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MINUTES
OF
AGRICULTURE,
MADE ON
A Farm of 300 Acres of Various Soils,
Near CROYDON, SURRY.

TO WHICH IS ADDED, A

D I G E S T

WHEREIN

The MINUTES are Systemized and Amplified ;
AND ILLUSTRATED BY
DRAWINGS OF NEW IMPLEMENTS, A FARM-YARD, &c.

The Whole being published as
A SKETCH of the ACTUAL BUSINESS of a FARM ;
AS
HINTS TO THE INEXPERIENCED AGRICULTURIST ;
AS
A CHECK to the Present FALSE SPIRIT of FARMING ;
AND AS AN
O V E R T U R E
TO
SCIENTIFIC AGRICULTURE.

By Mr. MARSHALL.

L O N D O N :
Printed for J. DODSLEY, in Pall-Mall.
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T H E

A P P R O A C H.

AN Author, like an Evidence in the Court of Justice, should consider himself as on oath at the bar of the PUBLIC: he ought to speak the truth, the whole truth, and nothing but the truth: and his evidence, like that of the subpoena'd assessor, will be credited or discredited in proportion to his education, his character, and connexions in life. Ought not, therefore, every PRIVATE Man, who offers himself at the tribunal of the PUBLIC, to preface his testimony by some account of himself?

The Author of the ensuing pages was born a Farmer, bred to Traffic, and returned to the Plow a few months before the commencement of the following MINUTES. He had long been convinced of the imbecility of BOOKS, and presently discovered the unfitness of BAILIFFS. He resolved, therefore, to be a Farmer from his OWN EXPERIENCE: He endeavoured to fathom the Theory and PRACTICE of every department.---As USEFUL TRUTHS occurred, he *planted* them, and *raised* the REFLECTIONS which naturally *came up*.

These facts and reflections being frequently the subjects of reference and perusal, he began to register his ideas in a manner more intelligible, not only to himself, but to his Friends, to whom the Register was ever open.

The more numerous these MINUTES grew, the more pleasure he took in increasing the number; the Retrospect became more and
more

THE APPROACH.

more interesting,---and he began to fancy them *really* important; His Friends, too, praised, or seemed to praise.

At length the question was put: "These Memorandums I find "useful to myself; may not some of them be serviceable to others? "Will they not exhibit a picture of PRIVATE AGRICULTURE totally "new to the PUBLIC? Will they not expose a collection of HAGARD "FACTS,---and give a view of the MINUTIÆ OF FARMING---as totally "strange to WRITTEN AGRICULTURE? Will they not, by shewing that "AGRICULTURE, as a SCIENCE, is *exceedingly abstruse*, and as an AVOCATION, *laboriously serious*, check that false and pernicious spirit of "Farming which has of late been industriously propagated, to the "signal injury of many Individuals, and which must, in its effects, "be injurious to the State?" AMBITION, the casting vote, gave it in the affirmative.

But the difficulty lay in the selection.—The Author was anxious to give a REAL LIKENESS OF FARMING*; but forefaw the tediousness which must attend on too minute a detail: he therefore determined to draw a middle line;—to insert every MINUTE, great or small, which was made during the first Eighteen Months; but of those made during the last Eighteen Months, to give such only as seemed to convey some useful HINT, or lead to SOMETHING USEFUL.

Therefore — before JANUARY 1776, is published every PETTY MEMORANDUM; which the Reader who claims the smallest degree of candour, will peruse as he would PRIVATE MANUSCRIPTS in the closet of his Friend; for he may be well assured, that nothing but a desire in the Writer to give a *real sketch* of PRIVATE AGRICULTURE, could have induced him to publish that which may appear, in the eyes of *some*, too minute for publication. He expects, however, that the Reader will not determine *separately* on each MINUTE; but suf-

* A sketch which otherwise might never have been held to public view.

pend

T H E A P P R O A C H .

pend his judgment until he has seen the several scattered rays converged in the DIGEST ; where, faint as they may *separately* seem, he hopes they will be found to throw more or less light on the object, or objects, to which they are conducted.

