I hope to hear of ſome other Perſons undertaking the Culture of it, beſides myſelf; and that many Miſcarriages which have attended it, ariſes from the Seed being bad, which it is very apt to be, from the Care which is neceſſary in the ſaving of it not being obſerved. I ſhall therefore endeavour to enable others to know good Seed from bad.

Chooſe ſuch Seed as hath a bright Huſk, the Kernel full and plump, of a light grey or blue Colour, cut the Kernel acroſs the Middle with a ſharp Knife, and if it be of a greeniſh Colour, it may be ſafely relied upon as good Seed. But if the Huſk be of a dark Colour, the Kernel black, and when cut, that on the Inſide it is of a yellow Complexion, or mealy about the Navel, or that it is pitted in the Skin, it is certainly bad Seed. It has been heated, that is to ſay, ſome Degree of Fermentation has been excited in it, and cannot grow.

The Seed of Sainfoin, when dry and old, is exceeding good Food for Horſes, inſtead of Corn, but if given to them new, it will gripe them as new Peas do.

The Meadow Fox-Tail, now commonly called *Timothy* Graſs.

The Attention of the Publick, particularly in *England*, has been very much engaged for ſome Time paſt with this Graſs, which is introduced under a *new* Name, perhaps with a View,

a View, the more conveniently to anſwer the Purpoſe of the Venders of the Seed; for which I have given 14 Shillings a Gallon; and I am informed, that in *London*, it was ſold laſt Summer for *five Shillings* a Pint, which is 40 Shillings a Gallon.

It is named *Timothy* Graſs, inſtead of its being called by its proper Name for a ſtrange Reaſon, I think. Namely, "that one Mr. *Timothy Hanſon* carried the Seed of it from "*Virginia* to *North Carolina*, (a great Paſſage truly) "where it is now cultivated by the Inhabitants; others "inſiſt it was brought by Mr. *Timothy* to *Carolina* from "*New York*." We are told, that from this Circumſtance it received the Name of *Timothy*, and in order to poſſeſs it of this Name, and to make us believe it is not to be had in theſe Kingdoms, we are told it is a native of *America*; a Fact of which I have no Doubt, but it is alſo a Native of theſe Kingdoms, and will be found to abound more or leſs in almoſt every Meadow, particularly in moiſt Grounds. I have found it riſe ſpontaneouſly in many Parts of my Land, even in the Up-lands, after I had manured and improved them; and the true Name of this Graſs, is the *Meadow Fox-Tail*, ſo called I preſume, becauſe the Head or Ear of it reſembles a Fox's Tail in Shape.

Mr. *Stillingfleet*'s Obſervations upon this Graſs are clear, although ſhort, and therefore I ſhall beg Leave to tranſcribe what he ſays,

"This Graſs is found in great Plenty in our beſt Mea-"dows about *London*, and I believe makes very good Hay. "*Linnæus* ſays that it is a proper Graſs to ſow on "Grounds that have been drained.

"I am

" I am informed that the beſt Hay which comes to " *London* is from the Meadows where this Graſs abounds. " I ſaw this Spring a Meadow not far from *Hampſtead*, " which conſiſts of this Graſs chiefly.

" This Graſs is ſcarce in many Parts of *England*, parti- " cularly in *Herefordſhire*, *Berkſhire* and *Norfolk*. *

" It might be gathered at almoſt any Time of the " Year from Hay Ricks, as it does not ſhed its Seeds with- " out rubbing, which is the Caſe of but few Graſſes."

Mr. *Miller* juſt mentions this Graſs; and likewiſe another, which he calls the *Smaller Fox-Tail*, which I have alſo found upon my Land very frequently; it reſembles the firſt named in every Reſpect, except that it is much ſmaller.

Mr. *Stillingfleet* mentions a third Graſs of this Kind, which he calls the *Water Fox-Tail*. He ſays, " This is " alſo found in Meadows about Town, that are ſound, but " lie under Water in Winter, and perhaps might be pro- " per to ſow on ſuch Grounds."

This laſt I have not met with; and really, had many other Writers of the preſent Time mentioned this third Sort, I ſhould have concluded it to be the ſame as that firſt named; but I have ſo great a deference to, and reliance upon this Writer's Judgment, that I have no Doubt of there being a third Graſs of the Kind, which I ſhall

* I am not ſurprized at its being ſcarce in *Berkſhire* and *Norfolk*, becauſe the firſt is a Gravel, and the latter a Sand. But I wonder it abounds not in *Herefordſhire*, which is a deep wet Country.

I ſhall uſe my Endeavours to find. Mr. *Stillingfleet* has furniſhed us with an engraving of the firſt, but not of the *Water Fox-Tail.*

Several Correſpondents to the Muſeum Ruſticum * have wrote upon the *Meadow Fox-Tail* Graſs, under the Title of *Timothy*; ſome few of them very rationally; but upon the whole, the Letters are not ſo inſtructive as might be expected, and tend principally to diſpute about Trifles, and to furniſh Panegyric upon Individuals; and as few of the Letters ſeem to have ariſen from Experience, I ſhall omit the taking further Notice of them.

I have, during the two paſt Summers, collected by Hand, of the native Seed. I have bought of that which was ſold in *Dublin*, and ſaid to come from *America*. A Noble Lord, who is a Member of the Society, received a preſent of this Seed from *America*. He did me the Honour to give me ſome of it. With this, and that which I bought, I have compared that which I collected; and I find them all to be exactly the ſame.

Where the Graſs riſes in Ground, which is in good Condition, and in Tillage, I obſerve, that very early in the Spring, it affords a very luxuriant and fine Paſture, of which all Sorts of Cattle are very fond; but when the Graſs riſes ſo high, as that the Seed is approaching to maturity, it is exceedingly coarſe, and I think muſt make very bad Hay; but if it be ſown on rich Ground, and ſhall not be ſuffered to ſtand longer, than juſt for the Heads or Ears to unſheath from the Leaves or Blades, which they do in the ſame Manner as Wheat, I have no Doubt but it will make good Hay, and that it will afford an heavy Crop.

It

* Vol. I. p. 233. Vol. 2. p. 60. p. 160. Vol. 4. p. 181. p. 243. p. 301.

It is urged as a Recommendation of this Graſs, that it will, ſome ſay in three Weeks, form a Sod, equal to Meadow of many Years ſtanding; and that it will, on the deepeſt Swamp or Bog in a ſhort Time make a Sod, which will bear Horſes and Waggons. I have had no Experience of this, and do confeſs, I ſhould not care to venture my Cattle and Carriages upon ſuch a Surface, unleſs I had before drained the Swamp or Bog; with that Precaution, I have no Doubt but the Meadow Fox-Tail Graſs will make ſound Meadow; as many other natural Graſſes will do under proper Care. Yet, I muſt not omit to obſerve, that this Graſs appears to be better ſuited to the Improvement of moiſt low Grounds, than the generality of Graſſes, and would certainly be very uſeful upon *drained* and *improved* Bogs.

Laſt Spring I ſowed of the Seed I collected, of that which I brought, and of that which was given me, (indeed it is not wet Ground) and all the Seeds came up, but it made no Figure at all: I hope next Spring it will come forward. Perhaps had it been ſown in moiſt Ground, it might have ſucceeded better, for the uncommon Drought of the paſt Summer muſt have been very injurious to it.

I have preſerved an Acre of good moiſt Ground, which I intend to ſow in the Spring with the Seed of this Graſs.

In my Report of laſt Year, page 99, I mentioned my having collected by Hand, ſmall Quantities of the Seeds of various Graſſes. During the paſt Summer I collected more; indeed, not out of my Meadows, for they ſhared the ſame Fate of my Neighbours from the great Drought, and therefore afforded no Graſs in Luxuriance to collect Seed from. But ſome Ground which I had prepared the Year before, for my ſmall Experiments of ſcarce Graſſes and other little Things, threw up laſt Spring ſuch a Variety of luxuriant Tuſſocks of natural Graſſes, that I could not

withſtand the Temptation of letting them remain to perfect their Seeds, which they did to the great Diſgrace of my Nurſery, for it is become quite a Wilderneſs. However, from thence I collected in ſmall Quantities, great Variety of Seeds. The Year before, where ever I ſaw in the Spring a luxuriant Tuſſock of natural Graſs in my Fields, I took it up, and tranſplanted it into my little Nurſery: From theſe I alſo collected various Seeds.

Thoſe I collected in 1764, I ſowed laſt Spring, but the exceeding long Drought which followed their firſt Appearance, deſtroyed moſt of them, thoſe which ſurvived it I hope will come forward in the Spring, amongſt which the great Meadow Graſs, ſeems to be of ſuch a Kind, that I have great Expectations from it.—It is not to be wondered that theſe Graſſes failed, when I ſowed 60 Acres of Clover and Trefoil, all which I loſt alſo.

However, diſcouraging as this Year has been to me, from a Perſeverance in theſe Purſuits, I hope we ſhall be able, not only to aſcertain which are the beſt natural Graſſes, but that in Time we ſhall be able to procure the Seeds of ſuch in Quantity, which would be a very capital Improvement in Huſbandry, good Seeds of the common Graſſes not being to be obtained. So ſenſible are the Gentlemen of the Society in *London*, for the Encouragement of Agriculture, *&c.* of this, that they have offered Premiums for collecting the Seeds of the beſt Graſſes by Hand, and for propagating them carefully in Drills, in Order to have them pure and unmixed.

My Wiſh is, that we ſhould be full as early in this Improvement as they are; indeed I began it before them, altho' my Succeſs has not yet been very great. It is an Object which has dwelt upon my Mind for ſome Years. And I find we have the ſame Graſſes in *Ireland*, which they have in *England*; I having ſent thoſe I could collect

here

here to a very ingenious Gentleman there; and perhaps in the rich Lands of *Munſter*, ſome which they have not, but I have not been ſo happy as to ſee thoſe Lands yet.

The Strawberry Trefoil mentioned in my Report of laſt Year, and which afforded ſuch an abundant Crop, made no Figure at all this Year; it produced a little Seed, but by the Drought and Heat, the few Leaves and ſmaller Branches fell into Duſt as the Clover did. I ſowed a little more in the Spring, but it did no more than juſt come up.

Parſley.

Mr. *Miller* ſays Parſley is a ſovereign Remedy to preſerve Sheep from the Rot; a Fact, of which I have had no Experience; but if it will have that Effect, it is certainly worth the Farmer's Attention, and as it is a luxuriant Plant, I ſhould conceive it muſt afford a plentiful Paſture. How far it may agree with Cattle I cannot from Experience determine, but I have this Moment given it to ſome of my Cows and Horſes, and they all eat it greedily. I conſider it as promiſing ſome Advantages, and therefore intend to introduce it into the Field under the new Huſbandry, as ſoon as I can raiſe my own Seed.

I ſowed a few Perches of it in Drills on the firſt of laſt *April*, it was a great while before it came up, and made no Figure all the Summer, on Account of the great Drought I ſuppoſe, but it is now the 7th of *January*, about a Foot high.

Another View I have in the Culture of this Plant is, that I have a Notion it would be a uſeful Paſture for Horſes and Black Cattle, when in Fevers; for it is a great Diuretick, and conſequently would promote a plentiful Diſcharge of Urine, at the ſame Time that I ſhould ſuppoſe it would nouriſh them. I conceive it would alſo be a good and ſpeedy Remedy, to relieve Horſes, when

they have the Strangury, a Diſorder to which they are very liable.

