A SHORT

DESCRIPTION and LIST,

With the PRICES of the

Inſtruments of Huſbandry,

MADE IN THE

FACTORY

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.

The Third EDITION, with large Additions and Amendments.

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MDCCLXIX.

INTRODUCTION.

To the READER.

WHEN I began this Factory, I had no Conception that the Demand would, in many Years, be equal to the Calls which have been, in the ſhort Time ſince its Eſtabliſhment, and therefore the Plan was originally calculated upon a ſmall Scale. The unexpected Demand, I am ſorry to obſerve, proves the Want of good Inſtruments for all the Branches of Agriculture in this Kingdom. Senſible of this Inconvenience, the Gentlemen who generouſly, in Behalf of their Country, bend their Attention to that *Support* of every other Science and Manufacture, have heretofore been importing Inſtruments from ſuch Parts of the World, as they have imagined could beſt ſupply them. But from a real Want of an Eſtabliſhment of this Kind, for the making all Kinds of Inſtruments for Huſbandry, the Importation of uſeful Ones has not anſwered the laudable Purpoſes of the Importers; at leaſt the Inſtruments have not been ſo generally introduced, as every Man of generous Sentiments muſt believe to have been the Intention of the Importers; for when they have been landed, they have been immediately carried to the Neighbourhood of the Importer, and at beſt, brought into Uſe only in that particular Diſtrict; ſo that if a good Inſtrument ſhould, by this Means, be introduced in the *North*, the *South* could receive no Benefit from it, and ſo *vice verſa*; from which Cauſe the general Introduction of good Inſtruments muſt have been ſlow. But when we add the Conſideration of an Unwillingneſs in Mechanicks to make from the

Patterns ſo imported, and what is quite as inconvenient, a Want of Men to ſhew the Uſe of them, it is not to be wondered at, that Tillage is in no better State in *Ireland*, than it is in many Parts of *England*, where it is, from the ſame Cauſes, in as bad a State, I believe, as in any Part of the World; at leaſt, any Part which pretends to the Practice of Agriculture. From the latter Cauſe it has too often happened, that Inſtruments of real Uſe have been thrown aſide, neglected, and abuſed, until they became unfit for the Uſe of the moſt experienced Hand.

It was conceived, that if a Factory were eſtabliſhed, for making Implements of Huſbandry, it would be a Means of diſperſing throughout the Kingdom, Variety of Inſtruments of the beſt in their Kinds; but that alone would not have done, if the Maker had not a competent Judgment in the Uſe of them, and a Notion of conſtructing ſuch new ones as have been wanting, and improving ſuch as have been defective. How far I have anſwered that Expectation of my Patrons, I ſhall ſubmit to the candid Conſideration and Experience of the Public.

Many Perſons have, heretofore, made and executed a ſingle Machine of particular Conſtruction, and that with Succeſs to themſelves and the Publick. But I believe, I am the only Perſon, who has ever attempted, to execute Machines, for every Branch of Agriculture, or that can be uſeful in the Buſineſs and Pleaſure of a Country Life.

How far this Attempt has been attended with Succeſs, I ſhall not preſume to deſcribe; but appeal to the Approbation of the Publick, in their Uſe of the Machines, and the Demand I have had; for in about two Years, I have ſold to the Amount of one thouſand ſix hundred Pounds worth of them.

How far the Publick muſt be benefited, by ſuch a Variety of Models, in their full Proportion, being diſperſed over the Kingdom, from which others are daily making,

making, without the Trouble of calculating their Scantling and Iron Work from Scales (for which the common Run of Workmen are by no Means qualified) I ſubmit, to the Conſideration of the Candid.

Reflecting, upon what muſt be the Sentiments of ſuch; I feel ſome Conſolation, amidſt the Care, Application, Anxiety, conſtant Exerciſe of Mind, great Expence, and the ſevere Conſequences of the Misfortune I ſuſtained, in the Proſecution of this Undertaking; hitherto, without any Benefit, to myſelf or Family.

For I can truly ſay, that I have ever been much more ambitious, of acquitting myſelf, to the Satisfaction of the Publick, thereby to reflect Honor to my Patrons, than I have thought of Emolument to myſelf.

An Enthuſiaſm, perhaps, not ſufficiently tempered with Prudence.

However, at that I ſhall not repine, but whatever may be my Fate, I ſhall endeavour to Heal the Conſequences, with the comfortable Conſideration, that I have acted diligently and faithfully, in the Truſt committed to my Care.

And I hope I ſhall be pardoned for believing, that my Factory has already prevented the Importation of many Machines for Agriculture, and put *Ireland* in Poſſeſſion of ſeveral uſeful Ones, which are to be found in no other Country.

Had this Factory been eſtabliſhed in any remote Part, its Effects could not have been diffuſed through the Kingdom, as I believe, the Demand will ſhew them to be. Had it been eſtabliſhed immediately in the Metropolis, it would likewiſe have been leſs effectual, I am willing to believe, than it has been in its preſent Situation; for this plain Reaſon, that the mere

mere looking at the beſt Machines for the Manufacture of Land, could not be ſufficiently perſuaſive of their Importance and Uſe, unleſs the Management of them in the Field, or, at leaſt, the Effects of their Operations could be ſeen. The Situation, being not beyond a Morning's Ride from *Dublin*, gives all People, from every Part of the Kingdom, who are occaſionally brought to the Metropolis by other Calls, an Opportunity of examining, not only into the Nature and Quality of the Machines, but the different Methods of Huſbandry carried on with them. The Reports of ſuch as have been here, have induced others, not only to come when they happen to be in *Dublin*, but what muſt be conceived as more grateful to me, to undertake Journies of more than an hundred Miles, on Purpoſe to ſpend ſome Days with me. It will hardly be neceſſary for me to ſay, it could not be from any perſonal Acquaintance, becauſe it is well known I am a Stranger here; but from a Zeal in the Cauſe of Agriculture, which, I have the Pleaſure to obſerve, is peculiar to the Gentlemen of *Ireland*.

I muſt be allowed to ſay, that I have frequently, ſince the Commencement of this Undertaking, felt great Concern that it has not been in my Power to give ſo general a View of the different Machines I make, as I wiſh to do, to thoſe who come on Purpoſe to ſee them: but it will be conſidered, that as faſt as they have been finiſhed, they have been ſent away, becauſe the Demand has always exceeded the Poſſibility of Execution; beſides which, I really have not Buildings to keep an Aſſortment in; a Point which I am exceedingly anxious to obtain, for the ſpeedier Diſpatch of the Orders, and the greater Convenience of the Public.

And I hope it will not be looked upon as extraordinary, that I am not equal to the erecting ſuch Buildings as are neceſſary to the conducting ſo great a Work as this is now grown, when it ſhall be conſidered, that it is very little more than two Years, ſince the Building which I had erected for a Part of this Under-

Undertaking, my Dwelling-Houſe, Materials, and Part of my Furniture were conſumed by Fire. And indeed, were it ever ſo compatible with my Circumſtances, I know not whether it would be altogether ſo prudent, to lay out a large Sum of Money, for carrying on a Work, in which the Public are much more intereſted than I can poſſibly be as an Individual; for I believe it is a well-known Fact, that many Machines which are purchaſed of me, are intended only as Patterns for others to work by; a Circumſtance, which calls for Circumſpection and Caution on my Part, in the Opinion of many. Theſe Conſiderations, added to the unhappy Event of the Fire, *which came upon me by this Undertaking*, had almoſt perſuaded me to decline this Factory; but when I re-conſidered who were my Patrons, and the Country I was ſerving, I could not harbour a Doubt, but my Labours and Misfortune would, at the proper Time, obtain the friendly Interpoſition of *thoſe*, who will conſider them candidly and generouſly. Still animated with theſe Hopes, I have perſevered in the Re-eſtabliſhment of this Undertaking, at an Expence, and under Difficulties, which Timidity and Diffidence would tremble at.

But although my Inſtruments and Methods of Huſbandry are paſſing into many Parts of the Kingdom, with a Rapidity, which the greateſt Vanity on my Part could not have expected; yet, ſhould I live, to be by any Means enabled to carry my Undertakings for the general Improvement of Agriculture in *Ireland*, to that Extent, which, what I have done, aſſures me is infinitely wanting, I do flatter myſelf, that a very few Years might be productive of this Kingdom's obtaining the firſt Character in the Article of Tillage, which will neceſſarily pave the Way to Perfection in every other uſeful Art, as the Neglect of it, muſt, on the contrary, be attended with the moſt fatal Conſequences both to the Affluence and Honor of the Nation. But I ſhall defer ſaying more upon the extending my Plan till another Opportunity.

In

In the Profecution of this Undertaking, I have been frequently called upon for Leather Harneſs, and have endeavoured to get it done in the beſt Manner that the Workmen in that Way could do it, but as I never could get any done to my Mind, or a Workman who knew how to do it, in the beſt *Engliſh* Manner, although I frequently advertiſed for one, I have often, where I could do it, declined receiving Orders for Leather Harneſs. But notwithſtanding that, the Demand has ſtill increaſed upon me, inſomuch, that I have been obliged to renew my Endeavours to obtain a perfect Workman in that Branch, and have lately got an *Engliſhman*, who I find upon three Months Trial, is a compleat Workman, in the making all Kinds of *Engliſh* Harneſs for Ploughs, Waggons, Carts, Coaches, *&c.* and therefore, I have, after examining minutely into the Expence of every Article, added all Kinds of Leather Harneſs, both elegant and plain to my Liſt of Inſtruments, which will appear in their proper Place, to be ranged in ſuch a Manner, as I hope will be intelligible to all Perſons who may have Occaſion for any Thing in that Branch.

I ſhall now endeavour to give a ſhort Account of the Uſes of ſome of the Inſtruments named in the following Liſt, every one of which I have numbered, for the more convenient Reference of the Reader.

A ſhort

A ſhort Account of the Uſes of the Inſtruments, referring, by the Numbers, to their Names, and the Deſcription of their Parts in the Liſt of them hereafter given.

MY former Publications have ſhewn, that the Inſtruments for the Drill Huſbandry are calculated only for that particular Species of Culture; and therefore I ſhall take no other Notice of their Uſes in this Place, than juſt to ſay, that for the Information of thoſe who may adopt that particular Huſbandry, I have ranged the neceſſary Inſtruments together, that they may appear at one View, under the Heads, N°. 1, 2, 3, 4, 5, 6, and 7, in the Liſt.

N°. 7. Contains an Account of the neceſſary Harneſs for the uſing theſe Inſtruments, the Bulk of which it is to be preſumed, moſt People have; thoſe who have them not, will pleaſe to order them with the Machines, otherwiſe they will not be ſent.

N°. 8. Is a Drill Plough, to which I have given a Place in my Liſt, becauſe I have met with ſome Perſons who have conceived an high Opinion of that Species of Huſbandry, for which that Plough is calculated. My Sentiments upon *that Practice* of the Drill Culture will be found in my Report for the Year 1766, Page 38.

N°. 9. Is a Plough which has been found to anſwer all the Purpoſes of the breaking and manufacturing Fallow of any Kind; the Draft has been found eaſy to the Cattle, and the Plough, from the Manner in which it is fortified with Iron in every Part ſubject to Diſtreſs, is rendered irreſiſtible, ſave, that the Coulter, Sock, and Ground-Plates, from the conſtant Friction in the Soil, muſt wear, and therefore will ſometimes want repairing. What recommends this Plough very much to the Practice of the common

Ploughman is, that it approaches the Plough he has been uſed to, more than any other I make, except the Chip-Plough, N°. 10, which I cannot recommend the Uſe of to any Man, becauſe the Chip is never large enough to take a Share with a large Socket, by which Means all Chip-Ploughs are apt to break off behind the Sock or Share; whereas, my Socks are made large in the Socket, and are always put upon the Point of the Croſs.