The MINUTES being generally made under the *immediate influence* of the (perhaps sanguine) ideas which gave rise to them ; and the Writer always considering his Minute-Book as his *confidant* ; to whom he communicated his sentiments in the very same language that he would have conveyed them to his *intimate Friend* ; there may (in the *Minutes*) be a FAMILIARITY and WARMTH of expression unpardonable in any thing—*except a Memorandum-Book*. But would it not have been evaporating the *spirit*, and marring the *sense* of the MINUTES, to have changed the autographical phraseology ? Would it not have been as truly ridiculous to have dressed up *private Memorandums* in the majestic stole of a JUNIUS, as it would have been in that magnanimous Writer to have arraigned the misconduct of Ministers of State in the *style memoranda* ?

Generally—the Writer hopes not to be *judged* by Men of narrow minds ; by Men who read and judge by rule : but by Men of enlarged ideas ; by Men of SCIENCE ; by Men who *think*, and think liberally ; and who *dare* to think, in defiance of CUSTOM, and the false awe of EDUCATION : by Men who *know* that IN MATTERS OF SCIENCE THE SMALLEST TRUTHS ARE VALUABLE ; by Men who are *aware* that GREAT EFFECTS RESULT FROM MINUTIAL CAUSES ; that flames proceed from sparks ;—that rivers are collections of rills,—armies, of individuals ;—and that UNIVERSE itself is MINUTIAE SYSTEMIZED.

The Author has one favour to beg of the INEXPERIENCED AGRICULTURIST : If, in the perusal of the following sheets, you meet with an Implement, a Process, or a Plan of Management which pleases you, do not *hurry* to the field of practice : consider *deliberately* whether

T H E A P P R O A C H.

whether or not it can be assimilated with your own plan of management : consult *deliberately* your soil, your situation, and your servants ; and thus, by a judicious adoption, and an attentive application, save the credit of yourself and the MINUTES OF AGRICULTURE. For altho' the Author practises what he preaches ; yet he wishes not to lay down POSITIVE RULES for others : and he here enters a Protest against such *didactic* passages, whether they occur in the MINUTES or the DIGEST, as may have escaped a *Perhaps* ; for his meaning is, not to enforce PRECEPTS, but to convey HINTS.

Near Croydon, Surry,
30 March, 1778.

W. M.

E R R O R S I N T H E M I N U T E S.

- 1775- Feb. 28. Last line but two—for *casting* read *collecting*.
Oct. 25. The third Minute—for *wrist* read *wrest*.
1776. Mar. 6. Last line but 14—for *arm* read *wrest*.
July 15. Second line—for *and as one*, read *and if one*.
— Ninth line—for *just* read *first*.
Aug. 22. A note—for *are* read *is*.
1777. Mar. 3. Eighteenth line—for *It* read *I*.
June 10. The third line of the fourth page—for *Lancashire* read *Cbeshire*.

E R R O R S I N T H E D I G E S T.

- Page 16. l. 20. for *confusion* read *confusing*.
18. l. 4. from bottom, for *tiibe* read *tiltb*.
20. l. 9. for *were* read *are*.
50. l. 4. from bottom, for *Whining* read *Whinny*.
73. l. 10. from bottom, for *Rye Grass* read *Rib-Grass*.
101. The note at the bottom of this page belongs to page 100.
104. l. 3. from bottom, for *iben* read *there*.

MINUTES

M I N U T E S O F A G R I C U L T U R E.

1774.

J U L Y 18.

S E R V A N T S.

Yesterday discharged *George Black*.—Why? Because I suspected him of smuggling;—because he was unequal to the management of the Farm, and is too much of a *Bailiff* to be reduced to a *Bustler*. He is hated by the men, and despised by the neighbours. He has good hands, but a bad head—a crazy couch, dangerous to lull upon ---a good implement of husbandry (spoilt by being made into a *Bailiff*) but a bad Husbandman.

I am resolved to be, henceforward, my own *Bailiff*, and learn to-morrow's management from to-day's experience, and next year's process from this year's miscarriages*.

HAYING. 26. Began carrying the hay of River Mead—got four loads into stack—caught in the rain with two more on the waggons—left

* The Writer must now, and during the first year, be considered as a traveller in a strange forest; who, conscious that the **PRESENT TRACK**, tho' *tolerable*, is frequently winding, here rugged and there miry, discharges his Guide, and resolves, if possible, to strike out a **NEW ROAD**, nearer, safer, and more agreeable. He sees at a distance the summit of the mountain he wishes to attain, and determines, at all hazards, to make his way towards it. The Reader must therefore expect frequently to see him entangled in a Thicket, baffled by a Quagmire, or climbing out of a Pit. But, whenever this happens, he will see him cautiously endeavouring to leave behind him such a Guide-mark as may prevent the like inconvenience in future.---Nor when he meets with an open, friendly glade, does he leave the approach unobvious. He equally marks out the **RIGHT** and the **WRONG**, that, *in a future journey*, he may choose the one, and

B

avoid

MINUTES OF AGRICULTURE.