But for Black Cattle, when in Fevers, it ſeems the better calculated, becauſe I find in Practice, that purging is not to be uſed ſo freely with this Species of Animal, as with ſome others; they, almoſt always being in a lax State; and are very liable to a Variety of dangerous Looſeneſſes, which are frequently brought on by ignorant Perſons, who uſe ſtrong Purges, when the Cattle happen to be a little Coſtive, by which Means many are killed. Theſe Conſiderations I hope will induce others to attempt the Culture of Parſley.

As I have mentioned the Subject of Looſeneſſes in Black Cattle, the Reader may perhaps expect me to explain that Diſeaſe, and the moſt effectual Remedies.

When Purges are neceſſary, they ſhould be of the moſt gentle Nature; ſuch as Manna, Lenitive Electuary, a little ſweet Wort, or Malt Maſh: and even theſe ſhould be uſed ſparingly. For when this Species of Animal is ſeized with a Purging (altho' Nature will do an infinite deal) yet they are often loſt for want of Care; for there are ſeveral Species of Purging which attend theſe Cattle, which for the moſt Part follow one another, tho' not always.—The firſt is the common Looſeneſs, which will ſometimes abate without any Remedy being uſed. The ſecond is attended with a Sharpneſs, ariſing from an Acidity in the Bowels, which will appear in the Excrement, by its being diſcoloured, and containing little Globules of Air. If this be not attended to, the third Stage of the Looſeneſs will follow, which will be bloody and is attended with great Danger, becauſe that will bring on the Fourth and laſt Stage of the Diſeaſe; which is, that the internal Coats of the Inteſtines will be excoriated, and will paſs in ſmall Flakes with the Stools, which will be attended with a ſymptomatick Fever, and Death will follow.

A Bullock

A Bullock of mine which had been worked very hard from laſt Spring till about two Months ago was ſeized with a violent Purging, which had been upon him ſeveral Days before I knew any Thing of it. When I ſaw him, he was very much reduced; but upon examining the Excrement, I found it had not arrived to the ſecond Stage of the Diſeaſe; and therefore I had Recourſe to the Uſe of *Diaſcordium* without Honey; in two Days I gave him four Ounces, when his Stools were become of the proper Conſiſtence, and I look'd upon him as being out of Danger. For his Drink I gave him a Sort of Oatmeal Gruel, which was no more than to mix about a Pint of Oatmeal with about three Gallons of warm Water, which was given him twice a Day. For his Food, he had old Hay, and three or four Sheaves of Oats a Day; the Oats being always firſt well dried before the Fire; he was well littered and kept warm; for ſome Days he mended, and eat his Food heartily. I left Home on the *Wedneſday*, with Orders to my Shepherd to continue the ſame Drink and Food to the Bullock. When I returned on *Saturday* Evening, I found this Fellow driving the Bullock from Water, and upon Enquiry, found he had driven him out to Water every Day during my Abſence, as if he was determined to deſtroy the Beaſt, or to ſee the utmoſt that could be done for his Relief.

The Purging was returned upon him, with more Violence than ever, and had arrived to the ſecond Stage of the Diſeaſe. I had Recourſe to the former Remedy, with an Addition of Chalk, with an Hope of abſorbing the Acid which I apprehended was in his Bowels, but the Purging remained obſtinate, and I was very apprehenſive of the third Stage of the Diſeaſe coming on. My *Diaſcordium* was exhauſted, and immediate Relief was neceſſary, and when I conſidered myſelf diſtreſſed for a Medicine, although only nine Miles from *Dublin*, it could not but occur to me, how much more other People muſt be ſo, who are not within

within ſome Days Journey of the Medicine, even if they knew the Uſe of it, and therefore I wiſhed to hit upon ſomething which might be within the immediate Reach of every Farmer, as a Remedy for this Diſeaſe.

I ordered the Shepherd to cut an Arm full of ſmall Oak Boughs, and then to take off the Bark; a Pound of this Bark was put into three Quarts of Water with an Ounce of Cinnamon, and boiled until it was reduced to three Pints. A Pint of this Decoction with two Ounces of powdered Chalk was given to the Bullock that Night, next Morning the ſame Doſe, towards the Evening his Purging abated, at Night I gave him half the Doſe, and next Morning repeated it. That Day his Stools became of the proper Conſiſtence. The poor Beaſt was as hollow as a Drum, and reduced to a lower State of Poverty than ever I ſaw any Animal, and he was moſt exceedingly Hide bound, for which Reaſon, in two or three Days after the ſecond Purging was ſtopped, I had him bled. The Oatmeal Gruel was reſumed for his Drink, and the Oats and Hay continued as before, and now and then a warm Maſh of Bran was given him, with a ſmall Handful of Salt, with an Hope of abating the Adheſion of his Skin. My neceſſary Buſineſs required my being abroad for ſome Days after this, and how my Patient was treated I cannot ſay, but from the former Conduct I have Reaſon to believe bad enough, for whilſt I was from Home, he died.

However, if the Remedy which I made Uſe of for the ſecond Stage of the Diſeaſe, ſhall be of any Uſe to the Publick, I ſhall not repine at the Loſs of my Bullock; but I recommend the Chalk not to be omitted, for that, in its Paſſage through the Bowels, abſorbs and carries away with it, the offending Matter, and it may be ſafely uſed in greater Quantities than I uſed it.*

* Since this was wrote, *i. e.* in *January* laſt, I have cured a Bullock with one Quart of this Medicine, altho' he was very ill, and much reduced.

On

On the Improvement of Meadow Land.

The Improvement of Meadow Land is well known to be an Object of great Importance, the general Practice of effecting which, is by carting Dung upon it; yet that does not anſwer all the Purpoſes, for Moſs is a great Enemy to Meadows, and Dung does not always deſtroy it. Beſides, really where the Meadows of a Farm are to devour all the Dung which the Farmer can make, he will make but a poor Figure with his Tillage, unleſs he happens to be poſſeſſed of natural Manures, which ſeem to abound indeed more in this Kingdom, than any other Country that I know of.

Notwithſtanding that natural Advantage, yet I hope we ſhall be able to ſhew a Method which ſhall effect all theſe Purpoſes, at the ſame Time that the Plow Land ſhall be brought to the higheſt State of Improvement; even ſo as to make choice Meadow, if the Occupier be diſpoſed to lay it down for that Purpoſe.

And the Propenſity of the Land Holders of this Kingdom, tending ſo much to the keeping Sheep, renders it a Method more eligible to the Practice of this Country, than to many Parts of *England*, where only a few Sheep are kept.

It may be remembered, that in my Report of laſt Year, it appeared I was well provided with very plentiful and extenſive Crops of Turneps and Cabbages. In the Month of *October* I bought upwards of two hundred Sheep, with an Intention to feed them with my Turneps, *&c.* for the Spring Markets; but not upon the Ground on which the Plants grew, for many Reaſons; for when fat Sheep are turned upon plowed Land to feed on Turneps, the Gravel and Dirt is very apt to lame them, and when they are lame, they

they cannot keep their Fleſh, much leſs thrive; beſides, they dirty their Wool, and do not appear ſo well in the Market; and when they are turned into the Turnep Field, they waſte very near as much as they eat, which is ſurely a double Conſumption of the Paſture.

I drew my Turneps and laid them upon my Meadow, beginning on one Side of the Field, and laying them regularly from End to End, 15 or 20 Feet broad; to this Place all the Sheep will immediately reſort, ſo that they are all in a Line: By the Time they have eat the Turneps or Cabbages, which ever they ſhall be, that Piece of the Field will be covered with Sheeps Dung, and thoroughly wet with their Urine, which enables their Feet to cut the Ground, and tread the Dung into it; by theſe Means the Ground becomes black here. In this Manner, from Day to Day, I go over a Meadow, in which there ſtands alſo Sheep Racks with Hay in them; they are all ſet in the Beginning at one End of the Field, 15 or 20 Feet aſunder, and every Day are wheeled (for they ſhould always be upon Wheels) one or two Perch ſtrait on, towards the other End of the Field. When they arrive there, they are then placed upon freſh Ground, and in the ſame Manner wheeled back again. Thus we ſee the Dung and Urine of the Sheep is regularly ſpread upon the Meadow, when they eat the Hay, and the Seeds which drop from the Hay are regularly ſcattered about, and which the Sheep tread into the Ground.

But I muſt not omit to add, that without a Maſter's Attention now and then, this Regularity will be omitted, the Idleneſs of Servants will let the Racks ſtand in one Place for a Month; and they will throw Loads of Turneps down in a Heap, and leave them in that Manner, when they will preſently begin to ferment, and then the Sheep will not eat them.

But

But before I begin this Proceſs in a Field, it is with Gratefulneſs to the ingenious M. *De Chateau Vieux*, that I introduce an Inſtrument of his, which he calls his three-coultered Plough. That he may have the entire Merit of this Inſtrument, and for my own Credit, I cannot attempt to deſcribe its Uſes in clearer Terms than he has done, and therefore I ſhall make Uſe of his Words, as tranſlated by Mr. *Mills*. Page 379.

" The Advantage which Plants receive from Dung " ſpread upon the Surface of the Ground, ariſes from the " rich Particles of the Dung being as it were filtrated " through that Surface, and carried down into the Earth, " by Rain or the melting of the Snow ; but many of theſe " Particles are undoubtedly loſt, and never reach the Roots " of the Plants."

" M. *De Chateau Vieux*, ſenſible of this Inconvenience, " particularly with reſpect to Graſs Lands ; rightly con- " cluded, that the Dung would have a much greater Effect, " if only juſt the Surface of the Meadow could be cut, and " ſome of the internal Parts of the Earth laid open, ſo that " the enriching Particles of the Dung may more immedi- " ately reach the Roots of the Graſs."

" He has ſucceeded admirably in this important Im- " provement, by Means of his three-coultered Plough. In " *November* or *December*, the whole Surface muſt be cut " with that Plough into Slips of three Inches Breadth, " which is the Diſtance between each of the Coulters. " This will have two Effects ; firſt, the Coulters will tear " up great Part of the Moſs with which all old Paſtures " are infected, and gradually deſtroy it. Secondly, the " Coulters piercing into the Earth five or ſix Inches deep, " cut the Extremities of many of the Roots of the Graſs,

" and thoſe cut or broken Roots afterwards produce new " ones, which give freſh Strength and Vigour to the " Plants, and as it were, renew and make them young " again."

" This Diviſion of the Surface of the Ground, will be " very beneficial to the Meadows. If the following Year " proves wet, it will greatly favour the Production of new " Roots."

" To render this Improvement ſtill more perfect, as " ſoon as the whole Surface of the Meadow is cut, Dung " muſt be carried on, and ſpread as ſoon as poſſible. The " ſmaller the Dung is broken, the more uſeful it will be; " becauſe the ſmall Particles will be carried by the Rain " into the Traces which the Plough has cut, and give ſur- " priſing Strength to the Plants."