The Plough, N°. 11. is calculated for throwing up the laſt Sod, in ſowing Wheat under the Plough in ſmall Ridges, in order to bring the Furrows narrow in the Bottom; and which I believe anſwers the Purpoſe very well, though I have not uſed it myſelf, for Reaſons which will appear preſently. See No. 15, in the Liſt.

N°. 12. Is a Plough for the Purpoſe of ſkinning Ground for Burning: and I have the Pleaſure to underſtand, that this Plough has compleatly anſwered the Purpoſe to thoſe who have uſed it. I ſhall juſt be allowed to ſay, that the Burning ſome Kind of Land is undoubtedly a very good Practice, upon its firſt Improvement; but in other Caſes it is altogether as bad a Practice as can be introduced. See my Hints upon Huſbandry, publiſhed by Mr. *Flinn* in *Caſtle-ſtreet*.

N°. 13. Is a Plough calculated for two Horſes, ſaid by ſome People to be capable of the firſt breaking, and compleatly manufacturing any Ground for Fallow. I muſt diſſent from that Opinion, becauſe I am ſure there is much more Land which two Horſes cannot effectually break, than there is which they can. To ſupport this Opinion, of two Cattle being ſufficient to break Land in general, ſhallow plowing is recommended as a general Practice, a Practice ſo contrary to all Principles, that it is hardly worth anſwering. But let any Man *carefully* examine the Roots of the Plants which are in the Farmers Department, and he will find, that they paſs a great Way into the Soil, if the

the Tiller will, by proper Tillage, allow them to do ſo; but if he will only juſt ſkin the Surface, particularly in a ſtrong Soil, he muſt not expect the Roots of ſmall annual Plants to penetrate in Search of Food, where he has not introduced his Coulter and Share to a proper Depth; and with the Strength of two Horſes he cannot; though I defy any Man to hurt this Plough, as I make it, with four, by fair Work. But if, from a Plan of Oeconomy, the Farmer wiſhes to introduce this Plough, he certainly may do it to Advantage, after he has deeply broken his Fallow, and well reduced it by the Harrow, provided he does not let it remain too long to conſolidate. And if, by this Saving, he can be prevailed upon to add one more ploughing than uſual, he will undoubtedly find his Account in the Uſe of theſe Ploughs in the manufacturing his Land; but 'till he can be diſpoſſeſſed of the inconſiſtent Notion of its being poſſible to make his Land *too fine*, I fear we ſhall not introduce the Extra-ploughing. The eſtabliſhed Method of not exceeding four Times ploughing Fallow, is founded in Ignorance; every Fallow ſhould be ploughed, until it is well reduced to receive the Seed.

N°. 14. Is the Lomax-Plough for four Cattle, to draw double, and is ſuch a one as Practice has induced many People to approve, I having ſold many of them; but every common Ploughman does not like them ſo well as they do the one I mentioned before, N°. 9, neither are they, indeed, ſo fit for *ſtony* Land, as that, but in every other Reſpect, anſwer all the Purpoſes of compleatly working Fallow.

N°. 15. Is the Plough which I have called, in my Report for the Year 1766, p. 40, the *Seeding* Plough; in the Uſe of which the Farmer will find many Advantages: But I ſhall ſay no more in the Recommendation of it, than to refer him to the Report already mentioned, and leave his Experience to examine the Merit of the Inſtrument, in the ſowing Corn under the Plough. I before ſaid, when I was ſpeaking of the Hunting-Plough, N°. 11, that for Reaſons which

would appear preſently, I never had uſed that Plough; which are, that I find this Plough anſwers all the Purpoſes of *that* and the four Horſe Ploughs, which are uſed for the *ſowing* or rather *burying* Wheat. Some indeed, who pay Attention to their Tillage, have very properly had two of theſe ſeeding Ploughs, which, with one four Horſe Plough, I call a Set of Ploughs for the common Huſbandry. The two ſmall Ones are the one wider and the other narrower in the Sole: The latter of which always follows the wider one, and clears up the Huntings, by which the Work goes on mathematically; whereas, it would be inconſiſtent, in finiſhing the Ridges, to have the wider Plough following the narrower. A Point not ſufficiently attended to in the general Conſtruction and Uſe of Ploughs.

N°. 16. Is a Plough of the ſame Kind, to be worked with only one Horſe, either in the Field or Garden, which I think may very advantageouſly be introduced in the Field for ſowing Corn under the Plough in broad Ridges, provided the Land be firſt *well manufactured*.

N°. 17. Is a large ſtrong Plough, calculated, at the particular Requeſt of ſome Gentlemen, for the ploughing very deep, by a great Strength of Cattle, and thoſe who have had them, have been kind enough to inform me they anſwer compleatly. Unhappily for me, I cannot uſe them in my Soil, the Quarry being too near the Surface.

N°. 18. Is a Plough which is calculated for keeping Land flat in its Tillage; I preſume firſt introduced on very dry Land, the better to retain Moiſture, in which, I have no Doubt, but that it may anſwer; and it has alſo been introduced for the Purpoſe of laying Land flat, which is intended for Lawns and Meadows. I ſhall not enter into the Merits of this Inſtrument, further than to ſay, that I have endeavoured to diveſt it of the Wheels, by which to render it a cheaper

cheaper and leſs complicated Machine, than it can be when worked with a Carriage.

N°. 19. Is a Plough, which Mr. *Tull* ſenſibly calculated for the ſpeedier Reducement of Ground; but the Draft of it is no leſs heavy than its Expence; and at the Time he invented this Plough, the Scarificator, N°. 27, had not been thought of. But as we are now in Poſſeſſion of that Machine, which will ſo effectually cut the Ground into Slips or Strings of three Inches broad, that by preceding the four Horſe Ploughs, N°. 9 or N°. 14, a little while before the Ploughs begin to turn the Land, all the Purpoſes of Mr. *Tull*'s four-coultered Plough will be anſwered.

N°. 20, and 21. Are Wheel-Ploughs, which, from my Obſervations upon their Operations, I conceive cannot be ſo effectual in general Uſe, as Ploughs without Wheels, for this plain Reaſon, that as the Wheels are the Gauge for the Depth of the Plough, wherever they meet with any Thing which raiſes them, the Plough conſequently riſes ſo as to work ſhallow, and ſometimes not to touch the Surface; at other Times, when the Wheels ſink into any Declivity, the Plough immediately ſinks in Proportion, ſo that the *Ploughing* is rendered irregular by thoſe Kind of Accidents, and will continue to be ſo until the Ploughs have been at Work upon the ſame Land for ſome Years. Another Conſideration againſt them is, that they are in general complicated, and not a little expenſive.

N°. 22, 23. 36, 37, and 41, are Sledges and Truckles for various Purpoſes. I ſhall only juſt add, that I wiſh it were more generally the Practice, to introduce Sledges for removing our Ploughs and Harrows from Field to Field than it is; for by the too general Manner of removing them, they often receive more Injury than by a Month's Work; beſides which, the Cattle are too often hurt.

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N°. 26. Is an Inſtrument, calculated for the Purpoſe of marking out Drains with ſtrait Edges, in order to ſave the Expence of that Part of the Work being done by a Spade and Line, which is attended with Delay; and the Machine is ſo conſtructed, that the Drain may be marked out from ſixteen Inches to two Feet wide, at Diſcretion. Where large Quantities of this Kind of Work is to be done, the Machine will ſave conſiderable Expence; but where the Quantity of Work is but ſmall, it will be an unneceſſary Purchaſe.

N°. 27. Is the Scarificator mentioned before, when I was ſpeaking of Mr. *Tull*'s four-coultered Plough, to which it will be a very uſeful Subſtitute: and as to its other Purpoſes, I refer the Reader to what I have ſaid of it, in my Report for the Year 1765, Page 41, *&c.*

N°. 28. Is an Inſtrument which I built upon the two preceding ones, in order to leſſen the Expence to thoſe who may have Occaſion for them both, and which I have the Pleaſure to obſerve, operates compleatly in either Caſe.

N°. 29. Is calculated for ſinking Ditches by the Strength of Horſes, after they are laid out, in order to ſave *Spade Work*; but after the Ditch ſhall be ſunk, the Sides, it will be imagined, muſt be dreſſed by the Spade. This Plough has alſo been found very uſeful in ſinking Potatoe Furrows, which ſaves the Labour of the ſecond Spitting, and reduces the Soil at once to the Command of the Shovel. It has alſo been found uſeful in deepening the Furrows, for the ſecond covering of the Corn by the Shovel.

N°. 31 to N°. 40, both incluſive, are Harrows of different Kinds; Inſtruments ſo univerſally known, that I need not ſay more of their Uſe, than juſt to obſerve, that the Harrow, in general Uſe in this Kingdom, is too often ineffectual in its Operation, by its being

being made only in *one* Frame; but by mine being made in two Frames, united together by what I call coupling Bolts, they lie close to the Ground, * even in irregular Places, and therefore, I flatter myself, fulfil the Purpose of the Machine, namely, harrowing; whereas, the Harrow which is made with one Frame rides all rising Places in the Field, and consequently passes over hollow Places very frequently. The triangular Plough-Harrow, N°. 32, is indeed an Exception to this Observation, because it consists of only one Frame; but then this Instrument is made in a particular Manner in the Pins, to *bite* the Ground, (if I may be allowed the Expression) because the Operation of it is diametrically opposite to that of the common Purpose of Harrows; for this Instrument acts like a Miner, under the Surface, the others act above it. And, indeed, the very *Name* which I have given this Instrument seems to indicate, that it is to act somewhat like a Plough, as well as an Harrow. This Instrument is wonderfully powerful in reducing Ground, clearing Weeds, Stubble, *&c.* and is really easier in its Draft, than would be imagined by looking at it.

N°. 42 to 53, both inclusive, are Waggons and Carts of different Kinds. Were I to enter into a general Description of their Construction, it would swell this Paper greatly beyond the Bulk of what I intended; and therefore I shall only beg Leave to inform the Reader, that I have given very particular Attention to the Improvement of this Kind of Carriages; and I have the Pleasure to think, that the Demand I have for them, is as strong an Indication as I can have, that in the Judgment of others, I have not been unsuccessful in that Attempt.

* I have an Harrow for reducing Ground, of quite a new Construction now in Hands, and before my next Publication, shall try it; and if it answers my Expectations I shall give it a Place in my next List.

Some Conſiderations upon the Conſtruction of the Two Sorts *of* CARS *in* general Uſe, *throughout this Kingdom; with a Deſcription of* One *of a new Conſtruction,* N°. 54 and 55, *calculated to carry greater Burthens, and with much more Eaſe and Safety to that generous Creature, the Horſe.*

The Lowneſs of the Wheels of an Outſide and Inſide Car.

THE Advantage which is apprehended to be gained by the Lowneſs of the Wheels of common Cars, is ſaid to ariſe, from the Weight of the Load, preſſing them forward. And yet, I have generally obſerved, that the *greater* Weight of the Load is put on *before* the Wheels, and that *entirely* in loading Stones. Hence it ſhould ſeem, that if the Weight of the Load, does at all contribute to the Motion of the Wheels, inſtead of its contributing to their Motion *forward*, it muſt on the contrary, preſs them *backwards*. And the *lower* the Horſe, the *greater* will be *that Effect*. But to be mathematically full upon this Head, would require more Room, than the intended Bulk of theſe Conſiderations will admit of.