26. JULY, 1774.

four or five in the field, fit to be carried—the stack and waggons abroad.—*In future*, I will accord to the adage, “CARRY HAY WHILE YOU MAY.”—Some of it was fit yesterday; but I was unwilling to break the day’s work of a plow-team.

27. The hay is not much worfe for the steeping rain of last night—and the SAIL-CLOTH † saved the flat stack surprisngly.

28. Carried all River Mead—got on briskly.—*Remember*,
BUSTLING NECESSARY TO HAYING.

COMPOSTING. 31. Finished composting the border of Ley-Lands. At 18d. a rod (of 5 yards and half), the men earned 3s. a day each; but they worked very hard.—There was a load of dung laid on about every 4 yards and a half; so that digging up the *flooring* (this was a border which produced nothing but weeds and rubbish), and making the mould into compost with the dung, (for the young clover of the same field) cost about 15d. a load of dung.

JULY, 1777. This is very expensive management, and its eligibility is still a moot point with the Writer ‡.

AUGUST.

WEEDS. 6. Cutting thistles and fern on Norwood Common, (bordering on the inclosures) to prevent their seeds from being blown into the

avoid the other; sometimes looks behind him, to reflect on the good or the evil he has missed---or theorizes on the most eligible track to be taken hereafter.

† An old Sail of a Ship.

‡ These Observations under JULY, 1777, are to be considered as the *public* remarks, explanations, and criticisms, of a Person whose judgment has reached some degree of maturity, by three years elaborate experience; whereas the Minutes themselves are only a *private* Register of his ascendant ideas during his novitiate; yet on which, collectively, his present judgment is formed.

When the MINUTES are full and just (in the Writer’s *present opinion*), the OBSERVATIONS are unnecessary.—When they are deficient or false, yet contain something interesting to Agriculture, it is judged more eligible to *explain* than to *alter* the original. And these explanations occurring so frequently, it is deemed more convenient to the Reader,
to

MINUTES OF AGRICULTURE.

6. AUGUST, 1774.

fields, and to raise MANURE.—Drew them into the yard, green, and left them in heaps to ferment.

JULY, 1777. This management wants no recommendation.—It is obviously eligible.

WORKING CATTLE *. 9. The Men and Boys are unanimous in their dislike of the oxen.—The buying of them was unluckily premature.—Their keep has thus far been treble the value of their labour, and they must now lie a dead weight 'till after Harvest. They have been the cause of more impertinence, vexation, and bickering, than all the other appendages of the Farm.

JULY, 1777. These were four oxen bought in Suffex, the preceding spring, at a time when the Writer was fully employed in the ordinary business of the Farm, besides the immediate superintendence of a new Farm-yard, with a complete suit of Erections:—and this Minute is inserted as a hint to such as wish to introduce SOMETHING NEW; for if it should interfere with the *necessary* business of the Farm, ten to one it will miscarry.

WHEAT. 20. Last Tuesday's rain had a remarkable effect on the mildewed wheat.—On Monday it was small, shrivelled, and steely

to join them immediately to the Minutes to which they belong, than to call off his eye perpetually to the bottom of the page, *to seek for a Net.*

The Indenture, it is hoped, will be thought fully sufficient to distinguish the *Observations* from the original *Minutes*.

* It is as absurd to distinguish Animals which Nature sent into the world *red-and-white*, by the name of *Black Cattle*, as to call those which never had, nor were ever intended to have horns, and of course *hornless*, *Horned Cattle*. Nor is it less ridiculous to suffer a word so altogether *English* as CATTLE, to remain in the ENGLISH LANGUAGE, without a determinate signification. The Writer, therefore, makes no apology for adopting it as the general name of Bulls, Cows, Oxen, Steers, Heifers and Calves, whether they happen to be black or white, horned or hornless; nor for using it in the singular as well as the plural, analogous with *Sheep*.

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26, AUGUST, 1774.

—on Thursday and Friday it became plump and kind.—The longer it stands, the more it improves.