" This Method of repairing and improving poor or " worn out Meadows and paſture Grounds, does not re- " quire any great Quantity of Dung; one Load will go as " far in this Practice, as three would in the common Way, " and be much more beneficial to the Graſs. M. *De Cha-* " *teau Vieux* has tried it for ſome Years, with all the Suc- " ceſs he could deſire. This Graſs thus improved, has al- " ways been very thick and long, and has yielded him plen- " tiful Crops of Hay, when Fodder has been extremely " ſcarce every where elſe. In his Opinion, one Arpent * " thus cultivated, will produce as much Graſs, as ten in " the common Way."

With great Deference to the Author of this Inſtrument, I venture to give it another Name. He calls it a Plough, we

An Arpent contains 51691 Feet, which is very near an Acre and three Quaters of a Rood *Engliſh* Meaſure.

we generally underſtand by a Plough, an Inſtrument which operates like a Wedge and turns a Sod, and ſo I find many Perſons have underſtood, when this has been mentioned as a Plough. Now as the Inſtrument really does no more than ſcore or ſcarify the Meadow in Lines, I venture to call it the Scarificator for Meadow Land.

I imported one of theſe Inſtruments, but directed it to have five Coulters inſtead of three, and Wheels behind. The Inſtrument has been uſed a great deal, but it is really ſo weakly put together, particularly iu the Handles, that it is not equal to very ſtrong Work; the one which I have had the Honour to preſent to the Society, if compared with the one I imported, and the engraving of the Original, I flatter myſelf it will appear to be improved.

The Words of M. *De Chateau Vieux* ſhew how I uſe the Inſtrument, and how much more effectually the Dung and Urine of the Sheep muſt enter the Soil, after the Operation, than could be without the Uſe of this Inſtrument. It will alſo plainly appear how much more liable to be deſtroyed the Moſs muſt be after the Operation, by the Feet of the Sheep, than it would be if this Inſtrument was not uſed.

The Effect proved theſe Facts on my Meadows, which were ſo covered with Moſs, that the moſt delicate Perſon might have walked upon the Carpet of Moſs without Shoes, and I am ſure would have felt no Pain; and yet after theſe Operations, there was not the leaſt Appearance of it left upon two of my Meadows; a third I could not perfectly compleat, as from the exceſſive Rains we had, Water ſtood upon it very often.

By this Means I improved in one Winter five Acres of Meadow, and made good Meadow of ſeven Acres of poor paſture Ground which never had been Meadow be-

fore; I totally deſtroyed the Moſs, and fed my Shep clean and well.

A late Writer in this Country, recommends the Sheep being turned into the Turnep Field, according to the old ſlovenly Method, in which he introduces the common Practices of Sheep Barrs, (in *England* called Hurdles) Netting, *&c.* and that Men muſt dig up the Shells of the Turneps with Hooks, and the poor Sheep muſt eat all clean up before they are to be allowed a freſh Parcel; altho' the Shells muſt be in a State of Putrefaction, and ſtrongly infected with the Dung and Urine of the Sheep, to receive which they ſtand like *as* many Baſons upon the Ground.

Whoever likes this Practice will follow it, but I wiſh them to keep an Account of the various Expences, ſuch as breaking the Sheep Barrs, Decay of Nets, Workmen's Wages, *&c.* and I think they will be tired of the Practice, beſides which I could name many other Objections. Whereas my whole Expence of drawing my Turneps to above 200 Sheep, from the 1ſt Day of *December*, to the 9th Day of *March*, amounted to no more than 2*l.* 4*s.* 10*d.* ½, for which I improved in the Manner already deſcribed, 12 Acres of Land, which Improvement I think, is at leaſt worth 3*l.* an Acre. The only Inconvenience which I have found to ariſe from this Species of Improvement is, that the Herbage theſe Fields have thrown up all this Winter, is ſo ſweet, that no Fence which I can make will keep my Cattle out of them; I have ſeen them ſtand for Hours, hankering to get into theſe Fields, when they had, in all Appearance good Paſture in others.

I muſt not omit to obſerve upon the Article of Expence which I have ſtated, that if my Turneps had been ſown in the broad caſt Way, that the Expence of drawing them to Sheep, would have been three or four Times as much as it amounted to, as plainly appeared when I came to draw

my

my broad caſt Turneps that Winter, the Expence of which is included in the above Sum. It may be remembered they were only half an Acre.

The Land upon which the Turneps grew is now in very fine Condition, and did not my Purſuits in the experimental Way, require my keeping theſe Grounds in a Succeſſion of Tillage, I ſhould have laid them down for Meadows, as being very fit for the Purpoſe, which I hope, with what has been ſaid of the Meadow Land, fulfills what I propoſed when I entered upon this Subject.

During the paſt Summer I attempted another Method of extending yet further, this Method of improving Meadow Land.

I have made for the Purpoſe, a Parcel of Hurdles, (here called Sheep Barrs) of a Conſtruction for ſetting them eaſily and expeditiouſly, without their being ſo liable to be broke as they are by the uſual Manner of ſetting them. With theſe Hurdles I penned my Sheep upon the Meadow every Night, and every Day move the Hurdles to a freſh Spot, intending firſt to ſcarify the Ground, and to ſow Hay-Seed in the Sheepfold every Evening before the Sheep ſhould be drove in; but the Ground was ſo exceeding hard, that I could not ſcarify it, neither did the Urine of the Sheep wet the Ground ſufficiently, to enable their Feet to tread in the Graſs Seeds, ſo that I was obliged to omit both theſe Circumſtances. However, what Ground the Sheep was folded upon is much improved, and has a very different Appearance to the reſt. I do propoſe to extend this Summer Improvement of Meadow much further, for I propoſe to feed the Sheep with Lucerne, Sainfoin, &c. out of the Hay Racks, upon Meadow Land.

Expe-

Experiments on Barley.

As my Experiments on Barley laſt Year were by no Means concluſive, I promiſed myſelf the Pleaſure of being able to furniſh ſuch a Report of my Experiments on this Grain this Year, as might be concluſive and ſatisfactory. But in this Article I ſet out unfortunately, for the heavy Rains which we had in the Months of *March* and *April*, rendered the Land ſo exceedingly wet, that it was impoſſible to prepare it for ſowing ſo early as I wiſhed and intended.

The Ground having been well reduced the Year before, run together with the wet, and became as ſtrong as ever it was, which it may be remembered in my laſt Year's Report, I deſcribed to be the Nature of my Land. Indeed, I ought not to omit adding, that the drawing off my Turneps in the preceding Winter, had contributed a good deal to the Miſchief. Under theſe Circumſtances, I was obliged to plow the Ground twice, and to harrow it as often, and even then it was very rough.

On the third of *May* I ſowed five Acres with Barley in Drills on five Feet Ridges; half of it with Seed which I bought for four rowed Barley, but it was mixed as appeared afterwards, and the other Half I ſowed with *Engliſh* Barley. On the 5th and 7th we had fine gentle Rain, which brought the firſt named up pretty ſoon, but ſcarce any of the other came up at all. From the 7th of *May* to the 8th of *Auguſt* we had ſcarce any Rain, for Want of which, the Barley which came up was but very indifferent. On the 25th of *Auguſt* I reaped a Part of the beſt of it, which was defended from the South Sun by a little Avenue, which I believe was the Reaſon why it was better than the reſt. I thraſhed a Part of this by itſelf, and the

Produce

Produce was in the Proportion of 9 Barrels and ſix Stone to the Acre, to which, if we add the Saving of Seed by this Manner of ſowing, which was 11 Stone, I having ſown only at the Rate of five, the Produce will be equal to ten Barrels and one Stone in the common Huſbandry.

But from the two Acres and an half, my whole Produce was no more than 16 Barrels and nine Stone of ſaleable Corn, excluſive of the Toll in ſending it to Market; which is only at the Rate of 6 Barrels 9 Stone 2 Pound and 12 Ounces to an Acre. If we add the 11 Stone ſaved in the Seeding, it will be equal to 7 Barrels 4 Stone 2 Pounds 12 Ounces, in the common Huſbandry; more I am perſuaded, than many Acres in the Kingdom produced this Year; but were I never to have a better Crop, I ſhould wiſh never to ſow Barley again.

It will be ſeen, that from theſe Experiments no Judgment can be formed of the Drill Culture of Barley, ſince the Crops of this Grain, have in general fail'd this Year, except in ſome few low, rich, moiſt Grounds.

I ſhould have ſown an Acre in this Field in the common Huſbandry, had I not been deſirous of keeping this Field all in good Condition for more extenſive Experiments on Wheat, than I have yet been able to introduce on my Farm.

Experiments on Wheat.

The Subject of Wheat I ſhould not enter upon till next Year, did I not think it neceſſary to inform the Society of the Steps I have taken, in Obedience to their Order of the 25th of *July* laſt; and alſo to gain a Year in laying ſome comparative Calculations before the Society, between the Drill and common Huſbandry, which will be in great

Meaſure

Meaſure ſupported by the Experiments of another Gentleman, and which will appear in their proper Place.

The Field on which my Barley grew, I intended for drilled Wheat, but as a good deal of the Barley was ſhed, I was obliged to plow the Ground and harrow it down, in order to let it lie till the ſhed Barley ſhould come up, and then to plow it again, which I hope totally deſtroyed the Barley. Notwithſtanding this Delay, I ſowed the following Experiments as inſtructed by the Society, on the 5th of *October*.

Plowing the whole Piece on which the Barley grew being five Acres, took ten Ploughs. Some of the Cattle were Horſes and ſome Bullocks; however, I ſhall value the Labour of them all at 12*d.* a piece one with another, which will therefore amount to 40 Shillings; the Wages of the Workmen amounted to 15 Shillings and 3 Pence, Wages of Men being at different Rates with me till the 29th of *September*, and this Work was done before that Time. Harrowing down the five Acres took eight Cattle and two Men; Cattle 8 Shillings, two Men 1*s.* and 4*d.* Thus the whole amounted to 3*l.* 4*s.* and 7*d.* which is 12 Shillings and 11 Pence an Acre.

After the ſhed Barley came up, I plowed the Field again. One Acre in Ridges of five Feet Breadth; half an Acre more in the like Ridges, and another half Acre in Ridges of about 12 Feet broad; and the other three Acres in 5 Feet Ridges for the Drill Huſbandry. The whole Expence of this ſecond plowing, including the Cattle, was 2*l.* 11*s.* and 8*d.* which is 10 Shillings and 4 Pence an Acre.

On the 5th of *October* I ſowed theſe two Acres in Obedience to the Inſtructions I was honoured with from the Society

Society in the following Manner, and for which Purpoſe I had each Acre laid out diſtinctly by a Land Surveyor.

One Acre I drilled with red *Lammas* Wheat, two Drills on each Ridge ten Inches aſunder.* The Seed being ſmaller this Year than it would have been, had the Seaſon not been ſo dry, it run faſter out of the Drill Boxes, than larger Grain would have done, and therefore the Acre took 6 Stone and 3 Pounds; I otherwiſe ſhould have ſown only about 5 Stone.

The Expence of each Operation for this Acre was as follows.