The Friction upon the Gudgeons of an Outſide Car.

The Gudgeons are in Contact with the Bolſters, which are always *Wood*, and therefore the Friction muſt be more laborious to Cattle, than when in Contact with Metal or Braſs. Beſides, the Bolſters are generally about four Inches broad, and therefore bear four Inches upon each Gudgeon, which muſt ſtill cauſe a greater Reſiſtance, by an *Increaſe* of Friction. Whereas a ſmall Spoak Wheel, when *properly hung*, will not have a Friction of more than an Inch and an half, and that will be leſſened by its being Steel againſt Metal or Braſs.

Inſide Cars their Friction.

The inſide Car is yet a more laborious Carriage to Cattle, becauſe the Friction in that is between *Wood* and *Wood*, which is in Contact *eight* and *ten* Inches. The Axis is of Timber made round; and the Sides of the Car are laid upon that. To prevent the Axis wearing

wearing in the Place of Friction, it is often ſtuck with Nails. I have lately ſeen a few Inſtances, where the Axis has been covered, in the Place of Friction, with Caſt Mettle, which is an Amendment.

Wheels, how made, and how fixed upon the Axis.

Both the Carriages of this Kind, and which are the common ones of *Ireland*, have their Wheels made of Plank, commonly called *Block Wheels*. Through theſe Wheels paſs the Axis, which is of Wood, and generally about four Inches *ſquare*. The Wheels have a *ſquare Mortice* made through them to receive the Axis upon which they are *firmly wedged*.

Conſequences.

The Conſequence is, that the Axis muſt always turn *with* the Wheels: And one Wheel cannot turn *independant of the other*. Hence follows infinite Diſtreſs to Cattle.

For when the Carriage is to turn ſhort, as ſoon as the Point on which the Horſe preſſes at his Shoulder, forms an acute Angle with the Wheels, the Wheels *ceaſe to turn*, for they immediately drag. The Horſe is obliged to exert *all* the Power he has againſt this Reſiſtance; which in *this* Operation is *Sideways*, and therefore he is deprived of at leaſt half his Power, in the very moment, in which he wants an Exertion of the greateſt he has, to conquer the natural Obſtruction of the Machine. But if Straw, ſtiff Dirt, or a Stone, meet the Wheel which *ſhould go forward*, the Horſe actually ſtops, and cannot move the Carriage, till the accidental Obſtruction be removed.

And this Effect ariſes, in turning *either* of the Carriages named. The Body of the Carriage is frequently racked and broken, and the Horſe often falls.

The Block Wheels in deep Roads, collect and carry with them great Quantities of Clay, which very ſoon come in Contact with the Car Sides and Inſide Back, by which the Horſe is infinitely diſtreſſed, and at laſt will be obliged to ſtop, unleſs an unmerciful and giddy Driver force him on, until he falls by Drawing,

Drawing. Careful Drivers are much interrupted in their Journies, by removing theſe Obſtructions, which frequently require a good Deal of Labour.

In drawing Hay Home, the outſide Cars are often ſtopped by a Collection of Hay between the Wheels, Sides, and Gudgeons, which take ſo much Time to remove, that I have often had Delay, Irregularity and Interruption enſue, in the drawing Home Hay, and which the Farmer muſt often have experienced.

Another Cauſe of Friction.

The Ends of the Axis to an outſide Car, come ſo nearly in contact with the Sides, that there is a continual Friction between them. In turning the Carriage, the Ends of the Axis immediately lock firm againſt the Sides. All tending to the Diſtreſs of the Horſe.

A ſhort Deſcription of the NEW CAR.

The new Car.

Having thus ſhewn the Inconveniencies which attend the Conſtruction of the common Cars, I ſhall now ſhew how far I have endeavoured to remove them, in the Conſtruction of the Cars, named in the following Liſt. N° 54 and 55.

Why the Form of the common Car was adhered to as much as could be.

I apprehended a Carriage which adhered, as cloſely as might be, to thoſe in common Uſe, would be moſt likely to make its Way into general Uſe.

Friction, why leſs in thisCarriage than a common Car.

Firſt, as to the Objection made to the Friction in the common Cars, I have endeavoured to leſſen that in this Carriage, by Iron Arms, ſteeled; running in Metal Boxes, touching in each Wheel, only about an Inch and an Half.

The one being *Steel*, and the other *Metal*; *both hard Bodies*; it is apprehended the Friction muſt be conſiderably leſs than in a common Car; and conſequently the Reſiſtance leſſened at equal Weights.

Why Braſs Boxes were not choſen.

Braſs Boxes would have been choſen, were it not, that it is apprehended they would be too dear for the lower People.

The

The Height of the Wheels exceed thoſe of a common Car only about ſix Inches: But notwithſtanding that, the Body of the Carriage is raiſed, by the Manner of hanging the Wheels, which will appear in the Machine. The Reaſon for which is, to bring the Shafts as near upon a ſtrait Line as may be, to the Point of Draft in the Horſes Shoulder; whereas, in the common Cars, the Points of the Shafts (commonly called the Sides) are ſo high, cauſed by the Lowneſs of the Wheels, that when the Draft is from the Points of the Shafts, the Shafts, and Point of Draft in the Shoulder of the Horſe, form an obtuſe Angle, by which the Horſe is drawing upon his Back, greatly to his own Diſtreſs. To remove this Inconvenience, ſome have a Chain running as far back, under the Shaft from the Collar, as brings the Draft upon a direct Line. But this is liable to two capital Objections, particularly in the common Cars. Becauſe in the Action of turning the Carriage, the Shaft from which the Beaſt draws, is a Lever to him, and by ſo much as he loſes of its Length, in Proportion he is deprived of the Uſe of it, as a Lever. And every Man knows that the Eaſe of a Purchaſe, depends upon the Length of the Lever. The other Objection is, that when the Carriage inclines to fall backwards, which is too often the Caſe, the Horſe cannot prevent it ſo effectually by his Draft's being ſo far back upon the Shafts, as he can when his Draft is from the Points, upon the ſame Principles, that his Lever is conſiderably ſhorter, than when he draws from the Points of the Shafts. But in this Caſe, the Purchaſe is perpendicular; whereas in the former it is horizontal.

The Height of the Wheels. The Body raiſed. And why.

As to the Inconvenience, which attends the common Car Wheels not turning properly; in this I have *totally* removed it, by uſing Spoak Wheels, which are to turn *upon* the Axis, *independent of each other*; but the Axis is not to turn, as in a common Car.

Wheels turn independent of each other. And why Spoak Wheels are choſen.

Another Reaſon for chooſing Spoak Wheels is, that they are by no Means ſo liable to collect Clay or Dirt in their Paſſage, as the Block Wheels to a common Car,

Further Reaſon why Spoak Wheels are choſen.

Car, and therefore leſs liable to the Obſtructions cauſed thereby; unleſs when they are improperly hung, which I am ſorry to obſerve is too prevailing in this Kingdom, and even in *England*, as may be explained to ſuch Perſons as ſhall wiſh to underſtand it; as may alſo, the Manner of clouting a wooden Arm, or making an Iron one to moſt Advantage, which as much as poſſible, is kept a Secret in the wheeling Buſineſs; for there are many Men of that Trade who can make a good Wheel, and yet know not how to buſh and hang it. Upon which *totally* depends the eaſy Draft of a Carriage.

In common Practice, Wheels hung improperly.

And why.

Beſt Manner of buſhing a Wheel.

To buſh a Wheel in the beſt Manner, and moſt expeditiouſly ſhould be done with an Engine, calculated for that Purpoſe only.

Block Wheels connot be effectually buſhed.

Block Wheels cannot be buſhed properly, as Experience has often proved; for there are Gentlemen of Ingenuity in this Kingdom, who have ſeen the great Inconvenience attendant on the Operation of the common Car, and have attempted to remove it, by putting Boxes in Block Wheels, in order that they might turn independent of each other, upon Iron Arms; but it has been found, that great Difficulty attended the fixing the Boxes, becauſe, if put really into the Plank, they cannot be wedged, it being impoſſible to drive the Wedges acroſs the Grain of the Plank. To remove that Difficulty, a Piece of Timber has been lodged in the Centre of the Wheel, placing the Grain of the Block horizontally, and thereby the Boxes could be firmly fixed in that Piece: But the Remedy was almoſt as bad as the Diſeaſe; for the Block, or Piece of Timber, which is ſo lodged in the Centre of the Wheel, ſoon became looſe by Labour and Contraction, and conſequently that Part of the Carriage muſt fall into a crazy Fabrick; abſtracted from Labour being increaſed to the Horſe, as ſoon as the Wheels, in their revolutions, form that offenſive Sight, zigzag Lines, which is the unavoidable Conſequence of being out of Square, be the Wheels what Kind they may.

In

In the Article of putting on the Tire, I flatter myſelf ſome Amendment is alſo made, and which I now purſue in all the Carriages made in my Factory. Manner of putting on Tire improved.

In the common Manner of putting Tire on Wheels, the Nails are apt to ſtart, and the Heads break off, by either of which Accidents the Tire gets looſe, and the Wheel is ſuddenly racked or ſhaken. To prevent this, I put every Strake on with Screw-bolts, which draws up the Tire, and keeps it to its Place, from which it never can ſtart, till the Tire be worn out.

The Manner of making the Heads of the Bolts, and punching the Tire, I apprehend, would be a great Preſervation of our Roads, were it in general Uſe. And therefore ſeems to merit the Attention of the Legiſlator; for by the general Manner of making the Nails for Tire, the Law for the Eſtabliſhment of broad Wheels is defeated. Roads how to be preſerved by the Manner of making Tire-Nails.

To prevent any Dirt or Grit getting in between the Boxes and Arms of the Carriage, Sand-pans are put upon the Ends of the Stocks, and Cuttoos over them, which will appear upon View, and which are put upon all the Carriages made in my Factory. The Iron Brackets which are mentioned, as being added to this Carriage, N°. 50, in the following Liſt, are diſpoſed in ſuch Manner, as to fortify the Parts moſt liable to fail in a Car; the Shafts or Sides are plated with Iron from the Axis to the Tug-pin Holes, and in every Part firmly affixed with Screw-bolts, which renders this Carriage a Machine of almoſt irreſiſtible Strength and Permanence. Dirt and Grit, how prevented getting into the Boxes.

I might have been much fuller in my Deſcription of this Car, but the Demand I have had for them is a ſtronger Proof, than any other I can give, of their ſuperior Convenience, in every Kind of Buſineſs, in which a Car can be uſed; and therefore I ſhall only add, that one Horſe has drawn, at one Load, upwards of 26 Hundred Weight upon one of them on a very rough Road; and I am well perſuaded, that the ſame Horſe can draw upwards of 30 Hundred on the ſame Car-

Carriage without any great Diſtreſs; and what ſeems to be a pretty ſtrong Fact, is, that ſince I introduced theſe Cars, my People will not uſe the old ones, and therefore, I have been obliged to part with all the common Ones I had.