Is not this a sufficient hint for letting blighted wheat have a shower in shock?

Cows. 29. Yesterday one of the Lancashire cows died of the red-water.—This is the same which suckled the two rearing calves loose in the field.—Could this have affected her? On opening her, her maw, though she had not ate for some days, was full of half-digested vegetables—her urine-bladder full to the stretch of blood-like, muddy water—and her gall-bladder remarkably large and yellow.

WORKING HORSES. 30. Brought down from Adscumb eight sacks of *oats in chaff* for the cart-horses.—Would it not be ridiculous to winnow them? Surely, to dress oats intended for private use, is muddling through a dirty, suffocating job, without any other advantage than that of having the pleasure of remixing the corn and chaff in the stable.

JULY, 1777. This may be plausible theory; but in evidence that it is not eligible in practice, those were the first and last oats the Writer gave to the Horses without winnowing.—The quantity of *corn* cannot be ascertained; some oats yield more chaff than others, and the Carters were of course dissatisfied; besides the inconveniency of carrying a quantity of dust, weed-seeds and trumpery, into the stable, and from thence to the dung-hill.

HARVESTING. 30. We have had a great deal of wet weather.—Some wheat which was caught in it, as it lay on the ground, is very much damaged.—Last night I put some men to work, to cut forked props about fifteen inches long, which I meant to have fixed in the ground as supporters of tiling-laths, on which I intended to have laid the wheat which

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30. AUGUST, 1774.

which was growing.—The laths would not have been worse for the buildings, and the whole labour trifling.—However, to-day's wind and sun have luckily made them useless.

Perhaps, had this precaution been taken at first, (instead of turning three or four times) not an ear would have suffered.—For by thus raising the heads from the ground, not only a free circulation of air would be gained, but the elevation would shed off the rain, and prevent its lodging in the ears.

JULY, 1777. If; thro' carelessness or ill-luck, wheat be caught in the rain, perhaps this management may be worthy of pursuit.—But except the weather prove very bad indeed, perhaps setting it up in *singlets* is a sufficient preventive, and the labour of it much less, as will appear hereafter.

S E P T E M B E R.

BUSTLING. 3. A fine morning.---Carried the remainder of O. 2.*---part of N. 5. &c. &c.---A number of little obstructions continued to retard us all the morning; but at last we *killed the devil* effectually (over-turned the waggon), and deposited the last load of O. 1. in the rivulet, in Home-field.—Got into G. 1. when we ought to have finished carrying it.—In the dusk, a cart went to load in E. 1.—Coming out of the field, got to a *stand-still*, and shifted the load.—Sent more strength to help out.—In the gate-way between F. 2. and the Common, lo! the gatepost caught the tumor of the shifted load, and scattered its contents in the brim-full ditch.—Re-loaded part of it, and got it into the barn between nine and ten in a dark night.—Left part of E. 1. uncarried, G. 1.

* Though these new names of different fields were not thought of, nor consequently adopted, until January 1776; they are used, priorly, in the transcript, equally to avoid barbarism and prolixity.

in

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6. SEPTEMBER, 1774.

in a slovenly condition, and a load of cocked oats in M. which ought all to have been cleared before dark :—but this was a *day of misfortunes*.

In future—BUSTLE IN THE MORNING, AND DEFY THE LITTLE DIFFICULTIES OF THE DAY.

HARVESTING BEANS. 6. Going this morning among the bean-cutters, a thought struck me, that *pulling* (eradicating) would be preferable to *cutting* (with sickles). On making the experiment, I found that I could pull them faster, and *much cleaner*, than they cut them—besides leaving the land in a state greatly superior. The waste too is less—scarcely a bean lost.—Being perfectly clean from weeds and grass, the beans are immediately ready to bind and set up---and the roots lifting them from the ground, give the air a free circulation.---The work, also, is easier to the Labourer.--He stands more upright, and the power required is much less (the surface is now moist; they may not pull* so easily in dry weather). By striking the roots of each handful against the foot, the mould is almost wholly disengaged from the fibres;---the soil in the drills, instead of being bound by the roots, and cumbered by the stubble, is left as loose as a garden, and the surface free from obstructions; and, if *thoroughly* hoed, is as fit as a fallow to be sowed with wheat on one plowing.