The firſt plowing and harrowing 12*s.* and 11*d.* ſecond ploughing 10*s.* and 4*d.* Harrowing with the Drill Harrows, a Man to guide them two Hours at 8*d.* a Day, 1*d.* ½, a Boy driving two Hours at 6*d.* a Day, 1*d.* one Horſe two Hours at 12*d.* a Day 2*d.* Drilling the Corn, one Man two Hours and twenty Minutes at 8*d.* a Day 2*d.* a boy driving the ſame Time at 6*d.* a Day 1*d.* ½, two Horſes the ſame Time at 12*d.* a Day each, 5*d.* ½. On the 20th of *November* I Horſe-hoed this Acre, by taking the Clay off each Side of every Ridge within about three Inches of the Corn. A Man and Boy four Hours and an half 7*d*, two Horſes ſame Time 1*s.*

The Acre which was to be ſown in the common Huſbandry, I divided into two Experiments; half of it I ſowed under the Plough, and the other half under the Harrow. The Quantity of Seed and Operations were as follows.

The half Acre under the Plough I ſowed with ten Stone of Seed, as being the Quantity always allowed by the Farmer. Firſt plowing and harrowing 6*s.* and 5*d.* ½. Second plowing, which is called ſtretching, 5*s.* and 2*d.* A Man ſowing the Seed four Hours and thirteen Minutes at 8*d.* a

* That is the Diſtance which I make my Drill Ploughs to ſow.

Day 3*d.* Plowing in the Seed, a Man five Hours and eighteen Minutes 4*d.* a Boy driving the ſame Time, 3*d.* four Horſes the ſame Time, 2*s.* Another Plough to raiſe the Huntings as it is uſually called, *i. e.* to raiſe the laſt Sod and clean up the Furrows. One Man one Hour and twenty Minutes, 1*d.* a Boy the ſame Time, ½*d.* three Horſes (this is one leſs than is common) the ſame Time, 5*d.* amounting in all to 3*s.* and 4*d.* ½.

Here we ſee the Operation of ſowing this half Acre, coſt only at the Rate of 6*s.* and 9*d.* an Acre.

I am under an indiſpenſable Neceſſity of ſtating Facts as they ariſe, and therefore I have ſtated the above Account exactly as it was; but I believe no Man will be able to ſow twenty or thirty Acres of Wheat unedr the Plough at the ſame proportionable Expence. The Cuſtom is to ſend a Barrel of Wheat into the Field with two Ploughs, which is to ſow an Acre of Land, and that is the uſual Day's Work for two Ploughs, in the general Courſe of Buſineſs. Let us ſee then what the Expence will amount to under the like Charges for Men and Cattle. Eight Cattle will be 8*s.* two Plowmen 1*s.* and 4*d.* two Drivers 1*s.* and the Seeds-man 8*d.* which in all amounts to 11*s.* a Difference which will be very conſiderable upon a large Quanty of Land. And altho' I compleated the above half Acre at the Rate of 6*s* and 9*d.* an Acre, yet I cannot in the general Courſe of Buſineſs plow more than half an Acre a Day with one Plough.

Doubtleſs it will be obſerved, that I have ſtated the Time to a Minute which every Operation took in ſowing the half Acre and Acre already mentioned, and therefore it will be concluded that a Watch was kept in the Field, and conſequently, that the Workmen were not ſuffered to ſtop; beſides which, the Evening was approaching, and I was determined to have theſe two Acres ſown in one Day,

and

and therefore the Cattle were ſo hardly preſſed as to be very much fatigued.

The half Acre which I ſowed under the Harrow took 8 Stone and one Pound of Seed. I intended to ſow only at the Rate of 15 Stone, as leſs Seed will do in this Manner of ſowing than under the Plow, becauſe it is not ſo liable to be buried. The firſt plowing and harrowing, 6*s.* and 5*d.* ½, ſecond ploughing 5*s.* and 2*d.* a Man ſowing the Seed, forty Minutes, 1*d.* harrowing in the Seed, a Man one Hour and fifty Minutes, 1*d.* ½. four Horſes the ſame Time 5*d.* plowing up the Furrows fifty five Minutes, two Men 2*d.* three Horſes 4*d.* amounting in all to 1*s.* and 1*d.* ½.

Here I have alſo ſtated the exact Time which the ſowing this half Acre conſumed. But the Diſpatch and *proper* Execution of this Kind of ſowing, depends entirely upon the Land being well prepared; and when it is ſo, one Stroke or Paſſage of an Harrow will lay the Ground as neat as a Garden, whereas, when the Land is not reduced, the Harrow cannot compleat the Work, but by frequently being drawn over the Ground, the Cattle are conſolidating of it, to the irreparable Injury of the Crop.

Notwithſtanding it appears that I ſowed this half Acre at the Rate of 2*s.* and 3*d.* an Acre, yet I find my general Expence of ſowing under the Harrow to be as follows. One Man will ſow three Acres in a Day, his Wages 8*d.* two Harrows with four Horſes in each, 8*s.* two Drivers, 1*s.* a Plowman to ſtrike the Furrows, 8*d.* a Driver 6*d.* three Horſes, 3*s.* amounting in all, for the three Acres, to 13*s.* and 10*d.* and this is ſuppoſing we can always have Drivers at 6*d.* whereas I am ſometimes obliged to give a Shilling, but generally have two or three driving at 8*d.* However, at the above Rate, we ſee ſowing under the Harrow amounts to 4*s.* and 7*d* ½ an Acre, inſtead of 2*s.*

and 3*d.* which was the proportionable Expence upon an Acre, by that which I have ſtated above; and even to do the Buſineſs at 4*s.* and 7*d.* ½, the Ground muſt be in very fine Order, the Cattle ſtrong, and the Men briſk.

I ſhall now take Notice of two capital Advantages that ariſes to this Acre under the common Huſbandry, which probably, never attended an Experiment of this Nature before, and to which the *Drill* Huſbandry contributed; namely, that this Field has been the two preceding Years under drilled Crops, which brought the Land to ſuch a State for receiving the Corn under the common Huſbandry, as perhaps no Acre of Land, of the *ſame Nature* was ever brought to before for Wheat. And ſecondly, that on Account of the Drill Culture, it does not ſtand charged with a Year's Rent for making it fallow, nor with the Expence of working a Fallow. Such Perſons as are poſſeſſed of Land, which conſiſts of a fine rich, deep Loam, ought to have it in fine Order, but it will be remembered, that this Field is naturally a poor, ſhallow, ſtiff, ſtoney Soil, upon a Lime-ſtone Quarry.

I ſhall now ſtate the Expences attending theſe two Acres of Corn as they really were, only that I ſhall reckon upon an Acre under the Plough, inſtead of half an Acre, and I ſhall ſtate it in the ſame Manner as to that under the Harrow, and then I ſhall ſtate the Expence as it ariſes in a general Courſe of Buſineſs.

The

The Expence as it aroſe on a Drilled Acre.

	l.	*s.*	*d.*
Firſt Ploughing and Harrowing.	0	12	11
Second Ploughing — —	0	10	4
Drill Harrowing — —	0	0	4½
Drilling the Corn — —	0	0	9
Seed Wheat 6 Stone and three Pounds	0	6	2½
	1	10	7
Winter Horſe-hoeing —	0	1	7
	1	12	2

The Expence on an Acre ſowed under the Plough as it aroſe.

	l.	*s.*	*d.*
Firſt Ploughing and Harrowing	0	12	11
Second Ploughing —	0	10	4
Sowing under the Plough —	0	6	9
Seed Wheat a Barrel — —	1	0	0
	2	10	0

The Expence on an Acre ſowed under the Harrow as it aroſe.

	l.	*s.*	*d.*
Firſt Ploughing and Harrowing	0	12	11
Second Ploughing — —	0	10	4
Sowing under the Harrow —	0	2	3
Seed Wheat 16 Stone 2 Pounds	0	16	2
	2	1	8

An

An Eſtimate of the Expence upon an Acre of Drilled Wheat, according to my general Work in that Way, after the firſt Year, ſuppoſing Wheat to have been the firſt Crop, after fallowing the Land.

	l.	*s.*	*d.*	
Ploughing the Land once		10	4	One Ploughing is all that is neceſſary after the firſt Year.
Harrowing with the Drill Harrows			6½	I never harrow leſs than 4 Acres, oftener 5, and can harrow 6 with one Horſe in a Day.
Sowing with the Drill Plough.		1	1	I never ſow leſs than 3 Acres, and have ſown five in a Day. 2 Horſes, Holder and Driver.
Seed, generally five Stone, but I ſhall charge ſix		6		
		17	11½	Total Expence of Sowing.
Winter Hoeing		1	7	I never hoe leſs than two Acres a Day. 2 Horſes, Holder and Driver.
Spring Hoeing with the Cultivator		1	1	To deepen the Soil. Not neceſſary in deep, rich Land. One Horſe, Holder and Driver.
Do. returning the Soil to the Corn		1	7	To make the Corn *tiller*. *i. e.* to increaſe its Branches. 2 Horſes, Holder and Driver.
Final Hoeing		1	1	To fill the Grain, and render it large. 1 Horſe, Holder and Driver.
One Year's Rent		18		
	2	1	3½	Total Expence upon an Acre of Drilled Wheat, excluſive of *Weeding* and *Reaping*.

Calcu-

Calculation of the Expence upon an Acre of Wheat, in the common Huſbandry, according to the general Courſe of Buſineſs.

				l.	*s.*	*d.*
Firſt Ploughing for Fallow, eight Horſes 8*s.* two Plowmen 1*s.* and 4*d.* two Drivers 1*s.*				0	10	4
Firſt Harrowing, 4 Horſes 4*s.* Driver 6*d.*				0	4	6
Second Ploughing				0	10	4
Second Harrowing				0	4	6
Third Ploughing, commonly called *Stretching*				0	10	4
Sowing the Seed.	Seedman	0	0 8			
	Eight Horſes	0	8 0			
	Two Ploughmen	0	1 4			
	Two Drivers	0	1 0	0	11	0
* Seed Wheat, one Barrel				1	0	0
Rent for the Year of Fallow				0	18	0
Do. for the Year the Crop is ſtanding upon the Land.				0	18	0
Total Expence upon an Acre in the common Huſbandry				5	7	0

In this Account it will appear that forty Shillings are charged for 40 Horſes, which it is plain are employed in the Culture of one Acre of Land in the common Huſbandry, a Charge which is never made by the Farmer, altho' he actually buys and maintains the Horſes for this Buſineſs.

In

* It is obſerved by ſome Gentlemen, that 16 and 18 Stone is now ſown by many Perſons, which will reduce the Calculation two or four Shillings. And I cannot but feel great Pleaſure to find, that my Arguments upon the Article of throwing away Seed, (See Hints upon Huſbandry) has been productive of even that much Saving to the Publick.

In my Buſineſs I am ſatisfied with the ploughing half an Acre a Day. I often hear People talk of ploughing three Quarters of an Acre, whoſe Cattle are neither ſo ſtrong nor ſo well fed as mine are. They may ſcratch the Ground, but I really plough it. Beſides, I have diſcovered a Trick which is pretty generally practiſed in ploughing, and was attempted to be introduced upon me, which is this. When a Plough-man enters his Plough, and paſſes acroſs the Field, he turns a Sod about a Foot broad, when he returns, he enters his Plough about four Feet diſtant from the Outſide of the Furrow he made before, and turns another Sod of the ſame Breadth, which when turned, juſt meets the former; thus four Feet of the Land appears to be ploughed, whereas the Fact is, that two Feet of it is not touched with the Plough at all *. My Men are obliged to open the Furrow both Ways, and then return the Sod, by which Means all the Ground is ploughed.