And it is allowed by competent Judges, that they are compleatly calculated not only for the Uſe of the Farmer, but for Sumpter Carriages on Circuits, military Baggage, Linen Cloth, Carriers, Millers, Timber, and Luggage of all Kinds; becauſe ſevere Trials in the Uſe of them have ſhewn, that a Horſe travels with Pleaſure under a Load from 12 to 20 Hundred Weight upon one of them, when, on the ſame Journey, an Horſe, under a common Car, with 6 and 7 Hundred upon him, has been ſuffering exceedingly by his diſtreſſing Draft, of which we have had many Inſtances, and very remarkable ones in bad Roads.

It muſt be confeſſed, that the Price is higher in the *firſt* Purchaſe than a common Car; but yet, when it is conſidered that this will laſt much longer, and that the ſame Horſe which draws 5 Hundred on a common Car, will, with more Eaſe, draw 12 Hundred on this, Candour muſt admit it to be a much cheaper Carriage, for all the Purpoſes of Buſineſs and Profit. And all Men will allow, that no *perfect* Machine can be had at the Price of an *imperfect* one.

For the Convenience of ſuch Perſons as uſe Turf in their Houſes, I have lately put a Cradle to this Carriage, to be put on and taken off occaſionally, (ſee N°. 57) by which it is ſaid, by thoſe who are acquainted with Turf, that as much may be drawn at one Load, as at three or four, in the common Manner.

N° 58 to 87, both incluſive, contain a Liſt of various Articles, which, from their Names, ſhew their Uſes, altho' ſome of them are new; thoſe which are improved in their Conſtruction will ſhew for themſelves.

N°. 88.

N°. 88. Is an Houſe and Boxes, calculated for the Preſervation of Bees, by which large Quantities of Honey and Wax, it is ſaid, may be taken, without murdering thoſe laborious Inſects. I have, in ſome of my former Papers, profeſſed not to underſtand the Treatment of Bees; but from an Attention which the DUBLIN SOCIETY have lately given to their Preſervation, I was animated into an Application towards the Management of them, and have received great Information in reading Mr. *Moſes Ruſden*'s Treatiſe upon that Subject, and from whoſe Book I have built one of theſe Houſes, *&c.* deſcribed, N°. 88. The Pleaſure I have received, in ſeeing their Induſtry and Mechaniſm, which this Manner of keeping them admits of, I have conceived to be a full Recompence for the Expence of building their little Habitation, and the Succeſs which the Method promiſes, induced me to give it a Place in my Liſt. The Edition which I have of Mr. *Ruſden*'s further Diſcovery of Bees was printed in the Year 1679; whether it has gone through many Editions I know not, but I fear it is now out of Print, which being, I think ſuch Gentlemen as are reputed Judges of this Management of Bees, would do the Public a Service to recommend the re-printing this Book.

N°. 89. Is a neat and convenient Kind of Crib, for the more commodiouſly foddering black Cattle without Waſte of their Fodder, calculated more as a Pattern for Gentlemen and Farmers to build them by, than with any Expectation of ſelling them, they being too large to be carried to any great Diſtance, but may very conveniently be removed from Place to Place about a Farm.

N°. 90. Is a Machine, calculated for the ſlicing Turneps for black Cattle with Expedition. An Inſtrument which I was induced to bend my Attention to the Conſtruction of, from obſerving that the Society of Arts in *Lond n* had offered a Premium for the Conſtruction of ſuch a Machine. In that which I have made for the Purpoſe, it is conceived by competent Judges, that I have not been unſucceſsful, becauſe the

the Machine is fortified by great Strength, at the ſame Time that it has powerful Execution. The Simplicity of its Conſtruction will render it intelligible to any Man, immediately upon a View of it. The Reaſons why it is prudent to ſlice Turnips for black Cattle, will be found in my Report for the Year 1764.

I continue to give this Inſtrument a Place in my Liſt, but from the Method which I have lately purſued, in feeding my Cattle with Turneps in the Winter, I have, in a Manner, rendered this Machine rather unneceſſary, of which I ſhall furniſh the Publick with Information in my next Report, for the Year 1768.

N° 91 and 92, are ſufficiently deſcribed in their reſpective Places.

A LIST of the INSTRUMENTS.

N°. 1. THE DRILL PLOUGH, upon an improved Conſtruction, with Braſs Boxes, and compleatly mounted with Swingle-trees, Straps, Turnip-box, and Standards; and for ſowing Wheat, Barley, Bere, Oats, Peas, Beans, Turnips, Sainfoin, Burnet, Buck-wheat, &c. 8 Guineas. See p. 9.

N°. 2. The DRILL HARROWS, of a new Conſtruction, rivetted and mounted with fifty-four Harrow-pins, hung to a Carriage with Chains, Hooks, Keys and ſcrew-bolted Staples. The Carriage mounted with Iron-arms, affixed with Screw-bolts and ſcrewed Staples, Spoak-wheels bound with Iron, a Pair of Shafts, double-twiſted Back-band, Staples and Hook, Tug-pins and Chains. 5 Guineas. See p. 9.

N°. 3. The HOE PLOUGH, compleatly mounted with double Bands, four Iron Wedges, Coulter, Bolts, Keys and Hook, Rider and Screw-bolt, the Mold-board

board, Land-ſide and Bottom, plated with Iron, Croſs and Beam united by a thorough Screw-pin, a ſteeled Coulter and Iron Share. 40 Shillings. See p. 9.

N°. 4. The SINGLE CULTIVATOR, mounted in the ſame Manner, only that this Inſtrument has no Mold-board, but is made with a Chip which is plated with Iron. *1l.* 14*s.* 1½. See p. 9.

N°. 5. The DOUBLE CULTIVATOR, mounted in the ſame Manner, but inſtead of a Share with one Fin, this has two, made of wrought Iron and ſteeled. 40 Shillings. See p. 9.

N. B. The Inſtruments, N°. 3, 4, and 5, are for Horſe-hoing Drilled Crops, and to work them requires a ſingle Swingle Tree, and Swivel Chain, and therefore I ſhall enter it here as N°. 6. Where any Perſon ſhall chuſe to have one for each of them, they will pleaſe to order them.

N°. 6. The SINGLE SWINGLE-TREE and SWIVEL CHAIN. 5*s.* 5*d.* This Swingle-tree will anſwer for any other Plough, which is to be drawn by Cattle lengthways, and which is always to be the Manner in Horſe-hoing Drilled Crops.

In my former Liſt I named the Marking Plough, and Double Mold-board Hoe Plough, but I there mentioned them as not being abſolutely neceſſary to the Drill Culture, and in the Continuation of my Practice I am confirmed in that Opinion, and therefore I ſhall not give them a Place in this Liſt, the above Inſtruments being all that are neceſſary for the compleat Execution of the Drill Huſbandry, except the Harneſs, and two Muzzles, which I deſcribe altogether, under the Article N°. 7, for the Convenience of ſuch Perſons as have them not, or who cannot conveniently get them.

N°. 7. The HARNESS for the Drill Husbandry, described under one Head, with the Prices of each Article. When Gentlemen order them, they will please to distinguish, whether they would have those under the Column A, B, or C, by naming the Letter, there being a Difference in the Price, and consequently in the Quality.

	A.				B.				C.			
	No.		*l.*	*s.*	*d.*	N°.	*l.*	*s.*	*d.*	N°.	*l*	*s.*	*d.*
Three Bridles,	107	at	0	11	4½	108	at 0	8	0	109	at 0	6	0
Three Neck Collars,	115		0	11	4½	116	0	7	6	120	0	4	6
One Cart Saddle and Crupper,	133		0	17	4	134	0	11	4½	135	0	7	6
Two Back-Bands and Pads,	148		0	8	8	—	0	8	8	149	0	6	6
Two Belly-Bands,	143		0	3	3	—	0	2	2	—	0	2	2
Two Back Cruppers and Hip Straps,	156		0	7	7	—	0	7	7	—	0	0	0
Two Muzzles,	167		0	4	4	—	0	4	4	—	0	4	4
Two Pair of Trace Pipes,	157		0	5	5	158	0	3	6	159	0	2	8½
Three Hame Straps,	165		0	0	4	—	0	0	4	—	0	0	4
Two Pair of Collar Hames,	99		0	6	6	—	0	6	6	—	0	6	6
One Pair of Draft Hames,	99		0	8	1½	—	0	8	1½	—	0	8	1½
Two Pair of Long Traces,	97		0	11	4½	—	0	11	4½	—	0	11	4½
One Stretcher,	96		0	2	2	—	0	2	2	—	0	2	2

No. 8. The DRILL PLOUGH of a new Conſtruction, for ſowing Drilled Crops in the Flat Way at equal diſtant Rows. 6 Guineas.

N. B. I would not be underſtood to recommend this Inſtrument, becauſe I conceive but an indifferent Opinion of the Huſbandry. But as others may form another Opinion, I give a Place to the Inſtrument in my Liſt. See p. 9. No. 8.

No. 9. The BLOCK PLOUGH improved, for four Cattle to draw double, compleatly mounted with Beam-plates and Screw-bolts, Mold-board, Side and Bottom plated with Iron; the Beam and Croſs united by a thorough Screw-pin, double Bands and Iron Wedges, Rider and Screw-bolt, a ſcrew Staple, Hook and Waſhes, Collar, Bolts, Keys and Hook; a ſtrong ſteeled Coulter and an Iron Share of a new Pattern. 2*l.* 10*s.* For its Uſe, ſee p. 9. No. 9.

No. 10. The CHIP PLOUGH, mounted in the ſame Manner. 2*l.* 10*s.* See p. 10. No. 9.

No. 11. The HUNTING PLOUGH, with an Iron Chip, the Cattle to draw ſingle, mounted in the ſame Manner. 2*l.* 10*s.* See p. 10. No. 11.

No. 12. The BAITING PLOUGH, mounted in the ſame Manner, with a wrought Iron ſteeled Share. 2 Guineas and an half. See p. 10. No. 12.

No 13. The ESSEX PLOUGH, *i. e.* a Plough to work with two Cattle, both a-breaſt, and the Ploughman to drive, mounted in the ſame Manner. 2 Guineas. See p. 10. No. 13.

No. 14. The LOMAX PLOUGH, for four Cattle to draw double, mounted in the ſame Manner. 2*l.* 10*s.* See p. 11. No. 14.

No. 15. The LOMAX PLOUGH, for two Cattle to draw ſingle, mounted in the ſame Manner. 2 Guineas. This is what I call my Seeding Plough. See p. 11. No. 15.

N. B. The Swingle Tree, No. 6, is neceſſary to work this Plough.

No. 16. The GARDEN PLOUGH, mounted in the ſame Manner as No. 3. 1*l.* 14*s.* 1½. This is a Plough of the ſame Make, calculated for one Horſe. See p. 12. No. 16.

N. B. No. 6, is neceſſary to work this Plough.

No. 17. A large ſtrong Plough, mounted in the ſame Manner as No. 9. and of the ſame Make, calculated for ploughing from twelve to eighteen Inches deep, and to be drawn by any Number of Cattle from eight to ſixteen. 3 Guineas. See p. 12. No. 17.

No. 18. The TURN-WRIST, or Kentiſh Plough with or without Wheels. See p. 12. No. 18. The latter 3 Guiueas.

No. 19. Mr. TULL's Four Coultered Plough. See p. 13. No. 19.

No. 20. The HERTFORD-SHIRE, or double Wheel Plough. See p. 13. No. 20.

No. 21. The OXFORD-SHIRE, or ſingle Wheel Plough. See p. 13. No. 20.

No 22. SLEDGES for four-horſe Ploughs, ſhod with Iron. 10*s.* See p. 13 No. 22.