IMPLEMENTS. 11. During the late rainy weather, I stumbled on an Implement, which *Theory* says is of that obviously useful species, which her elder sister, *Practice*, always approves.---She says †, it may in a few minutes be a *sub-soil*, a *move-soil*, a *turn-soil*, a *mid-soil*, and a *sur-soil*. It is *multifurrow*—the number may be increased or decreased at pleasure.

JULY 1777. The Writer wishes to give a drawing of this plausible Plow; but as it is little more than a complication of the

* The Active Verb is here, and frequently in the *Minutes*, used passively.---It is technical and familiar.

† Do not believe her, her name's up for a Liar, Oct. 1775.

double-

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13. SEPTEMBER, 1774.

double-shaft Plow, Minuted under the 24th of AUGUST, 1775, he defers its description till then.

13. Tested the *Coulter-rake* (for the first time since the low wheels were put to it) in S. a bean-stubble.—It exceeds my expectations.—It leaves the surface, at twice going over, as clean and pulverous as can be wished for;—but single shafts would be preferable to double ones.—With these, the off-horse treads that which is textured, and destroys the effect: With those, it will be an excellent preparative for wheat after beans.

JULY, 1777. This Implement was constructed of a range of coulters inserted into an axle, supported by two wheels about eighteen inches diameter,—and dragged by a pair of double shafts.—The theory of it arose from seeing the coulter of the common plow eradicate and collect the weeds and rubbish as it passes along;—and this was meant to eradicate and collect the weeds, and at the same time leave the surface of *stiff* land pulverous and *porous*.—The fronts of the coulters were therefore not sharp, and their backs thick; on the contrary, their fronts were about half an inch thick, and their backs hammered down almost to an edge:—nor were they placed upright in the axle, but with their points tending forward, the line of their tendency making an angle with the horizon of about 45°.

This Implement was not destitute of merit, but its complexity and expence cancelled it totally:—besides, the *Sub-plow*, Harrow and Horse-rake, cleanse and pulverise the surface still more effectually.

LEYING *. 18. In June, mowed swaths across a field of barley and a field of oats, to try its effect on the grass-seeds, which were sowed

* *Laying* is here used for the process whereby arable land is reduced to sward, to grass land, to a *Ley*.

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18. SEPTEMBER, 1774.

with the corn in the spring.---The green corn was given to the cart-horses.---The result is this :---The parts mowed are perfect mats--the young grasses, much ranker and stronger.---They and the second crop of corn would have made an excellent summer-pasture. The second crop of oats, though puny, was in full *barw*, when the first crop was cut.

JULY, 1777. If green fodder and pasturage be wanted, this may be eligible management.

EARLY SOWING. 25. A great quantity of rain has fallen last night—the whole country is deluged.—O the charming effects of a late Harvest! In some parts of Kent, and on the hills of Surry, the Farmers are in the midst of it.—*In future*, RATHER BE BEFORE, THAN BEHIND THE SEASONS.—It is true, the beans only are now out; but the oats and some of the barley are but indifferently got in, and had the incessant rains set-in only a few days sooner, they must have been very bad indeed.

OCTOBER.

THE WEATHER. 2. “What a wet Season! The like was never “known!” is the general cry.—But is not every year—almost every Season, remarkable for something? And, indeed, the greatest wonder is, how the rains and fair weather come so regularly as they do.

In future—EMBRACE THE FAIR OPPORTUNITY, AND PREPARE FOR THE UNCERTAINTY OF SEASONS.

COMPOST-FALLOW. 17. Finished taking up the potatoes, and spreading the compost of F. 2.—The crop is not large, but the roots are very fine.

JULY, 1777. Led by the idea of making compost useful while in a state of maturation, and of culturing and cleansing the soil, while

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while a crop is produced ; in each furrow of a foul wheat-stubble, strewed potatoe-plants—covered them with rows of *long* dung—(strawy, undigested dung)—and reversed the ridges, as if no dung nor potatoes had been deposited.—During summer, plowed and cleansed the intervals, and hoed and earthed up the rows.—In autumn, opened the potatoe-ridgelets with a plow—gathered—harrowed—re-gathered—and spread the compost over the intervals with shovels.

A very fine crop of wheat and another of tares succeeded ; and were the Writer to plant potatoes for sale, he would make compost-fallows—with these improvements : Instead of covering the plants with the dung, he would first bury the dung, and afterwards dibble in the plants ; and instead of plowing and harrowing up the potatoes, he would dig them up, and cleanse the compost by hand-picking.