I ſhould not have entered ſo minutely into theſe different Calculations, were it not that I think it my Duty to State very minutely, a comparative View of the Drill and common Huſbandry, as I am now fairly entered upon the Practice of both, in which I ſhall be very accurate as to the Expence and Produce in every Particular.

From the preceeding Accounts, I ſhall now ſtate a comparative one of Profit and Loſs, upon theſe two Methods of Culture for fifteen Years, in which I ſhall allow very largely to the common Huſbandry, and the Produce of the Drill I ſhall take from ſome Experiments which will appear preſently.

It

* This Trick, with the Practice of juſt ſkinning the Ground, enables Hirelings to undertake, what they call Ploughing, at ſix and ſeven Shillings an Acre.

It ſhould be obſerved, that in the common Courſe of Tillage, the Land produces *two* Crops in three Years, and therefore, in comparative Calculations of this Kind, we muſt cloſe the Account always at the End of ſome third Year, in order to give the common Huſbandry its full Advantage, for that Reaſon I have named fifteen Years.

Dr. One Acre of Drilled Wheat for 15 Years.

	l.	*s.*	*d.*
First Ploughing for the Fallow	0	10	4
Harrowing the first Time	0	4	6
The second Ploughing	0	10	4
The third Ploughing	0	10	4
Harrowing the second Time	0	4	6
The fourth Ploughing	0	10	4
Rent for the Year of Fallow	0	18	0
	3	8	4

N. B. Thus it appears, that the Expence of preparing the Land the first Year is as much, as for the common Husbandry, perhaps that has led People to say, it is more expensive.

Seed Wheat, 6 Stone	0	6	0
Harrowing and sowing	0	1	7½
Horse-hoeing four Times during the Growth	0	5	4
Rent for the Year the Corn is standing	0	18	0
Total Expence on the first Crop in 2 Years	4	19	3½
To the *third* Year's Expence (*See p.* 54.)	2	1	3½
To the 4th Year's Expence	2	1	3½
To the 5th Year's Expence	2	1	3½
To the 6th Year's Expence	2	1	3½
To the 7th Year's Expence	2	1	3½
To the 8th Year's Expence	2	1	3½
To the 9th Year's Expence	2	1	3½
To the 10th Year's Expence	2	1	3½
To the 11th Year's Expence	2	1	3½
To the 12th Year's Expence	2	1	3½
To the 13th Year's Expence	2	1	3½
To the 14th Year's Expence	2	1	3½
To the 15th Year's Expence	2	1	3½
	31	16	1
To clear Profit in 15 Years	52	3	11
	84	0	0

Per

Per Contra. *Cr.*

				l.	*s.*	*d.*
By the Produce of Wheat,	2d. Year,	6	Barrels	6	0	0
By the Produce of Ditto,	3d. Year,	6	——	6	0	0
By the Produce of Ditto,	4th Year,	6	——	6	0	0
By the Produce of Ditto,	5th Year,	6	——	6	0	0
By the Produce of Ditto,	6th Year,	6	——	6	0	0
By the Produce of Ditto,	7th Year,	6	——	6	0	0
By the Produce of Ditto,	8th Year,	6	——	6	0	0
By the Produce of Ditto,	9th Year,	6	——	6	0	0
By the Produce of Ditto,	10th Year,	6	——	6	0	0
By the Produce of Ditto,	11th Year,	6	——	6	0	0
By the Produce of Ditto,	12th Year,	6	——	6	0	0
By the Produce of Ditto,	13th Year,	6	——	6	0	0
By the Produce of Ditto,	14th Year,	6	——	6	0	0
By the Produce of Ditto,	15th Year,	6	——	6	0	0
				84	0	0

Dr. One Acre of Wheat and Oats in the Common Husbandry, for 15 Years.

	l.	*s.*	*d.*
To the Expence on a Wheat Crop, 2d. Year* —	5	7	0
To the Expence on an Oat Crop, 3d. Year† —	2	5	2
To the Expence on a Wheat Crop, 5th Year —	5	7	0
To the Expence on an Oat Crop, 6th Year —	2	5	2
To the Expence on a Wheat Crop, 8th Year —	5	7	0
To the Expence on an Oat Crop, 9th Year —	2	5	2
To the Expence on a Wheat Crop, 11th Year —	5	7	0
To the Expence on an Oat Crop, 12th Year —	2	5	2
To the Expence on a Wheat Crop, 14th Year —	5	7	0
To the Expence on an Oat Crop, 15th Year —	2	5	2
	38	0	10
To clear Profit in 15 Years ——	27	19	2
	66	0	0
To clear Profit arising upon an Acre of Land in 15 Years, in the Drill Husbandry ——	52	3	11
To clear Profit arising upon an Acre of Land in 15 Years, in the Common Husbandry ——	27	19	2
Superior Profit on the Drilled Acre, in 15 Years	24	4	9

Which amounts to 1 *l.* 12 *s.* 3¾ *d. per Annum*, for 15 Years, on the Acre, *more* than by the Common Husbandry.

Per

* *See p.* 55. † *See p.* 72.

Per Contra. *Cr.*

				l.	*s.*	*d.*
By the Produce of Wheat,	9 Barrels,	at	20*s.*	9	0	0
By the Produce of Oats,	14 ——	at	6*s.*	4	4	0
By the Produce of Wheat,	9 ——	at	20*s.*	9	0	0
By the Produce of Oats,	14 ——	at	6*s.*	4	4	0
By the Produce of Wheat,	9 ——	at	20*s.*	9	0	0
By the Produce of Oats,	14 ——	at	6*s.*	4	4	0
By the Produce of Wheat,	9 ——	at	20*s.*	9	0	0
By the Produce of Oats,	14 ——	at	6*s.*	4	4	0
By the Produce of Wheat,	9 ——	at	20*s.*	9	0	0
By the Produce of Oats,	14 ——	at	6*s.*	4	4	0
				66	0	0

In the ſtating theſe two Accounts, I have not mentioned the Weeding or Reaping. The Expence of the firſt depends ſo much upon the Seaſon being wet or dry, as well as upon the State of the Land; and the other upon the Price of Wages in Harveſt; ſo that it is not eaſy to fix the Price.

We

We ſee, that upon the Face of the two laſt Accounts, there is a *ſuperior* Profit of 24*l.* 4*s.* 9*d.* on the Acre of Land under the Drill Huſbandry, in the Courſe of 15 Years, altho' the Crops are ſtated at three Barrels of Wheat leſs than the common Huſbandry, my Reaſon for which was; that the drill Huſbandry ſhould not be over-rated, and that the common Huſbandry ſhould be ſtated at the higheſt. I have alſo allowed 14 Barrels of Oats for a Crop to the common Huſbandry, which I believe every Farmer will conſider as a great Allowance, upon the general Produce; not but ſome particular Lands will produce more. But ſuch Lands would alſo produce more in the drill Huſbandry, than I have ſtated.

Let us now conſider a Farmer as having only 40 Acres of Tillage, and ſuppoſing he were to direct his Attention to the bringing it under the drill Culture, we ſee, that in 15 Years he would make 969*l.* 10*s.* more than he can in the common Huſbandry. — Is not this an Object of great Conſequence to him?

But let us yet put this Calculation in another Light, and we ſhall find, that the ſuperior Profit of a drilled Acre, amounting in 15 Years to 24*l.* 4*s.* 9*d.* will be a Sum ſufficient to purchaſe the Fee Simple of the Acre which ſhall be under the common Huſbandry, valuing the Rent of the Land at 18 Shillings an Acre, as I have done in the preceding Calculations, and that at 27 Years Purchaſe.

Thus it appears, that every 15 Years, the *Fee Simple*, of all the Tillage Lands of the Kingdom is loſt to the Community, by the common Courſe of Tillage.

Doubtleſs

Doubtleſs it will be obſerved, that in 15 Years, 14 Wheat Crops are obtained by the drill Culture. In the common Huſbandry, only 5 Wheat Crops are obtained, and 5 Oat Crops. The five other Years are not only loſt, but really are a very heavy Expence upon the Farmer.

The Oppoſers of the drill Huſbandry have generally urged, that it is more expenſive than the common Huſbandry, and that therefore it requires a greater Capital to conduct it.—The preceding Accounts (upon the Faithfulneſs of which my Credit ſhall ſtand) ſhews the firſt Aſſertion to be wrong, and conſequently the Concluſion drawn cannot ſtand. At the ſame Time I muſt add, that no Man, upon his beginning this Culture muſt expect, that he can conduct it upon ſuch low Terms as he will, after having had a little Practice, any more than he will know how to build upon the beſt Terms, when he firſt engages in it.

The Advocates for the drill Huſbandry have generally ſtated the Produce as being more than the common Huſbandry. Perhaps that very Circumſtance has been injurious to the Syſtem, for I am afraid, and indeed I do believe, that where the Land ſhall be equally prepared, and that the broad Caſt does not happen to lodge, which it is more liable to do than the drilled, that the common ſowing will produce the moſt for *one* Crop; but then every Wheat Crop conſumes two Years, whereas the drill Culture produces a Crop *every Year*, after the firſt.

Perhaps it may be urged as an Objection to the preceding Accounts, that the drill Culture will not produce *ſix Barrels*. I ſhall only anſwer that, by referring to ſome Experiments made this Year, and the Relation of which will appear preſently; and alſo requeſt of all Perſons who

chooſe

chooſe to be convinced that an Acre will produce much more than I have ſtated, provided they will not deny the Conviction of their own Eyes, to view my drilled Crops in the ſucceeding Summer, any Time from the Beginning of *May* till next Harveſt.

The Fact to be aſcertained by the two Acres of Ground already ſpoken of, ſeems to be, which Method will produce the moſt Corn. But in my Judgment, that is not the *capital* Point. The fair Queſtion ſeems to be, which of theſe two Acres will produce the *moſt Money* in any given Number of Years, upon a fair Account of Profit and Loſs. Regard always being had to the Point of giving the common Huſbandry two Crops for every Fallow. For the aſcertaining this Capital and Main Point, my Intention is, to keep the drilled Acre under Wheat for ſix or nine Years; and the other Acre under the common Courſe of Tillage, for the ſame Time as ſtated in the laſt general Account; and I ſhall carefully keep an Account of every particular, reſpecting each Acre.

For the preſent I ſhall conclude this Subject with only obſerving, that Wheat raiſed in the drill Huſbandry, will always bring a better Price than that raiſed on the *ſame Land* in the common Huſbandry; becauſe it will produce more Flour, and is much finer for Seed Corn. And that the Land under the drill Culture is always in high Condition to be laid down for Graſs, which that under the common Huſbandry is not.