No. 23. SLEDGES for two-horſe Ploughs, ſhod with Iron. 7*s.* See p. 13. No. 22.

No. 24.

No. 24. PLOUGH HAMMERS. 3*s*. 9*d*½.

No. 25. PLOUGH PADDLES. 1*s*. 7½.

No. 26. The DRAIN PLOUGH, to mark out Drains of different Diameters, mounted with a Spoak-wheel, bound with Iron, Iron Axis, double Wheels behind, plated Sliders, Swivels, Staple, Bolt Key and Lip; twelve ſtrong Plates bedded in the Beams, Body Screw-bolts, Brackets and Screw-bolts, thorough Screw-bolts to hind Axis, two ſtrong ſteeled Coulters and Iron Wedges, with Swingle-trees and Chain, mounted. 5 Guineas. See p. 14. No. 26.

No. 27. The SCARIFICATOR, with four Coulters, for taking Moſs off Meadow Land, and otherwiſe improving it, mounted with a Spoak-wheel bound with Iron, double Wheels behind, two Iron Axletrees, double Iron Brackets, plated Sliders, ſwivel Staple, ſwingle-tree Brogues and Loops, five ſteeled Coulters, their Holes double plated and the Table-ſcrew bolted. 4 Guineas. See p. 14. No. 27.

No. 28. The SCARIFICATOR DRAIN PLOUGH, being a Scarificator and Drain Plough comprized in the ſame Inſtrument, mounted with Body-bolts, Brackets and Screw-bolts, a Spoak-wheel bound with Iron, and an Iron Axis, two hind Wheels, thorough Screw Bolts and Brackets to the hind Axis, plated Sliders, ſwivel Staple, Bolt, Key and Lip; twenty-two ſtrong Plates bedded in the Beams; two ſtrong ſteeled Coulters for marking out Drains, and ſeven ſteeled Coulters for the Purpoſe of Scarifying Meadow Land; Wedges, Swingle-trees, Swivel Chain, Brogues, Loops, *&c.* 6 Guineas. See p. 14. No. 28.

No. 29. The DITCHING PLOUGH. This Inſtrument is mounted in the ſame Manner as No. 4, with the Addition of Beam-plates, and is an Inſtrument of the ſame Kind, only that it is much ſtronger. 40*s*. See p. 14. No. 29.

N. B. This Inſtrument is to be worked with the Horſes one before the other, and therefore requires a ſingle Swingle-tree, No. 6, and which is to be ordered, if required with it.

No. 30. SWINGLE-TREES which are for drawing double, and a Swivel Chain, Brogues, Loops and Rivets. 12*s.* and without a Chain, 9*s.* a Set.

No. 31. A LARGE HARROW upon Wheels, a new Inſtrument. See p. 14. No. 31.

No. 32. HARROWS for two, and four Horſes, with Chains, and affixed to a Carriage, with a Pair of Wheels and Shafts. See p. 14. No. 31.

No. 33. The TRIANGULAR PLOUGH-HARROW, for the reducing Ground; ſtrong Bulls, Iron-flats affixed with Screw-bolts, Anchor-pins, ſteeled, nutted and ſcrewed; Collar-bolts, Keys and Hook. 5 Guineas. See p. 14. No. 31.

No. 34. DOUBLE HARROWS for four Horſes, eight Bulls mounted with ſquare Pins, coupling Screw-bolts and Nuts, ſcrewed Staple and Hook. 3 Guineas. See p. 14. No. 31.

N. B. I have lately rivitted the Bulls of ſome of theſe Harrows, on each Side of every Pin Hole, which prevents their being ſplit, in driving the Pins by a careleſs Hand. That additional Work, adds to the Price 8*s.* 4*d.* and therefore, Gentlemen who order them, will pleaſe to ſpecify whether they would have them rivetted or not.

No. 35. DOUBLE HARROWS for two Horſes, mounted in the ſame Manner. 3*l.* See p. 14. No. 31.

N. B. When rivetted, that adds to the Price, 6*s.* 8*d.*

No.

No. 36. The SLEDGE for the four-horſe Harrows, ſhod with Iron, Chains, Hooks, ſuſpending Hooks and Staples, and Iron Lid to the Box for the coupling Pins of the Harrows and Keys. 16*s.* 3*d.* See p. 13. No. 22.

No. 37. The SLEDGE for the two-horſe Harrows, mounted in the ſame Manner. 14*s.* See p. 13. No. 22.

No. 38. The TRIANGULAR PLOUGH HARROW, for one or two Horſes, chiefly for Peas.

No. 39. GARDEN HAND HARROWS.

No. 40. FLAX HARROWS.

No. 41. SLEDGES and TRUCKLES of every Conſtruction, for Ploughs, Harrows, Buſhes, Timber, Sacks of Corn, Lead, *&c.* See p. 13. No. 22, *&c.*

No. 42. WAGGONS with either broad or narrow Wheels, finiſhed in the compleateſt Manner. See p. 15. No. 42.

No. 43. CARTS with three Wheels three Inches broad, for one or two Horſes; with a framed Bottom, Compaſs Shaft Slats and Screw Bolts, and compleatly mounted with ſtrong Stock-bands, Sand-pans, Buttons and Pins, Cuttoos affixed with Screw-bolts, ſtrong counter-ſunk Hinges and Screw-bolts, and ſtrong Shaft-ſtraps; ſtrong Iron Standards, ſcrewed and nutted; Iron Tail-pins and Chains; Iron Tail-board Lips and Bolts; Tuck-pins, Chains and Staples, double-twiſted ſwivel Back-band, Staples and Hook; a ſtrong Iron-ſword, Screw-bolt and Staple; ſtrong Hurters, Iron Trap-bolt, Staples and Screw-ſhaft Staples, ſtrong and full ſized Tire on the Wheels, counterſunk and put on with Screw-bolts; Fore-carriage mounted with ſtrong treble Iron-bows, Screw-bolts, Centre-pin and Keys, Gudgeons, Gudgeon-hurters and Gudgeon-brackets, affixed with Screw-bolts and ſtrong Shaft-bolt, *&c.* 11 Guineas. See p 15. No. 42.

No. 44. The ſame CARRIAGE, mounted with Iron Arms, affixed with Screw-bolts and Screw-ſtaples. 12 Guineas. See p. 15. No. 42.

No. 45. The ſame CARRIAGE, with ſix-Inch Wheel, Wooden Axle-tree. 13 Guineas. With Iron Arms, 14 Guineas. See p. 15. No. 42.

No. 46. The ſame CARRIAGE with nine-inch Wheels, Wooden Axle-tree. 15 Guineas. With Iron Arms, 16 Guineas.

N. B. Where the Tire for theſe Wheels ſhall be choſen of thin Iron for Lawns, the Price will be leſs in Proportion to the Quantity of Iron abated. See p. 15. No. 42.

No. 47. TWO-HORSE CARTS, with a framed Bottom, Compaſs Shaft-flats, and Screw-bolts, and compleatly mounted with ſtrong Stock-bands, Sand-pans, Buttons and Pins; Cuttoos affixed with Screw-bolts, ſtrong Hurters, ſtrong counter-ſunk Hinges and Screw-bolts; ſtrong Shaft-ſtraps, ſtrong Iron Standards, nutted and ſcrewed; Iron Tail-pins and Chains; Iron Tail-board Lips and Bolts; Tug-pins, Chains and Staples; double-twiſted ſwivled Back-bands, Staples and Hook; a ſtrong Iron-ſword Screw-bolt and Staple; Iron Trap-bolt, Staples and Screw-ſhaft Staples; ſtrong and full ſized Tire on the Wheels, counterſunk and put on with Screw-bolts, *&c.* 12 Guineas. And mounted with Iron Arms, 13 Guineas. See p. 15. No. 42.

No. 48. ONE-HORSE CARTS, mounted in the ſame Manner as No. 47. with Wooden Axle-trees, 7 Guineas. With Iron Arms, 8 Guineas. See p. 15. No. 42.

No. 49. The FARMER'S CART for one Horſe, mounted in the ſame Manner as No. 47, and with Iron Arms, and the Addition of Top-railing, calculated for drawing

drawing Hay, Straw, Corn in Sheaf or Sacks of Corn, Dung, Earth, &c. 7 Guineas. See p. 15. No. 42.

No. 50. A TURF CRADLE, for drawing Turf, or Graſs, fitted to this Cart, No. 49; to be put on and taken off occaſionally. One Guinea.

No. 51. BOMB CARTS of any Size.

No. 52. SMALL CARTS, of a new Conſtruction, for Lawns or Graſs Walks, which will not cut the Sod.

No. 53. WATER-CARTS of any Conſtruction, either to fill themſelves, or to be filled by Hand or Pump.

No. 54. LOW-BACKED CARS of a new Conſtruction, mounted with Spoak Wheels, and bound with Counter-ſunk Tire put on with Screw-bolts, Iron Arms put on with Screw-bolts, Wing-brackets and Screw-bolts, Tug-pins and Chains, double-twiſted ſwiveled Back-band, Hook and Staples, 5 Guineas. When a double Centre Bracket, moulded Brackets behind, Shaft Brackets, and Shaft Lining, all firmly affixed with Screw-bolts, a Drag-ſtaff hung on a Swivel, Screw Staple and ſuſpending Chain, Cuttoos, Sand-Pans, Buttons and Pins, Tug-Pins and Chains are added, then the Price is 6 Guineas. See p. 16 to 22. No. 54.

No. 55. LOW-BACKED CARS, of a ſecond Kind, mounted with Spoak Wheels and Iron Arms. 4 Guineas and an half.

N. B. This Car moves upon the ſame Principles, and works as eaſy as the above, No, 54, but is not ſo fortified with Iron and Screw-bolts, being calculated for Perſons who cannot afford to pay for the Beſt. A Turf Cradle may be fitted to this alſo.

No. 56. SIDE-BOARDS, HEAD-BOARD, TAIL-BOARD, fitted to either of the above Cars, and mounted, with coupling Irons, Iron Brackets and Screws, with

with Iron Tail-pins, Chains and Staples, for drawing Dung, &c. 16*s.* 3*d.*

No. 57. A TURF CRADLE, for drawing Turf, ſuited to either of the Cars, to be put on and taken off occaſionally, one Guinea. See p. 22.

No. 58. COACH, POST-CHAISE, CABRIOLE, and other WHEELS.

No. 59. SPOAKED WHEEL BARROWS of a neat and ſtrong Kind. Half a Guinea a Piece.

No. 60. WHEEL BARROWS, for Gardens, with Broad-Rollers, for the Preſervation of the Walks. 16*s.* 3*d.*

No. 61. WATER-BARROWS, for Gardens, with a Pair of Wheels of a new and compleat Kind. 3 Gu.

No. 62. LARGE WHEEL BARROWS, for Stables or Gardens, with a Spoak Wheel, and Iron Brackets. 17*s.* 4*d.*

No. 63. The ſame BARROW, with an Hollow Roller, ſhod with Iron, and Iron Brackets for Gardens. 20 Shillings.

No. 64. A STABLE BARROW, with a Pair of three Feet Spoak Wheels, ſhod with Iron, an Iron Axle-tree, and in every Reſpect made like a Cart, except that of having Handles for a Man to wheel it, inſtead of Shafts for an Horſe. 4 Guineas.

No. 65. WEED-BARROWS for Gardens. 13*s.*

No. 66. GRASS-BARROWS for Soiling Plough Cattle when ſtanding yoaked in the Field. 13*s.*

No. 67. SHEEP-RACKS, of a compleat and new Conſtruction, with Bevel Racks, running on Wheels, and Iron Arms. 3 Guineas.