The evil attendant on this process, is the prevention from cross-plowing during summer.

N O V E M B E R.

SUMMER-FALLOWING. 5. Sowed two ridges of the exhausted foul part of Barn-field, a bean-stubble, with wheat.

MAY, 1775. Plowed it in.—*Good for nothing.*

JULY, 1777. This field was summer-fallowed, and sown with wheat the ensuing autumn, *without manure* ; the crop *very good*—from three to four quarters an acre.—It is now in clover, as clean as a garden ; and the Writer is convinced that summer-fallowing, if the soil be foul, is the most spirited of all spirited managements ; and if one summer will not cleanse it, it is doubly spirited to give it two.

C

CARTERS.

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19. NOVEMBER, 1774.

CARTERS. 19. Boy Joe broke two dung-carts to-day thro' carelessness. *In future*,---*Never suffer Boys to drive*; it is only saving ten-pence a-day, and twenty shillings will not pay to-day's damage.

BARN-ECONOMY. 22. We are over-head-and-ears in oat-straw. It is one man's employment to supply the horses with oats, and no vent for the straw.—To thrash oats in autumn, whilst the cattle are abroad, is infamous management.

In future—Save a stack of oats until the eve of Harvest, sufficient to supply the horses until the cattle be taken up (at least till Martinmas); —straw in Hay-time is necessary for thatch, and useful to mix with indifferent hay, or second crop of clover.—Fill the barns with wheat; laying such as will shew for a seed-sample easily to be come at.—Begin thrashing as soon as possible, and have them cleared by Martinmas, ready to throw in spring-corn and pulse, for fodder for the straw-yard-stock—oats for the cart horses—pease for the hogs, &c. &c.—The wheat in stack will take possession in the spring, when the straw-yards are shut up, and this again give way to the reserve of oats.

At any rate, do not make a shameful waste of straw, by having oats to thrash in October;---rather beg, buy, steal, or let the horses starve.

FALLOWING. 29. Re-began to stir the fallow of B. 3. *Before*, (when we were obliged to leave off) it was between wet and dry, and clung to the plow.—*Now*, the frost, snow, and rains, having run the soil to mortar, it slides; but it is absolute plaster, and turns up in whole furrows.

DECEMBER.

LEYING. 5. Plowed furrows in K. 2. to take off the water which stood on the surface:—the young grasses were totally covered in
many

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5. DECEMBER, 1774.

many places, and in others buoyed up by the foliage, which swam on the surface.

I am convinced that a stiff, level, retentive soil may be *leyed* too flat, and that this field ought to have been gathered up into wide, gentle ridges.—The furrows which we drew to-day, are but a *partial* relief to it, are at present very uncouth, and will be troublesome in the spring.

Perhaps, an Implement may be contrived to cut surface-drains of a sufficient depth, and at the same time carry off the sod :—the attempt is worth making.

The condition of this field must still be very hurtful to the young trefoil, clover, rib-grass, &c. and the dung cannot with any propriety nor conveniency be strewed in the water.

JULY, 1777. The Writer is still clearly of opinion, that a *retentive* soil ought to be *acclivated*, whether it be intended to produce corn or grass ;—with this difference,—for winter-corn, the ridges ought to be high and narrow ;—for grass, low and wide :—perhaps half a rod wide for the former---two rods wide for the latter.

It is true, the grasses did not perish ; but, tho' the soil is clean, in tolerable heart and fine tilth, this field never yet bore a middling crop ; excepting the upper head-land, which lies perfectly dry.—It is observable, that this part begins every year to vegetate much earlier than the part which lies flat and wet.—The sun has here double duty :—first, to exhale the superfluous moisture, and then to throw in an extraordinary degree of warmth, to rouse the benumbed fibres. When That has secured its surface from the spring drought, This is but beginning to shoot ; and the dry weather setting-in whilst its surface is wholly unshaded, it is of course baked to a crust, and the crop stunted.

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5. DECEMBER, 1774.

The Writer, therefore, has ever since acclivated, and (if not convinced of its ineligibility by repeated comparative experiments) will ever acclivate a cold soil.

The Implement before-mentioned was attempted, and the wood-work nearly finished; but a more simple, and less expensive mode of surface-draining occurring to him, it may never be used.