Beſides the Experiments already mentioned, I have ſeveral others depending this Year: I have about 10 Acres more of Wheat in drills; ſome in the ſame Field; ſome with a light Manuring of Shell Marle. Some on the ſame Ground manured with the native Earth; and ſome ſown without any Manure at all. I have ſome Acres alſo ſown under the

the Harrow, in very poor Ground without Manure. Some Acres alſo in the ſame Field ſown under the Harrow, and then covered again with the Shovel: And an Acre in the ſame Field ſown with the drill Plough in the *flat* Way, at equal diſtant Rows. I have alſo ſome Experiments depending, where I have ſown ſingle Grains of Wheat at certain Diſtances in my Fields, and they are all very promiſing at preſent; but I ſhall defer the enlarging upon them 'till the next Year.

I have Oats now in Drills, which really make a beautiful Appearance. I have ſown Bear alſo in the ſame Manner, but I can form no Judgment of it, as the Mice have greatly injured it.

I now have the Pleaſure of introducing ſome Experiments, which were made by Gentlemen in differents Parts of the Country, and next Year I hope to have a Report of ſeveral others to communicate with my own. A Circumſtance which I flatter myſelf will afford Pleaſure to the Society; becauſe, if a Spirit of Emulation ariſes amongſt Gentlemen, to enter into experimental Huſbandry in different Parts of the Kingdom, it muſt neceſſarily follow, that experimental Knowledge will be diffuſed amongſt the Farmers, if we continue to purſue the Meaſures we are now taking.

Experiments in Agriculture,

By Richard Levinge, Eſq;

In the County of *Kildare*, in the Year 1765.

Experiments on Wheat.

THIS Gentleman did me the Honor to apply to me very ſoon after my ſettling here, reſpecting the neceſſary Inſtruments for the drill Huſbandry. It was not then in my Power to aſſiſt him in any other Way, than by ſending mine down to him, with a Workman to ſow his Wheat. Upon the Expectation of this, he began to prepare a Piece of Ground for the drill Huſbandry.

The Field he fixed upon contained five Acres and an half, Plantation Meaſure. The Soil a gravelly Loam, which had lain *two Years only*, under Paſture.

This Field he ploughed up for Fallow in the Month of *October*, 1763, including the firſt Ploughing, the Field was ploughed five Times. The laſt Ploughing it was laid in Ridges of five Feet Breadth.

On the 15th of *September*, 1764, I received Notice from this Gentleman, that the Land was ready for ſowing. I ſent down the Inſtruments with a proper Workman, and on the 17th and 18th of *September*, the whole Field was ſowed with red Lammas Wheat. The Quantity of Seed uſed, was 27 Stone, *i. e.* 378 Pounds, which is at the Rate

Rate of 4 Stone, 12 Pounds and 12 Ounces to the Acre, wanting in the whole 2 Ounces.——I had the Pleaſure of being preſent at the ſowing. The Wheat came up well.

On the 31ſt of *October* following it received the Winter Hoeing, which Operation took nine Men, at 6*d.* a Day, 4*s.* 6*d.* and nine Horſes at 12*d.*—9*s.* The ſecond, or Spring Hoeing, was done the latter End of *March*, which took the ſame Number of Men and Horſes, 13*s.* 6*d.* The third Hoeing was done the latter End of *May*. At this Time the Land was exceedingly hard and dry; and for that Reaſon, he ſays, it took double the Number of Men, and 15 Horſes, which amounts to 1*l.* 4*s* *. The fourth and laſt Hoeing was given the Beginning of *July*, which took only 8 Men and 4 Horſes, which amounts to 8*s.* The Weeding the whole Field coſt 1*l.* 4*s* †.

On the 9th of *Auguſt*, I was in this Field, when moſt of the Corn was reaped, and I ſuppoſe was finiſhed the next Day.

* The Spring Hoeing was done when the Land was wet, and conſequently the third Hoeing will be troubleſome.—— Ground ploughed when wet, will be hard when dry.

† Let it be obſerved, that this Field was immediately ſowed with Wheat after the Fallow: In which Caſe I have generally found the Weeds troubleſome, and therefore I recommend, when a Field is intended for the drill Culture of Corn, that the firſt Crop ſhould be Turneps in the drill Huſbandry, which will ſo effectually deſtroy the Weeds, that the Expence will be very trifling to weed the following Crops.—As a Proof of which, the Weeding my five Acres of drilled Barley this Year, which was upon the Turnep Ground, coſt me but 4 Pence.——This Field which was under drilled Wheat, abounds with a Weed, called *Dog-fennel*, which is very troubleſome.

Two Acres, one Rood and one Perch was meaſured off by itſelf and cut, which produced 14 Barrels, 12 Stone, and 5 Pounds; which is at the Rate of 6 Barrels, 9 Stone and 13 Pounds to the Acre, excluſive of ſome ſmall Fractions, which are not neceſſary to take Notice of.

Now let us add the Seed which was ſaved in the Sowing, to this Produce, which was 15 Stone, 1 Pound and 4 Ounces on each Acre, and the Crop will be exactly equal to one in the common Huſbandry, which ſhall produce 7 Barrels, 5 Stone and 4 Ounces.

By this Produce we ſee the drill Huſbandry is capable of producing a Crop which is by no Means to be deſpiſed, when we look back to the comparative Accounts which have been already ſtated.

There was no Manure uſed in this Field, and with only one Ploughing, it is again ſown under Wheat, Oats and Vetches, as Winter Crops in the drill Way.

When I was in this Field in *Auguſt*, I obſerved the Corn to be much finer in ſome Parts of the Field than other Parts, and therefore I meaſured two Perches in Length of one of the beſt Ridges, which I ſaw cut whilſt I ſtood in the Field. Mr. *Levinge*, at my Requeſt, was ſo kind as to have it thraſhed by itſelf, and it yielded nine Pounds of Corn.

Two Perches of a Ridge 5 Feet broad, contains 210 Feet, which being the Diviſor of 70560 (which are the Number of Feet in a Plantation Acre) the Anſwer will be 336; ſo that there is in an Acre 336 Times 210 Feet: And therefore we are to multiply 336 by 9, which ſhews that at the ſame Proportion, an Acre will produce 3024 Pounds,

Pounds, which is 10 Barrels and 16 Stone. To this we have a Right to add the Seed ſaved in ſowing, *i. e.* 15 Stone 1 Pound and 4 Ounces, which will make it equal to a Crop in the common Huſbandry, of 11 Barrels, 11 Stone, 1 Pound and 4 Ounces.

Now if two Perches will produce in this Proportion, why ſhould not a Quantity of Ground be made to do the ſame by proper Care and Attention? However, I hope theſe Crops will ſhew, that I have not over rated the Produce in the Drill Huſbandry, by ſtating it at 6 Barrels in the comparative Accounts.

Twelve Stone of the Wheat which grew upon this Field was ground in a *ſteel Mill*, and it produced four Stone of *fine* Flour, and five Stone of *coarſe*. I am not yet a Judge of what Proportion this may be above the Wheat raiſed in the common Culture, neither would it be a fair Experiment to compare it with the Wheat of other Land. But from my Experiments now depending, I will next Year compare the Produce of Flour from the Wheat raiſed in the three different Ways on the ſame Land. Mr. *Levinge*'s Servants being examined before me, ſay they never had ſuch a Produce of Meal before, nor any ſo good from the Wheat they uſed to have.

It is now neceſſary for me to ſtate the Account of this Gentleman's Expences, in managing this Field after the Wheat was ſown, becauſe it ſeems to exceed my Expence in this Culture.

The

The Expence of Horſe-hoeing and Weeding theſe five Acres and a half.

			l.	s.	d.
October 31.	*Firſt* Hoeing	9 Men 4*s.* and 6*d.*			
		9 Horſes 9*s.*	0	13	6
March.	*Second* Hoeing,	ſame Number	0	13	6
May.	*Third* Hoeing,	18 Men 9*s.*			
		15 Horſes 15*s.*	1	4	0
July.	*Fourth* Hoeing	8 Men 4*s.*			
		4 Horſes 4*s.*	0	8	0
			2	19	0
Weeding the whole Field			1	4	0
			4	3	0

By looking at the Accounts already ſtated, it will appear I charge only 1*s.* and 7*d.* an Acre for the firſt Hoeing, whereas by this Account the firſt Hoeing coſt 2*s.* and 5*d.* ½ (ſome ſmall Fraction beſides) ſo that it amounts to 10*d.* ½ an Acre more than mine; a Circumſtance not to be wondered at, when we conſider the Work as being quite *new* to the Men, and that it is of ſuch a Nature as they are generally *frightened* at, and conſider it as *romantick* and *ridiculous*. I hope the Reader will readily believe, that a little Practice will ſoon bring theſe Men to ſave this 10*d.* ½ an Acre; beſides, nothing but Practice has taught me to know how much ought to be horſehoed in a Day, and my Men now know their Day's Work as well as I do, and therefore know it muſt be done.

I ſhall now beg leave to ſtate this Expence in another Light. We ſee the whole Amount of the four Hoeings was 2*l.* 19*s.* for five Acres and an half, which is at the Rate

Rate of 10*s.* and 8*d.* ¾ an Acre, whereas mine amounts to only to 5*s.* and 4*d.* in the Account, Page 54. The ſame Reaſon which I have given above will account for this I think. But now let us draw a Concluſion from even this Gentleman's Expence. We ſee even in his firſt Attempt, the Expence of feeding the growing Crop and preparing the Land in Fallow for a ſucceeding Crop coſt *him* only 10*s.* 8*d.* ¾. It will coſt me only 5*s.* 4*d.* without the Circumſtance of being loaded with a dead Year's Rent; Whereas, when the common Farmer prepares an Acre of Land for Wheat, it will coſt him without Seed or the laſt Plowing, 2*l* 18*s.* an actual Difference upon him of 2*l.* 7*s.* 3*d.* ¼, even at this Gentleman's Expence, but when compared with mine, the Difference is 2*l.* 12*s.* 8*d.*

From this Circumſtauce, let us conſider what becomes of the Aſſertion made by the Oppoſers of this Culture, *viz.* that to conduct this Huſbandry, requires a greater Capital than the common Huſbandry, when it appears beyond Contradiction, that to prepare an Acre of Land for ſowing in the Drill Way, after the firſt Year, including Seed and Workmanſhip, will coſt only 17*s.* 11*d.* ½. See Page 54. whereas in the common Culture it will coſt 4*l.* 9*s.* See Page 55 *.

However I muſt ſay, that when I *firſt* read of the Drill Huſbandry, I looked upon it as being founded on *imaginary* Principles; but when I began to conſider it with *that Attention*, which I find *Prejudice* will not allow many People to give to its *Principles*, I was induced to attempt it. When I began

* It has been urged alſo, that the Expence of the Inſtruments is a great Objection to the Drill Culture; But that Expence will be very nearly anſwered in ſowing 20 Acres of Land, as 15 Barrels of Seed will be ſaved in ſowing that Quantity of Ground, which will almoſt pay for the Inſtruments; as five Stone it appears is ſufficient for an Acre in the Drill Way,

I began my *publick Experiments* here, I flattered myſelf that I was poſſeſſed of Power enough to prevent Mankind's diſcovering which I thought the *beſt* Huſbandry; but as I proceed, every Day's Practice proves to me, the ſuperior Advantages of the Drill Culture; and therefore I find it is to no Purpoſe my attempting to ſhew an Opinion of Impartiality; it would be *unjuſt* to the Publick, which I have the Hope of ſerving; and it would be *unjuſt* to the *Author* of the Syſtem.

Experiments on Oats.