No. 68.

No. 68. SHEEP-RACKS of a compleat and new Conſtruction, with Perpendicular Racks, running on Wheels, and Iron Arms. 4 Guineas. Calculated to prevent Waſte of Hay.

No. 69. FIELD-GATES of any Conſtruction.

No. 70. GARDEN-SEATS, CHAIRS, and STOOLS, of various Kinds.

No. 71. ROLLERS for Corn and Meadow, of a compleat and new Conſtruction.

No. 72. SPIKED-ROLLERS of any Conſtruction.

No. 73. A ROLLER for reducing Fallows, be they ever ſo ſtubborn.

No. 74. FANNERS for Winnowing Corn in the Barn, when the Wind does not ſerve to Winnow out of Doors, or in the Paſſage of the Barn Doors. 3 Guineas and half.

No. 75. BRASS-WIRE-SIEVES for Corn and Seeds.

No. 76. HAY-RAKES, of a ſtrong and neat Kind, 19*s.* 6*d.* *per* Dozen.

No. 77. IRON RAKES of various Kinds.

No. 78. HAY-FORKS, Handles, Ferrils, and Rivets neatly mounted, 2*s.* 8*d*½.

No. 79. HAY-PITCHING FORKS, with long Handles, Ferrils, Head, and Rivets, 3*s.* 9*d*½.

No. 80. THREE-PRONGED FORKS for Dung, compleatly mounted. 5*s.* 5*d.*

No. 81. THREE-PRONGED FORKS, for raiſing Stones or Rubbiſh out of Gardens. 5*s.* 5*d.*

No. 82.

No. 82. DRAG-FORKS, for unloading Dung in ſmall Heaps on Land. 3*s*. 3*d*.

No. 83. DOCK-IRONS, for pulling up the Roots. 7*s*. 6*d*.

No. 84. The BRIER-DOG, with poliſhed Cheeks, ſcrew-bolted Arm, Block double-hooped, and double-banded Lever, for pulling up Thorns, &c. by the Roots. 1*l*. 14*s*. 1*d*½.

No. 85. The STUMPING-IRON, for compleatly taking the Beards off Barley with Expedition. 13*s*.

No. 86. ENGINES for cutting Hay and Straw for Horſe-Meat.

No. 87. VENTILATORS for Hay Ricks, by which the Hay may be ſaved without putting it in Tramp-Cocks.

No. 88. BEE-HOUSES and BOXES, for taking the Honey and Wax, without killing the Bees, conſiſting of an Houſe, and ſix Octagon Boxes, for two Colonies. 7 Guineas. See p. 23. No. 88.

No. 89. CRIBS of a neat and new Conſtruction for foddering Black Cattle. See p. 23. No. 89.

No. 90. The TURNEP SLICING ENGINE, a new Inſtrument for ſlicing Turneps for Black Cattle. See p. 23. No. 90.

No. 91. The STUBBLE HORSE-RAKER, caulculated for pulling up and gathering Stubble at one Operation, where the Corn ſhall have been ſown flat, either under the Harrow or Plough.

No. 92. The BROAD-CAST TURNEP HORSE-HOE, an Inſtrument for thinning and horſe-hoeing Broad-caſt Turneps.

No. 93.

No. 93. A Gentleman's WALKING POLE, ſix Feet long, with Braſs Figures upon it, and Variety of neat and uſeful Tools, to put upon the Staff occaſionally. 16*s.* 3*d.*

No. 94. BULLOCK HAMES, of a ſtrong and neat Kind. 4*s.* 4*d.* a Pair.

No. 95. BILL HOOKS, home made, and well ſteeled and tempered. 2*s.* 2*d.*

No. 96. A STRETCHER for TRACES. 2*s.* 2*d.*

No. 97.. TRACES of different Kinds, from 8*s.* 8*d.* to 11*s.* 4*d.*½ a Pair.

No. 98. LONG PLOUGH CHAINS, ſhort Links, 9*s.* 9*d.* Short Plough Chains, 3*s.* 9*d.*½

No. 99. HORSE-HAMES, of ſtrong compleat Kinds, for Ploughs and Carriages, from 6*s.* 6*d.* to 8*s.* 1*d.*½ a Pair.

No. 100. SUSPENDING-CHAINS for Ploughs, 3*s.* 6*d.* per Pair.

The LIST of LEATHER-HARNESS.

BRIDLES, of various KINDS.

No. 101. The very beſt *Engliſh* front Bridles, with Face Piece, Noſe Piece, and Star Piece, elegantly ornamented with Work, lettered and dated, and furniſhed with Fringe, Bobs, Toſſels and a Pair of Bells, and two Pair of Reins. 1*l.* 15*s.* 6*d.*

No. 102. The ſame Bridle, compleat, without Bells. 1*l.* 8*s.*

No. 103. The ſame Bridle, compleat, without Bobs, Toſſels, or Bells, 1*l.* 5*s.*

No. 104.

No. 104. The ſame Bridle plain, without ornamental Work, Bobs, Toſſels, or Bells, only bound, lettered and dated. 17*s.* 4*d.*

No. 105. The ſame Bridle, quite plain, without any ornamental Work, Letters, Date, Bobs, Toſſels, or Bells. 14*s.* 6*d.*

No. 106. The very beſt Winker Bridles, lettered and ornamented with Work, the Front handſomely lapped, with Stays and Buckles to the Winkers, Toſſels and double Reins. 14*s.* 6*d.*

No. 107. The ſame Bridle without Toſſels, and with double Reins. 11*s.* 4*d.*½

No. 108. The ſame Bridle, neatly bound with Red *Morocco* Leather, lettered, without Toſſels, and with ſingle Reins. 8*s.*

No. 109. Neat Winker Bridles, ſingle Reins. 6*s.*

N. B. All the above Bridles, are mounted with ſtrong home-made poliſhed Bits, and made of the beſt tanned Cow Leather, Black, that they may be kept clean, like Coach Harneſs, unleſs people choſe them Brown.

No. 110. Common White *Iriſh* Winkers, from 14*d.* to 19*d.*½ a Pair.

NECK-COLLARS, for HORSES and BULLOCKS.

No. 111. The very beſt *Engliſh* tanned Cow Leather Neck Collars, double welted and bound, lined with ſoft Leather or Swan Skin, to abſorb Sweat, faced with curled Hair, and mounted with large Houſing, and that compleatly fringed, lettered, and elegantly ornamented with Work. 1*l.* 5*s.*

No. 112.

No. 112. The ſame Collar, with Houſing, neatly lettered and fringed. 16*s*. 3*d*.

No. 113. The ſame Collar, with Houſing, neatly lettered, and bound with Red *Morocco* Leather. 13*s*.

No. 114. The ſame Collar, without Houſing. 9*s*. 9*d*.

No. 115. Good *Engliſh* tanned Leather Collars, lined with Linen, double welted, faced with curled Hair and Wool, and handſome plain Houſing, neatly bound. 11*s*. 4*d*. ½

No. 116. The ſame Collar, without Houſing. 7*s*. 6*d*.

No. 117. Plain *Engliſh* tanned Leather Collars, ſingle welted, lined with Linen, faced with curled Hair and Wool, and with plain Houſing. 8*s*. 8*d*.

No. 118. The ſame Collar, without Houſing. 5*s*. 5*d*.

No. 119. Plain *Engliſh* Collars, made of White Leather, lined with White Linen, and faced with Wool. 5*s*. 5*d*.

N. B. Theſe White Collars are chiefly for working in Mines, where the White Leather, from the Manner of its being manufactured, will laſt conſiderably longer than any tanned Leather, as Experience hath ſhewn in the Mines of *England*.

No. 120. The beſt hairy Collars, double welted, faced with curled Hair, lined with Linen, double bolſtered, and made like *Engliſh* Collars. 4*s*. 6*d*.

No. 121. Beſt *Iriſh* hairy Collars, lined with Ticken, faced with Hair and Wool, and covered with Side Pieces. 3*s*. 3*d*.

No. 122. The ſame Collar, lined with Ticken, and faced with Wool. 2*s*. 9*d*.

No. 112.

No. 123. The ſame, lined with Ticken, without Side Pieces, and ſtuffed with Straw. 2*s.* 2*d.*

No. 124. Beſt Collars for Plough Bullocks, made very large and full, double welted and double bolſtered, faced with Hair and Wool. 7*s.* 6*d.*

No. 125. A cheaper Kind, at 5*s.* 5*d.*

N. B. I ſhall juſt obſerve here, for the Information of the Reader, that the Manner of making all theſe Collars, in the Part next the Throat of the Horſe, for the greater Freedom of his Breathing, differs from the Manner practiſed in *Ireland*, in the Conſtruction of Collars; which not being attended to, by the Collar-Makers here, (perhaps from the mireſable Kind of Work which they find the greateſt Demand for) we thence, ſo frequently, hear a poor Animal, in an hard Draft, blowing as if his Wind is broke, from the Preſſure of the Collar upon his Windpipe, although he be a ſound Horſe in that Reſpect. And I have had ſome of my Horſes, which were good Cattle, ſound, and in good Order, fall to the Ground under their Burthen, from this Circumſtance. And Gentlemen cannot but have obſerved Carmen, *(more particularly when the Cattle have been their own)* frequently upon the Road, run in great Haſte to ſtop their Horſes, as ſoon as they hear them begin to blow, becauſe they well know the Conſequence, if the Horſes are not ſtopped. And how pitiable a Caſe it is, that ſo valuable and generous a Creature, ſtruggling in the Execution of his Office, even againſt the Pain of Strangling, by the Inaccuracy of conſtructing any Part of his Accoutrements, ſhould be ſo near expiring, as to fall under his Burthen, Humanity will ſuggeſt.

The Houſing to Collars, is not only ornamental, but uſeful; for it prevents the Rain running between the Collar and Shoulders of the Horſe, where he is very apt to be injured, when the Houſing is not uſed.

When

When Gentlemen order any Collars of me, they will pleaſe to let me know whether their Horſes be large or ſmall.

No. 126. Beſt Jockey Collars, faced with curled Hair, and lined with ſoft Leather, or Swan Skin. 6*s*. 6*d*.

No. 127. Common ditto. 5*s*. 5*d*.

No. 128. Beſt Chaiſe Collars. 6*s*. 6*d*.

No. 129. Common ditto. 5*s*. 5*d*.

CART-SADDLES, or STRADDLES.

No. 130. The very beſt *Engliſh* Cart Saddles, the Tree compleatly plated with Iron, and furniſhed with double Houſings; thoſe put on with Braſs Nails, and elegantly lettered and ornamented with Work, the Pannel of tanned Leather, and lined with Hair; a broad Crupper neatly worked, and double-tongued Buckle; a worked Leather Pad to the Crupper, a Girth, and an Iron Spring on the Tree, to prevent the Back-band of the Carriage flying out, and a Swan Skin Saddle Cloth bound. 2*l*. 2*s*.

No. 131. The ſame Cart Saddle, with *Roman* Letters and Date on the Houſings, and thoſe bound with Red *Morocco* Leather, but no Saddle Cloth. 1*l*. 14*s*. 1*d*.½

No. 132. Good plain *Engliſh* Cart Saddle, with plain Houſings, without Iron Plates or Spring, faced with curled Hair, and a broad Crupper and Pad. 1*l*. 2*s*. 9*d*.