MANURE. 7. Shot a load of gravelly loam in the gate-way of Adscumb Farm-yard, to prevent the road-water from overflowing into the yard, and carrying away the essence of the dung.

It is bad management to suffer the water which falls immediately upon dung, to drain *from* it wastefully; but infamous, to suffer that which is extraneous to drain *thro'* it; tho' the latter is a common practice.

THRASHING. 7. How necessary is it to attend narrowly to the thrashing of wheat!—Two Fellows, whom I have employed for some time, have been cheating the Public in general, and myself particularly, upwards of a fortnight.—I did not discover their rascality until yesterday. I ordered half a load of the straw which they had bound for sale, to be drawn from the rest indiscriminately, and re-thrashed.—To-day, we have cleaned up above half a bushel of prime wheat! covered them with shame and disgrace, and discharged them, publicly, as a warning to the rest.

SWINE. } 26. The fattening-hogs have finished the potatoes, which
POTATOES. } have swelled them out prodigiously. They were boiled to batter, and given to them warm.—The effect exceeds my expectations.—Put them to pease and damaged barley unground.

SWINE. } 29. The barley passes thro' them whole:—therefore,
BARLEY. } *unground barley is improper for hogs.*—Put them to pease-alone.

FENCES.

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31. DECEMBER, 1774.

FENCES. } 31. Crooked fences—public paths—and close
 FOOT-PATHS. } fields, are heavy, if not the three heaviest curfes of
 SMALL FIELDS. } arable land; and I feel a peculiar satisfaction in
 having finished grubbing the uncouth hedges and borders of the five
 acres, four acres, &c. &c.—and no less pleasure in having confined,
 by a new straight ditch, a quarter of a mile long, the nuisance of the
 foot-path to a corner of the Farm; which corner I mean to *lay* the
 ensuing spring.

The expence and attendant advantages stand thus :

Paid for breaking up, deep enough for the plow to pass *£. s. d.*
 safely, 86 rods in length, and about a rod in width, at 2s. 8 12 0

—Cleaving and stacking 28 $\frac{1}{4}$ stack of wood (cankered
 pollards, and the roots of timber-trees taken down for the
 buildings), at 5s. - - - - - 7 1 3

—Binding 320 bavins, at 2s. 6d. - - - - - 0 8 0

—Making 79 rod of ditch, five feet wide at top, three
 feet deep and ten inches wide at bottom, at 17d.—(*In future,*
 16d. is a fair price for such a ditch) - - - - - 5 9 1

The new bank and ditch take up about 55 square rod,
 worth, during the remaining term of the lease, about - 5 0 0
£. 26 10 4

The wood is worth on the spot, 15s. a stack, and the bavins---
 spray bavins---10s. a hundred. *£. s. d.*

28 $\frac{1}{4}$ stacks of wood, at 15s. - - - - - 21 3 9

320 bavins, at 10s. - - - - - 1 12 0

There is, as near as may be, half an acre of land re-claimed,
 worth, on a par with the rest of the Farm, during the re-
 mainder of the lease, 7l. 6s. 3d.; but it is fresh virgin soil,
 which will give three or four good crops without manure,
 and is worth, during the remainder of the term, at least, . 10 0 0

£. 32 15 9
 Thus,

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31. DECEMBER, 1774.

Thus, there is an apparent neat profit of 6l. 5s. 5d. besides the invaluable advantages of open fields and long ridges. But the ditch is not a fence;---the quick is yet to be planted, a temporary hedge to be made, and the quick to be weeded and defended.

STUBBLE. 31. Re-began to harrow down the stubble of O. 2. with a pair of large Harrows;---but the tines stand too wide, and the stubble is *still* too tough. Hung a pair of small Harrows behind a plain Roller, which answer very well.---Going twice in a place breaks it down sufficiently, *in a frost*, to be gathered up with the Horse-rake, *when damp*.

JANUARY, 1775.

SWINE. } 3. Yesterday, put the remainder of the fatting-hogs
CABBAGES. } to pease.—Cabbages take more boiling, and are not so well affected, as potatoes—and make an abominable stink.—However, to precede potatoes, or when these cannot be had, cabbages may do, as *relaxing preparatives* to pease.

JULY, 1777. The Writer has not since boiled any cabbages;---but, given raw, he finds them of very great use to the yard-hogs, particularly the suckling sows; and he hopes never to be without a patch of cabbages.