By *Richard Levinge*, Eſq; in the Year 1765.

The Piece of Ground for ſowing theſe Oats upon, had been the Year before under Potatoes and drilled Turneps.

The Ground was ploughed in Ridges ſix Feet and an half broad.* On the 13th of *March* it was ſown with 13 Stone of Oats in Drills, two Drills on each Ridge.

The Quantity of Ground was 1 Acre, 2 Rood, and 32 Perches.

They were horſe-hoed for the firſt Time, on the 28th Day of *May*, which took *four* Men 2*s*. and *two* Horſes 2*s*.

Second Hoeing, the ſecond Week in *June*, which took the ſame Number of Men and Horſes.

Third Hoeing in *July*, which took *two* Men 1*s*. and *one* Horſe 1*s*.

Fourth Hoeing, in *July*, which took two Men and one Horſe 2*s*.

Weeding

* Theſe Ridges were wider than is neceſſary.

Weeding with *Dutch* Hoes, three Men 1*s*. 6*d*. Women weeding by Hand coſt 3*s*. 8*d*.

This Crop was reaped the latter End of *Auguſt*, and the Produce was 20 Barrels, which is at the Rate of 11 Barrels, 10 Stone, 9 Pounds, 14 Ounces to an Acre *.

This is a Crop which I think confirms yet farther the ſuperior Principles of the Drill Huſbandry; but now let us add the Seed ſaved in ſowing, to the actual Produce, in order to compare it with a Crop in the common Huſbandry. The Quantity of Oats uſed by the Farmer for ſowing an Acre of Ground, is two Barrels; the Quantity uſed for the above Crop, was 7 Stone, 8 Pounds and 14 Ounces to the Acre, ſo that the Quantity of Seed ſaved in the ſowing, is 1 Barrel, 6 Stone, 5 Pounds and 2 Ounces, which will make the above Produce ſtand thus;

	B.	*S.*	lb.	*Oz.*
Crop upon an Acre	11	10	9	14
Saved in the Seed	1	6	5	2
	13	3	1	0

which is exactly equal to a Crop of that Produce in the common Huſbandry. Now let it be remembered as the great Diſcouragement of the common Culture, that after producing ſuch a Crop of Oats, the Land ſhould be plowed to lie a Year fallow for Wheat; whereas the Land on which theſe Oats grew, is now under a flouriſhing Crop of Wheat in Drills, to prepare the Ground for the Reception of which, required but one Ploughing. Hence I think it plainly appears, that when the Farmer, in the Practice of the common Huſbandry has procured two Crops off his Land, that he has all his Work to begin again, as much as if it was

* A Barrel of Oats in *Ireland*, is 196 Pounds. *i. e.* 14 Stone.

the firſt Day he entered upon his Farm, whereas in the Drill Culture, it appears, that after taking off a Crop we have nothing to do, but to plough the Land once, and proceed to ſowing of it again.

If the Ridges, (which it may be remembered were 6 Feet ½ wide) had been only 5 Feet, which is wide enough, the Crop muſt have been conſiderably more.

I ſhall now ſtate the total Expence of managing this Field after the Crop was ſown.

		l.	*s.*	*d.*
May 28th.	*Firſt* Horſe-hoeing	0	4	0
June,	*Second* Hoeing	0	4	0
July,	*Third* Hoeing	0	2	0
July,	*Fourth* Hoeing	0	2	0
		0	12	0
	Weeding	0	5	2
		0	17	2

Here we ſee, that Horſe-hoeing this 1 Acre, 2 Roods, and 32 Perches four Times, coſt only 12*s.* which is about 7*s.* an Acre, whereas the Wheat appeared to have coſt 10*s.* 8*d.* ¾, ſo that we ſee a little Practice will reduce this Expence to what I have ſtated it at; for theſe Oats are hoed four Times, at 3*s.* 8*d.* ¾ an Acre leſs than the Wheat, and coſt only 1*s.* 8*d.* an Acre more than I have ſtated the Expence of Horſe-hoeing a Crop four Times.

I am

I am now to introduce the Experiments of another Gentleman as ſtated by himſelf, in a Letter which he did me the Favour to direct to me, before I had the Honour of his Acquaintance.

SIR,

I Have read your Book of Experiments in Agriculture with much Satisfaction, and think it both curious and uſeful; eſpecially as it is wrote with Preciſion of Circumſtances, ſo much wanted in all Authors, except Duhamel, and *our* Tull.

I find we have been engaged in the ſame Purſuit for ſome Years paſt, *i. e.* in making Experiments in the Drill Huſbandry; and in endeavouring to find out the beſt Winter and Spring Soils to ſupport Cattle with, till the artificial Graſſes, or at leaſt the natural Ones come in. As to the laſt, mere Accident prevented my going very far in trying different Sorts of them.

In a very hard Winter, I obſerved in my Garden a Plant in full Verdure above the Snow, when Turneps were buried a good Depth below it. On Enquiry I found it was Rape (I believe the *Engliſh* call it Cole). I tried Cows and Sheep with it, and found they devoured it with greater Eagerneſs than I had ever ſeen them eat any other Soil. This determined me to try it, and it has anſwered beyond my Expectations, for Cows and Sheep (eſpecially Ewes).

I have cultivated it ever ſince, as the beſt Plant for Winter and Spring Paſture, that had at that time come to my Knowledge.

I ſow the Seed about the Beginning of *July* on good Garden Ground in Drills, and tranſplant it on Ridges thrown up from a good Fallow at three Feet Diſtance the

Rows, and the Plants in the Rows about eight Inches Diſtance (which I believe is too near) in *Auguſt* to chuſe, when the Ground is moiſt with Rain. If it has a favourable Seaſon, about *Chriſtmas* it will be above two Feet high; but in *March*, when the Seed Branches have ſhot, near four Feet high.

I weighed a middling Plant in *March* 1753, it weighed *eight* Pounds. In 1754, a middling Plant weighed *ten* Pounds.

My Butter, from the Time the Cows began to get the Rape, was a rich yellow Colour, and had a particular Sweetneſs. And the Ewes and Lambs were in high Order.

It muſt be given to Cows with Caution, as it will *hove* them like Clover, if given in too great Quantities.

A Man will plant eight Yards of a Ridge in ſeven Minutes*.——This is all I can recollect in Relation to this valuable Plant; which for Quality, Quantity, and laſting, excels all others that I have experienced or obſerved.

As to Cabbage, the late Biſhop of *Elphin* and Secretary *Carter*, both aſſured me, they never had fatter or better taſted Beef than that they fed with Cabbage.—I know it will have the ſame Effect on Turkeys, having found a Poultry Walk planted with it, when I returned from *England*, where I left the Turkeys that Seaſon.

I once, at the Inſtance of a Friend, in a good Fallow for Wheat, run a deep Furrow from one End of the Field to

* At the ſame Proportion of Time which this Gentleman mentions, an Acre will take one Man 11 Days, 4 Hours and 20 Minutes, which at 8 *d.* a Day, amounts to near 7 *s.* 8 *d.*

to the other. Two Boys followed with Wheel-barrows, one with Cabbage Plants, and the other with Dung. The firſt placed the Roots of the Plants at the Bottom of the Furrow, leaning againſt the Earth thrown up out of it; the other Boy laid as much Dung on the Root as he could take up with both his Hands. The Plough in returning, earthed them up to the Neck. The Plants were at about a Foot diſtance. They all took, and had Heads of about eight Inches Diameter.——What Kind they were, I can't ſay.

As for drilling Wheat, when I was preparing my Ground here for Fruit and Kitchen Gardens, I laid out an *Iriſh* Acre which I burnt; laid on it about three common Tumbrils of Street Dirt, turned to Mold on a ſquare Perch, gave it three or four Ploughings and Harrowings.

The Beginning of *July*, I ſowed Turneps in ſingle Drills at 12 Feet diſtance. The Beginning of *September*, in the Middle of this Interval, I ſowed Wheat in double Drills, at eight Inches Partition. The Wheat was well ſoaked in Brine and Pigeons Dung Water, and ſifted Lime upon it, till each Grain was candied. Of ſuch Wheat the Acre took *ſeventeen* Quarts*.

I hoed and thinned the Turneps, which proved very good, and were from 8 to 12 Pounds a Root.

In Spring, obſerving the Weeds to come up thick, in the Intervals, I gave them a Digging. From this Time, the Wheat flouriſhed ſurprizingly; each Grain produced a great Tuft of dark green broad Leaves, ſo that a Friend who was walking with me ſaid, I was putting Flaggers upon him for Wheat. The Stalks grew to five Feet high, the Ears to ſix Inches long. I could not find a Root that had leſs than 30 Stalks; ſome had 65.

About

* Which is about 34 Pounds to the Acre.

About a Week before it was fit to reap, a great Storm ſhed a great deal of it; and Birds fell moſt unmercifully on it, ſo that the whole Ground was ſtrewed with Grain and Chaff. The Produce was *nine* Barrels of very fine clean Corn, the Barrel at four Buſhels of 42 Quarts. It was ripe about a Fortnight before I heard of any coming to *Dublin* Market *.

My drilled Wheat this Year, in ſingle Rows at three Feet diſtance, yielded ſomething leſs than *ſeven* Barrels an Acre, and ten Loads of Straw; reckoning the Load 25 Sheaves, of 20 Pounds weight each. But what was remarkable, the common little *Iriſh* Wheat produced better Corn than ſome red and white imported from *England*. A great deal of this Wheat was deſtroyed by Birds.

Oats drilled in the ſame Manner, at the Rate of 5 Pints to 120 Yards, yielded at the Rate of 16 Barrels an Acre. A great deal deſtroyed by Birds.

French

* Here we ſee, notwithſtanding the great Waſte, that the Produce was *nine* Barrels from an Acre, altho' only 34 Pounds of Seed ſown. The Seed ſaved in ſowing was 17 Stone and 8 Pounds, which being added to the Produce makes it equal to a Crop in the common Way of 9 Barrels, 17 Stone, 8 Pounds. Let it be further remarked, that theſe Drills were ſown 12 Feet aſunder, which ſeems to have been done for the Sake of having two Crops growing upon the Land at the ſame Time. But if the Ridges had been only ſix Feet wide, the Produce muſt have been double, *i. e.* 18 Barrels, but had they been but five, (which my Practice induces me to believe is wide enough) the Crop might probably have been one ſixth more, which would be 21 Barrels. But let it not be forgotten how very highly this Acre of Land was prepared.

French Wheat ſowed in the ſame Manner, at the Rate of a Quart to 120 Yards, yielded at the Rate of ten Barrels an Acre.

Potatoes planted *April* the 7th, in a Furrow, juſt as the Cabbage were, at one Foot diſtance, and covered with Dung, were dug the 20th of *September*, and yielded at the Rate of 86 Sacks to the Acre, of 280 Pounds Weight to the Sack. This Experiment I think deſerves Attention, as it ſaves Labour and Dung; and effectually dreſſes the Ground, for an immediate other Crop. Some of the Potatoes weighed 11 Ounces.

As for Lucerne, it really deſerves all the Encomiums and Trouble you have given yourſelf, in the particular Inſtructions you have given for the Raiſing it, which agree exactly with my Experience of it, which has been more or leſs for this 20 Years, both in ſowing in Drills and tranſplanting.