No. 133. Good plain *Engliſh* Cart Saddles, with a broad Crupper and Pad, lined with Swan Skin, and faced with curled Hair, neatly finiſhed. 17*s*. 4*d*.

No. 134. Good plain *Engliſh* Cart Saddles, neatly finiſhed, and narrow Crupper. 11*s.* 4*d.*½

No. 135. Plain *Engliſh* Cart Saddles, without Cruppers. 7*s.* 6*d.*

No. 136. Beſt *Iriſh* Cart Saddles, faced with Stuffing, and the beſt jointed Trees. 4*s.* 6*d.*

No. 137. Another Kind of ditto. 3*s.* 9*d.*½

No. 138. The Common ditto. 2*s.* 8*d.*½

No. 139. Block Cart Saddles, of all Kinds.

N. B. Here I ſhall obſerve, that Care is taken in the Stuffing theſe Cart Saddles, that the Pannel riſes before and hind, ſo as not to preſs upon and wound the Horſe, as is generally the Caſe with thoſe I have bought here, from the Pannel not being properly cut or ſtuffed.

BELLY-BANDS.

No. 140. Beſt *Engliſh* Belly-bands, with double tongued Buckles, neatly worked and ornamented, for the Shafts of Carts or Cars, to prevent the Carriage riſing in aſcending an Hill, or when the Load has been injudiciouſly put on too far behind. 7*s.* 7*d.*

No. 141. Plain Belly-bands for the ſame Purpoſe, with double Buckles. 5*s.* 5*d.*

No. 142. The ſame, for large Carriages, lined with Leather and worked. 11*s.* 4*d.*½

No. 143. Plain Belly-bands for Horſes or Bullocks in Ploughs, or leading Horſes in Waggons or Carts, from 2*s.* 2*d.* to 3*s.* 3*d.*

No. 144.

No. 144. Linked Belly-bands, double capped, and lined up, for Waggons or Carts. 4*s*.

BRITCHENS.

No. 145. Beſt *Engliſh* Britchens, double Hip Straps, compleatly finiſhed, and elegantly ornamented with Work. To prevent a Carriage running upon an Horſe or Horſes, which are in it, in deſcending an Hill, or to enable the Horſe in the Shafts to back the Carriage. 14*s*. 6*d*.

No. 146. The ſame Britchen, neatly finiſhed, but not ornamented with Work. 12*s*.

No. 147. Beſt *Iriſh* Britchens, neatly made. 8*s*. 6*d*.

BACK-BANDS.

No. 148. Broad Back-bands, with double-tongued Buckles and Leather Pads, neatly worked and ſtuffed, for Ploughs. 8*s*. 8*d*.

No. 149. Broad Back-bands, with double Buckles and common Pads, for Ploughs. 6*s*. 6*d*.

No. 150. Narrower Back-bands, with ſingle Buckles, and without Pads, for Ploughs. 4*s*. 6*d*.

No. 151. Broad Nooſe Back-bands, with worked Pads and Toſſils, and handſomely ornamented, for the leading Horſe or Horſes, in Waggons or Carts. 9*s*. 9*d*.

No. 152. The ſame Back-bands, plain, with common Pads. 6*s*. 6*d*.

No. 153. The ſame Back-band, with double Iron Links inſtead of Nooſes, with worked Pads and Toſſils. 9*s*. 9*d*.

No. 154. The ſame Back-band, with ſingle Iron Links, and common Pads. 6*s*. 6*d*.

BACK-CRUPPERS.

No. 155. Back Cruppers and Hip Straps, for the leading Horſes in Waggons or Carts, handſomely worked, ornamented and fringed. 9*s*. 9*d*.

No. 156. The ſame plain, for Ploughs, Waggons, or Carts. 7*s*. 7*d*.

TRACE PIPES.

No. 157. Beſt tanned Leather Trace Pipes, for Waggons, Carts, or Ploughs. 5*s*. 5*d*. a Pair.

No. 158. Common ditto, neatly cloſed. 3*s*. 6*d*. a Pair.

No. 159. Common ditto, *Iriſh*. 2*s*. 8$d.\frac{1}{2}$ a Pair.

Engliſh WHALE-BONE WHIPS, &c.

No. 160. Beſt *Engliſh* Waggon Whalebone Whips, 9 Feet long. 9*s*. 9*d*,

No. 161. The ſame, for two or three Horſe Carts, 7 Feet long. 7*s*. 7*d*.

No. 162. The ſame for driving Ploughs, $6\frac{1}{2}$ Feet long. 6*s*. 6*d*.

No. 163. The ſame for a one Horſe Carriage, 5 Feet long. 5*s*. 5*d*.

No. 164. An Elaſtick Whalebone Bullock Goad. 6*s*. 6*d*. I have been induced to think of this Article, from the Pain I have felt, at frequently ſeeing the Drivers

Drivers of Ploughs, unmercifully ſtabbing the Bullocks with a Nail, (commonly called a Prod) put into the End of a ſtubborn Stick, often to the great Pain of the Animal and Injury of its Owner: Circumſtances, which cannot happen in the Uſe of this Goad.

SUNDRY ARTICLES.

No. 165. Straps for Hames, with a Buckle. 4*d.*

No. 166. Horſe Netts, for Ploughs, Waggons, or Carts.

No. 167. Muzzles, made of the beſt tanned Leather, for Stallions, or Horſe-hoeing drilled Crops. 4*s.* 4*d.*

No. 168. *Dutch* Head Collars or Halters, for Stables, with double Leather Reins. The beſt Kind. 6*s.* 6*d.*

No. 169. The ſame, ſuch as are generally made. 5*s.* 5*d.*

No. 170. The ſame, with two Iron-linked Reins,

No. 171. The ſame, with ſingle-linked Reins. 6*s.*

No. 172. The ſame, with a ſingle Leather Rein. 4*s.*

No. 173. Common Head Collars, with ſingle Reins. 2*s.* 8*d.*½

No. 174. White Jocky Collars, from 13*d.* to 16*d.*

No. 175. Beſt *Engliſh* Hedging Mittens, welted. 3*s.* 3*d.* For defending the Workman's Hand, in ſplaſhing or cutting Hedges, Faggots, or Furz.

No. 176. Common ditto. 2*s.* 2*d.*

No. 177. Millers and other Pads, in the *Engliſh* Form, for carrying Sacks on an Horſe's Back.

No. 178. *Engliſh* Hamper Pads, for carrying Hampers on an Horſe's Back, with Straps and Bolſters.

No. 179. Hood Winks, for Horſes in Mills or Paſtures, from 2*s.* 2*d.* to 2*s.* 8*d.*½ a Pair.

No. 180. Bullock Suggons, of Bull-ruſh and Gadded, from 14*d.* to 16*d.*

No. 181. Noſſils and Tuggs, for a Shaft Horſe to draw by, inſtead of Iron Chains and Rings, which I find injure the Shafts greatly, often the Collars, and ſometimes the Horſe. Theſe are made of the beſt tanned Cow Leather, lined, handſomely worked, and with double tongued Buckles. 8*s.* 8*d.* a Pair.

No. 182. The ſame, made with white or hairy Leather, quite plain, and no Buckles. 5*s.*

No. 183. Black Leather Caps of different Kinds, for Ploughmen, Plough-drivers, Carmen, Waggoners, Poſt-Chaiſe Boys, or Laborers.

No. 184. Black Velvet Caps, for Gentlemen or Farmers, of any Kind.

No. 185. Saddles and Bridles, made in the *Engliſh* Manner, of various Kinds.

No. 186. Side Saddles of all Kinds.

No. 187. *Engliſh* Pads of all Kinds, for Women.

No. 188. Pillions of all Kinds, and Pillion Cloaths.

No. 189. Mail Pillions.

No. 190. Leather Bags and Portmanteaus.

No. 191. Watering Bridles, for Coach-Horſes.

No. 192. Coupling Reins, from 19*d.*½ to 2*s.* 2*d.*

The

The laſt Number having finiſhed my Liſt, I ſhall now, for the Convenience, and readier Information of Gentlemen, who may wiſh to ſupply themſelves with compleat Sets of Inſtruments *for Tillage*, endeavour to ſtate diſtinct Tables, of Sets of Ploughs, and their neceſſary Appurtenances; with Sets of Harneſs, and their Appurtenances: And as the latter differs in Price, ſo I ſhall give diſtinct Tables thereof, referring by the reſpective Numbers, to the Articles in the Liſt at large, as I have done in the Harneſs for the Drill Huſbandry, in p. 26. No. 7. And all theſe diſtinct Sets I ſhall diſtinguiſh under the Letters of our Alphabet, beginning with the Letter A. So that when any Perſon means to have a compleat Set or Sets of any of the following Articles, he will pleaſe to name the *Letter*, under ~~which the Column ſtands~~, and the Number of Sets he would have, of the Article or Articles that he may want; and I ſhall, thereby, inſtantly know the Kind he would have, in Point of Quality. And this Method will be eſſentially neceſſary to be obſerved, in the ordering Harneſs for any particular Purpoſe.

A Set

A Set of Ploughs, for four Horſes or Bullocks, for making Fallow, and for ſowing Corn, either in ſmall Ridges, or in Broad Sets under the Plough, with their neceſſary Appurtenances, *viz.*

	No	A. l. s. d.	B. l. s. d.	C. l. s. d.	D. l. s. d.
The Block Plough ——	9	at 2 10 0	2 10 0	2 10 0	2 10 0
The Lomax, or Seeding Plough, to draw ſingle, wider in the Sole than the following, ——	15	2 5 6	2 5 6	2 5 6	2 5 6
The ſame Plough, narrower in the Sole than the above, and why. See Page 11 and 28. No. 15. ——	15	2 5 6	2 5 6	2 5 6	2 5 6
The Sledge for the Block Plough,	22	0 10 0	0 10 0	——	——
Two Sledges for the Seeding Ploughs,	23	0 7 0	0 7 0	——	——
Two Plough Hammers, ——	24	0 3 9½	——	0 3 9½	——
Two Plough Paddles, ——	25	0 1 7½	——	0 1 7½	——

The Reader, it is preſumed, will immediately ſee, that if he would have all the Articles, he is to order the Column A. If no Hammers or Paddles, the Column B. If no Sledges, the Column C. And if neither Sledges, Hammers, or Paddles, the Column D.

A Set of Harrows, for four Horſes, or Bullocks; for the Purpoſes of reducing Ground, and ſowing Corn under the Harrow, with their neceſſary Appurtenances, *viz.*

	No.	A. *l.*	*s.*	*d.*	B. *l.*	*s.*	*d.*	C. *l.*	*s.*	*d.*
One Pair of four Horſe Harrows,	34	at 3	16	7	at 3	8	3	at 3	8	3
Two Pair of two Horſe Harrows,	35	3	6	8	3	0	0	3	0	0
A Sledge for No. 34. ——	36	0	16	3	0	16	3	0	0	0
Two Sledges for No. 35. ——	37	0	14	0	0	14	0	0	0	0
One Set of Swingle-trees, with a ſhort Chain, —— ——	30	0	12	0	0	12	0	0	12	0

The Reader will obſerve, that in the Column A, the Harrows are to be rivetted B, not rivetted, both the Sets having the proper Sledges, but in the Column C, the Harrows will not be rivetted, neither are the Sledges included in that Column The Swingle Tree, No. 30, are neceſſary to the working the ſecond two Horſe Harrow.

A TABLE, containing compleat Harneſs for four Horſes, of different Qualities, in four diſtinct Columns, referring by the Numbers, to the reſpective Articles in the preceding Liſt.

Names of the ARTICLES.	A. No.	s.	d.	B. No.	s.	d.	C. No.	s.	d.	D. No.	at s.	d.
Four Bridles, — — —	107	at 11	4½	108	at 8	0	108	at 8	0	109	6	0
A Pair of Coupling Reins, —	192	2	2	192	2	2	192	1	7½	—	—	—
Four Neck Collars, — —	115	11	4½	116	7	6	120	4	6	121	3	3
Four Hame Straps, — —	165	0	4	—	0	4	—	0	4	—	0	4
Four Back-bands, — —	148	8	8	148	8	8	149	6	6	150	4	6
Four Belly-bands, — —	143	3	3	143	2	2	143	2	2	143	2	2
Four Back Cruppers and Hip Strap,	156	7	7	156	7	7	156	7	7	—	—	—
Four Pair of Trace Pipes, —	157	5	5	157	5	5	158	3	6	159	2	8½
Four Pair of Collar Hames, —	99	6	6	99	6	6	99	6	6	99	6	6
Four Pair of Traces, — —	97	11	4½	97	10	10	97	10	10	97	8	8
One Long Plough Chain, —	98	9	9	98	9	9	98	9	9	98	9	9
One Pair of ſuſpending Chains,	100	3	6	100	3	6	100	3	6	100	3	6
One Set of Swingle-trees, and a ſhort Plough-Chain, — —	30	12	0	30	12	0	30	12	0	30	12	0
One Set ditto, without a Chain,	30	9	0	30	9	0	30	9	0	30	9	0
One Whale-bone Whip, —	162	6	6	162	6	6	—	—	—	—	—	—

N. B. Thus, four Horſes are furniſhed with compleat Tackling, by which they cannot be cut or hurt; for working the four Horſe Plough, No. 9. The four Horſe Harrows, No. 33. The two Seeding Ploughs, No 15, and the two Horſe Harrows, No. 34. Only with this Difference, that when the compleat Set of Ploughs, A, are ordered, with any one of theſe Columns of Harneſs, A, B, C, or D, that two Pair of the Traces will be made longer than would be neceſſary for working four Cattle to the Plough No. 9, only, and theſe two longer Pair of Traces are for the leading Horſes, in working the Ploughs, No. 15. The ſame Rule will be obſerved in the Harneſs for four Bullocks, (which follow in the next Tables,) when the Set of Ploughs, A, ſhall be ordered with Harneſs. But when only a four Horſe Plough and Harneſs ſhall be ordered, then the Traces will be all of a Length.

A TABLE, containing compleat Harneſs for four Bullocks, of different Qualities, under five diſtinct Columns, referring by the Numbers to the reſpective Articles in the preceding Liſt, *viz.*

Names of the ARTICLES.	A. No.	s.	d.	B. No.	s.	d.	C. No.	s.	d.	D. No.	s.	d.	E. No.	s.	d.
Four Bullock Suggons, — —	180	at 1	4	180	1	2	180	1	2	—	—		—	—	
* Or Four Neck Collars, —	—	—		—	—		—	—		124	7	6	125	5	5
Four Back-Bands and Pads, —	148	8	8	149	6	6	150	4	6	148	8	8	148	8	8
Four Belly-Bands, — —	143	2	2	143	2	2	143	2	2	143	2	2	143	2	2
* Four Hame Straps, — —	—	—		—	—		—	—		165	0	4	165	0	4
Four Pair of Pipes, — —	158	3	6	158	3	6	159	2	8½	157	5	5	158	3	6
Four Pair of Bullock Hames, —	94	4	4	94	4	4	94	4	4	—	—		—	—	
Four Pair of Traces, — —	97	10	10	97	10	10	97	8	8	97	10	10	97	10	10
One long Plough Chain, —	98	9	9	98	9	9	98	9	9	98	9	9	98	9	9
One Pair of Suſpending Chains, —	100	3	6	100	3	6	100	3	6	100	3	6	100	3	6
One Set of Swingles, and ſhort Chain,	30	12	0	30	12	0	30	12	0	30	12	0	30	12	0
One Set ditto, without a Chain, —	30	9	0	30	9	0	30	9	0	30	9	0	30	9	0
One Elaſtick Plough Goad, —	164	6	6	—	—		—	—		164	6	6	164	6	6
* Four Pair of Horſe Hames, —	—	—		—	—		—	—		99	6	6	99	6	6

Thus four Bullocks are furniſhed with compleat Tackling, by which they cannot be cut or hurt, for working the four Houſe Plough, No. 9, the four Horſe Harrows, No. 33, the two Seeding Ploughs, No. 15, and the two Horſe Harrows, No. 34. The Columns A, B, and C, contain the Harneſs for Bullocks to work with Suggons, No. 183, and ſo every Article diminiſhes in Price, from the Column A to the Column C, both incluſive. But as it is a much better and ſafer Method to work Bullocks in Collars, as we do Horſes, I have named them in the Column of Articles, and marked them thus *, and carried them on to two other Columns, D and E, with all the other neceſſary Articles, diminiſhing in Price, from D to E; ſo whatever Quality any Perſon would have, he is to diſtinguiſh it by the Letter, at the Head of the Column he fixes upon.

A TABLE, containing compleat Harneſs for three diſtinct Columns, referring by the Numbers to the ref

Names of the ARTICLES.	A. No.	A. l.	A. s.	A. d.	B. No.	B. l.	B. s.	B. d.
A Bridle for the fore Horſe, — —	101	1	15	6	102	1	8	0
Two ditto, for the two hind Horſes, —	106	0	14	6	106	0	14	6
Three Neck Collars, — — —	111	1	5	0	111	1	5	0
Two Pair of Hames, for the two fore Horſes,	99	0	6	6	99	0	6	6
One Pair ditto, for the ſhaft Horſe, —	99	0	6	6	99	0	6	6
A Pair of Noſſils and Tugs, — —	181	0	8	8	181	0	8	8
Three Hame Straps, — — —	165	0	0	4	165	0	0	4
Two Pair of Cart Traces, — —	97	0	11	4½	97	0	11	4½
Two Stretchers, for the two fore Horſes,	96	0	2	2	96	0	2	2
Two Pair of Trace Pipes, — —	157	0	5	5	157	0	5	5
Two Back-Bands, for the two fore Horſes,	151	0	9	9	148	0	8	8
Two Belly-Bands, for ditto, — —	143	0	3	3	143	0	3	3
Two Back Cruppers, — — —	155	0	9	9	155	0	9	9
One Cart Saddle for the Shaft Horſe,	130	2	2	0	130	2	2	0
One Shaft Belly-Band, for ditto, —	142	0	11	4½	140	0	7	7
One Britchen, for ditto, — —	145	0	14	6	145	0	14	6
Three Horſe Nets, — — —	166				—			
One Whale-Bone Whip, — —	160	0	9	9	160	0	9	9

Thus I have endeavoured to range the different Qualities of Columns, ſo that by naming the Letter, at the Head of any one man would have. This Table will anſwer for two Horſes in a

Horſes in a Cart, of different Qualities, in ſix pective Articles, in the preceding Liſt, *viz.*

C.				D.				E.				F.			
No.	*l.*	*s.*	*d.*	No.	*l.*	*s.*	*d.*	No.	*l.*	*s.*	*d.*	No.	*l.*	*s.*	*d.*
103	1	5	0	104	0	17	4	106	0	14	6	107	0	11	4½
107	0	11	4½	108	0	8	0	108	0	8	0	109	0	6	0
112	0	16	3	112	0	16	3	115	0	11	4½	116	0	7	6
99	0	6	6	99	0	6	6	99	0	6	6	99	0	6	6
99	0	6	6	99	0	8	1½	99	0	8	1½	99	0	8	1½
181	0	8	8	—				—				—			
165	0	0	4	165	0	0	4	165	0	0	4	165	0	0	4
97	0	11	4½	97	0	11	4½	97	0	11	4½	97	0	11	4½
96	0	2	2	96	0	2	2	96	0	2	2	96	0	2	2
157	0	5	5	158	0	3	6	158	0	3	6	158	0	3	6
148	0	8	8	152	0	6	6	152	0	6	6	152	0	6	6
143	0	2	2	143	0	2	2	143	0	2	2	143	0	2	2
156	0	7	7	156	0	7	7	156	0	7	7	156	0	7	7
131	1	14	1½	131	1	14	1½	132	1	2	9	133	0	17	4
141	0	5	5	141	0	5	5	141	0	5	5	141	0	5	5
146	0	12	0	146	0	12	0	146	0	12	0	147	0	8	6
—				—				—				—			
160	0	9	9	160	0	9	9	160	0	9	9	—			

Harneſs, for three Horſes in a Cart, under diſtinct Column, I ſhall at once know the Kind any Gentle-Cart, as Tackling for one may be omitted.

The

The Nature of this Undertaking is attended with ſuch a conſtant Demand for ready Money, that I hope, whoever may favour me 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 add the Number which is annexed to the Articles in the preceding Liſt to ſuch Inſtruments as they may pleaſe to order, which will effectually prevent any Miſtakes. And alſo, to ſpecify whether they would have any extra Coulters or Socks to ſuch Ploughs as may be ordered; the latter will always be neceſſary, when the Ploughs are to go to any great Diſtance, becauſe no other Socks will fit my Ploughs but my own Pattern; the Reaſons for which, ſee Page 9, in my Explanation of the BLOCK PLOUGH, No. 9.

N. B. It has for ſome Time paſt been made a Practice to invite my Artificers to do what is called little Jobs for other Perſons, inconſiderately, I am willing to hope; becauſe a Moments Reflection would convince any Gentleman, that nothing can be more indelicate and unreaſonable, not to uſe a ſeverer Term, than privately, and to the Interruption of my Buſineſs, to call away Men whom I have imported, collected and inſtructed at a great Expence, whom I conſtantly maintain, together with their Families, and who are to return to me, when the Purpoſes of the Perſons ſo inviting them are ſerved. Some recent Inſtances of this Kind, added to many preceding Ones, obliges me to mention it thus publickly, which I hope will ſo effectually prevent a repetition of it, as to render it unneceſſary for me to take any further Notice of it.

THE END.

ualities, in eleven distinct Columns, re-
ling List, *viz.*

	H.			I.			K.			L.		
N	*l.*	*s.*	*d.*	No.	*l.*	*s.*	*d.*	No.	*l.*	*s.*	*d.*	No.	*l.*	*s.*	*d.*
One	0	8	0	108	0	8	0	108	0	8	0	109	0	6	0
One	0	7	6	118	0	5	5	120	0	4	6	121	0	3	3
One	0	17	4	134	0	11	4½	135	0	7	6	136	0	4	6
One	0	5	5	141	0	5	5	—				—			
One	0	12	0	147	0	8	6	—				—			
One	0	8	1½	99	0	8	1½	99	0	8	1½	99	0	8	1½
Nofl				—				—				—			
One	0	0	4	165	0	0	4	165	0	0	4	165	0	0	4
One				—				—				—			
One				—				—				—			

alities of Harneſs for an Horſe, in a one Horſe
Car nder their reſpective Cclumn, referring by the
Nu y Thing that can be wanting, for compleatly
furn eople, to which I thought it unneceſſary to give
a Pl ceſſary in a flat Country, though always very
Uſe he Whip, No. 163, or the Net, No. 166,
be and L, I have totally omitted theſe Articles.
And

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