As ſoon as the Roots, which ſhoot very deep, come to Moiſture, the Plants begin to decline.

I ſowed ſome in my Garden in 1758, in order for tranſplanting next Year, but I went to *England*, where I ſtaid four Years. This Lucerne I tranſplanted in 1763, and but few of the Plants failed.——I cut it *five* Times this Year. The ſecond Time it weighed 2 Pounds and 14 Ounces the Yard ſquare, free from all Moiſture*; but good Lucerne the *ſecond* Year ſhould yield 3 Pounds and an

* Two Pounds and 14 Onces off a ſquare Yard, is in the Proportion of 10 Tons, 1 C. 1 Qr. to an Acre; which at four Cuttings would be 40 Tons, 5 C.—A fifth Cutting, which this Gentleman had, even *this Year*, will make the Produce 50 Tons, 6 C. 1 Qr. from an Acre.

an half to a ſquare Yard at each cutting, and I have frequently had it ſo *.

When I give it the firſt Tillage in the Spring, and that the Plough can come no nearer to the Rows, I puſh down the Earth with three pronged Spades into the Furrow, beat it fine, and then reſtore it to the Plants by the Plough.

I cut ſome drilled, and ſome in the random Way in *Auguſt*, both ſown the *April* before. The drilled weighed *one Pound and a Quarter*, the ſquare Yard; the other not half as much.

Thorough ſaved Hay made of it, is not above a Fifth of the Weight when it is cut †.

I once turned ſome Cows, ſome Sheep, and a Horſe, into a Field of drilled Lucerne and Sainfoin the latter End of *September*, when the Ground was very dry: It is hardly credible how ſuddenly they all improved in twenty four Hours, the Milk of the Cows was greatly improved in Quantity and Quality. The Sheep in ſome Time were very fat. The Horſe was ſurfeited when I put him in; in ten Days he was fat and ſleek, as a Horſe generally is after a ſalt Marſh.

I don't

* This Produce would be in the Proportion of 12 Tons and 5 Hundred Weight to an Acre; which at *four* Cuttings would be 49 Tons, and at *five* Cuttings, would be 61 Tons and 5 Hundred Weight in a Seaſon.

† Now if in the making Lucerne into Hay it waſtes *one fifth*, we ſee that at this laſt Proportion an Acre would make above 12 Tons of Hay, which would be 60 of our Loads.—Short, it is true of the Produce already deſcribed, Pages 34 and 35; but ſurely this Produce is ſuch a one as it is to be imagined would invite People to the careful Culture of this Plant.

I don't find any mention of Sainfoin in your Book. I can aſſure you it deſerves your Attention. The ſecond Year, a Yard ſquare of it will weigh *four* Pounds *; but there are but two *good* Cuttings of it in a Seaſon. I ſhould imagine it would do well on that Part of your Land, which you deſcribe as lying on a Lime Stone Quarry.

I tranſplanted ſome of it in 1763, which was ſown in 1758, at the ſame Time the Lucern mentioned above, but not one Plant lived.

My Land in dry Weather turns up as you deſcribe yours, in great Clods as big as my Head, which no Harrowing will reduce; but I have for that Purpoſe a Stone-fluted Roler, which, when it has paſſed over the Land, don't leave a Clod larger than a Walnut; and thoſe too ſo roughly dealt with, that they melt away next good Shower of Rain.

The greateſt Part of my Kitchen Garden Stuff I raiſe in Drills, and till it with the Plough: It anſwers very well, both as to ſaving Manure and Labour, and particularly in the Sweetneſs of the Products.

This is all I can recollect, or find Memorandums of. As I find it would be agreeable to you to have the Succeſs of ſuch Sort of Experiments communicated to you, I ſhall for the future be more obſervant, and take Memorandums

* A ſquare Yard producing *four* Pounds at one Cutting is in the Proportion of 14 Tons to an Acre, and if the ſecond Crop will produce the ſame, an Acre in a Seaſon will produce 28 Tons; which is very near *double* my Produce, but is far ſhort of that produced by the Gentlemen I named in Page 27.

of every Thing that I apprehend may be uſeful, which you may command with Pleaſure.

I propoſe, the firſt fair Morning, to have the Pleaſure of ſeeing you at *Laughlinſtown*. I long to entertain you on a Method I think I have hit upon of ſowing any Kind of Seed in Drills, at what Depth and in what Quantity you chooſe, with or without any powdered Manure, ſuch as Lime, Cockle-ſhells, *&c.* If it ſucceeds, I compute five Acres may be done with one Horſe in a Day. A common Car is not a more ſimple Inſtrument, nor more eaſily kept in Order.

I am, SIR,

Your very humble Servant,

Ariane, Nov. 8, 1765.

N. DONNELLON.

Beſides the Experiments of the two Gentlemen already mentioned, ſeveral have been made by *Francis Forſter*, Eſq; in the County of *Meath*, a Member of the Society; but as yet, I have not been favoured with his Report, but he is preparing of it, and as ſoon as I am favoured with it, I ſhall lay it before the Society.

I ſhall now cloſe my Report for this Year, with an Account of an Experiment on feeding Bees in the Winter without Honey or Sugar, and an Abridgment of my Kalender of the Weather from the firſt of *January*, 1765, to the laſt Day of *December*, both incluſive.

An

An Experiment on feeding Bees without Honey or Sugar in the Winter.

Take four or ſix Pounds of *Barley* Malt ſlightly ground, put it into a glazed Veſſel, and let about two Gallons of boiling Water be poured upon it, and thoroughly mixed; then cover it very cloſe with a Cloth, to keep in the Steam. Let it ſtand thus for twenty four Hours, when the Tincture muſt be ſtrained through an hair Sieve, and the Malt left in the Sieve to drain, without uſing any Preſſure to it; for if the Malt be preſſed, the Tincture will be too much loaded with the Malt Flour, which Practice hath ſhewn, will render the Food not ſo acceptable to the Bees.

When this Liquor is ſtrained off, let it be evaporated over a gentle Fire, 'till it is reduced to the Conſiſtence of Treacle. During the Evaporation, let Care be taken that it do not burn.

The firſt Time this Food was ever made, was about the Middle of laſt *September*, and my Children have given it to their Bees all this Winter, without any other Food, and the Bees appear to be very well, and eat the Food very greedily.

The Bees in the Hives, which are about Half full of Comb, eat three large Table Spoonfuls of this Food in two Days; but the Bees in one of the Hives which happens not to be Half full of Comb, eat more than any one of the others. This was the third Swarm from one Hive laſt Year.

It has been obſerved, that the Bees in the ſtrongeſt Hives have not eat ſo much during the Froſt as they did before.

But the Bees of the weak Hive always eat the Food up clean; we apprehend, becauſe the Comb appears to have no Honey in it.

If the Food by long keeping ſhould throw up upon its Surface any Appearance of whitiſh Scum, that is an Indication of an Effort to Fermentation; in that Caſe, let it be juſt boiled up, which will preſerve it.

It has been imagined, that this Food would grow ſour in the Combs and kill the Bees.—Our Bees have been fed with it ever ſince *September* laſt, *i. e.* ſix Months, and they are very well, and ſtill continue to eat this Food.

I confeſs I do not at preſent much underſtand the Treatment of Bees; but I do not apprehend they are employed in laying up Store in the Winter, but during that Seaſon I ſhould conceive them calculated by Nature to live upon the Proviſion they collect in the Summer:—And what ſeems to be a ſtrong Preſumption of this is, that it is poſitively aſſerted, that Birds and Chickens Fleſh is given them as a Winter Food, Flour and Water, Sweet-wort and Flour, Ale and Bread.——Now if a Kind of liquid Sugar (which this Food really reſembles) will turn ſour and kill the Bees, what Conſequences may we not expect from *putrid* Fleſh, the moſt offenſive of *all* Diſſolutions of natural Bodies, and yet animal Fleſh is ſaid to be an wholeſome and good Food for them.—Does not this ſeem to prove that the Bees do no more than *eat* in the Winter?—Are not all the other Articles named liable to turn ſour? I am ſure they are all fermentable Bodies, and it is univerſally known, that Fermentation is the Mother of Acidity.—And yet all theſe Articles are ſaid to be ſafely uſed for feeding Bees.

But now let us ſuppoſe the Bees do really make Lodgements of this or any other Food they can collect in the Winter,

Winter, we are to conſider, that a very ſmall Quantity of a fermentable Body will not proceed to Fermentation in the Winter, without ſome Degree of Heat being brought in Aid of it; and without Fermentation, it cannot become ſour. But Putrefaction will ſeize almoſt the ſmalleſt Particle of animal Fleſh; yet that is ſaid to be ſafely given to Bees.

I have lately been informed by a young Man, that his Father, who kept many Bees, uſed to give them Salt once or twice a Week in the Winter. I cannot conceive what this could be for, neither can the young Man tell me, but he aſſures me the Bees did eat the Salt.—Perhaps this may be ſome Improvement for thoſe Perſons who feed their Bees with Fleſh.

Flour is ſaid to be given to the Bees, and that they eat it; we have mixed Malt Flour and Wheat Flour with our Food, and then the Bees refuſed it ——Bees deal in Flowers, and therefore *Sweets* ſeem the beſt calculated for them. I think this Food approaches Sugar ſo nearly, that it muſt anſwer all the Purpoſes. It will coſt about 1½*d.* a Pint.

An

An Abridgment of my Kalendar of the Weather for the Year 1765.

	Rain, &c.	Fair.
January — — —	16	15 Days.
February — — — —	11	17
March — Storms, Snow, Sleet, Hail and Rain. — — — —	21	10
April — Storms, Hail, and Rain. — —	21	9
May — — — —	3	28
June — — — —	1	29
July — — — —	1	30
Auguſt — — —	7	24
September — — —	3	27
October — — —	10	21
November — — —	4	26
December — — —	4	27
	102	263

Fair Days —	263
Rain, &c. — —	102
	365

The Months of *March* and *April* having been ſo wet, rendered it impoſſible for the Farmer to ſow the Land in proper Time with the Spring Crops, which added to the exceeding long Drought which followed, as appears by the above Table, was the Reaſon why they failed: That threw the greater Conſumption of Bread Corn, upon Wheat, which conſequently raiſed the Price of it.

Aſtho'

Altho' it relates not to the Year 1765, yet it may not be improper to add, that from the Severity of the preſent Froſt, the Birds are dying with Hunger and Cold, Field Fairs, Thruſhes, Black Birds, and Robins. The Crows are ſo much diſtreſſed, that they pitched upon ſome of my Offices to Day to pick the Thatch.

We enjoy an Happineſs in this Froſt, which I do not remember ever to have attended any long Froſt in *England*, for we have ſcarcely any Wind. It has blown from almoſt every Point ſince the Froſt begun, but it has been very gentle. Some Days I have not been able to diſcover from what Point the Wind blew, it has been ſo calm.—— Every Day almoſt has been attended with a Clearneſs in the Sky, and comfortable Warmth in the Sun.

My Beet is fallen flat upon the Ground by the Froſt, and my Oats look as if they had been burned with an hot Iron. The Wheat and Burnet retain their fine Green.

Laughlinſtown, Jan. 14, 1766.

THE END.