STUBBLE. 4. (See 31. DECEMBER, 1774.)---The Horse-rake, going twice in a place, this open weather, gathers it up very clean.

PURPLE BEANS. } 8. Counted the produce of the
PROLIFICKNESS OF VEGETABLES. } double stem of Cape beans from one root, which has been a piece of parlour-furniture since Harvest.---

It

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8. JANUARY, 1775.

It had, when drawn, upwards of ninety pods; but some of them were immature. I now opened,

	2	pods	of	5	each,	10	beans.
	12	-	-	-	4	-	-
							48
	37	-	-	-	3	-	-
							111
	27	-	-	-	2	-	-
							54
	7	-	-	-	1	-	-
							7
	<u>85</u>	pods				<u>230</u>	vegetative beans.

A pod of one was dubious, which I threw away; the rest were dried to powder. Put up the fives and fours---the threes---and the two's and ones, in three separate papers, to try, hereafter, whether the seed which springs from a root specially fructuous is, or is not, in itself peculiarly prolific, and whether the particular circumstances of its production influence its produce.

JULY, 1777. These beans were drilled indiscriminately, in a patch of the same species.---The particular produce of the pods of different sizes, were identified by labelled stumps, and the experiments rigidly attended to. But at Harvest, the smallest degree of disparity could not be discovered; the bean which was brought forth singly, being equally fruitful with that which *happened* to be produced in a pod of five or six; and that which *happened* to be produced on a stem of ninety, not more fertile than its neighbour, grown on a stalk of fifteen or twenty.

These beans are said to be natives of the Cape of Good Hope. They are small, remarkably plump, and of a beautiful purple. In general, they pod *very* well; but, being small, do not *fill the bushel*: a middling crop, last year, yielded only eighteen bushels an acre.

CABBAGES. 10. A patch of sixty rods this year has abundantly supplied the kitchen, (with six or eight hungry fellows in it) from

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August till now.---Some have been given away, and probably some stolen;---the yard-hogs have been fed with them, more or less, several weeks, and six fatting-hogs brought forward eight or ten days;---fourteen dozen were drawn to-day, and *laid-in*, in fresh ground, to prevent their *running*;---a great many are still left in the field for the store-hogs to be turned to;---and of those sixty rods, there was at least one-quarter destroyed or stunted by the grub. The soil, it is true, was well tilled and well dunged, but I apprehend it has discharged the debt with interest.

CLAYEY LOAM. 16. I wish to break up E. 1. for a fallow.---Attempted to plow it with the stubble upon it; but this and the may-weed, added to the clingyness of the soil, forbade it.---Attempted to horse-rake it off; but it hangs to the teeth, as if dipped in bird-lime, and I am obliged to give it up wholly.

If this field was ever in grass, the man who broke it up ought to have been buried alive under the last furrow.

HARVESTING WHEAT. 21. Two men have been six days each in thrashing-out three quarters and seven bushels of wheat! At four shillings a quarter, (the agreement) they did not, (including a shilling a load for the straw) earn common day-wages, tho' they thrashed hard, and stuck close to it;---but it was *got in damp*. The straw thrashes all to pieces, and the corn is *cold*.

In future---Be careful not to carry wheat into *barn*, while damp, if it can possibly be avoided. *Perhaps*, in general, there is more danger of harming it in mow than in shock.

MANURE. }
HORSE-RAKE. } 24. Horse-raking M. 3.---The dung laid on one
FERN. } side of it was much too *long* for a sward---too undigested to dissolve with the rains. It lies in large lumps on the surface, and the grass under it is become yellow and rotten.

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rotten. The Horse-rake makes good work.---It gathers up the undigested, pulverises and scatters the digested, and scarifies the sod.

What rakes up is chiefly fern; some of it as entire as when brought from Norwood, though it has been in the dung near twelve months. This is a heavy charge against fern. Perhaps, it delays the maturity of a dung-hill, a full year longer than straw.---Perhaps, straw at fifteen shillings a load is more eligible litter, and *cheaper* than fern at five.

Perhaps, the received opinion that fern breeds smut may be thus accounted for:---When a straw-mixen is fully digested, and fit for the field, a fern-mixen is in the height of fermentation:---but it suits the Farmer to carry them both on at the same time---That, pure *spade* dung---This, crude, *porous*, and swarming with animalcules of various species, and in various states.---These are of course conveyed to the soil; and *perhaps*, from insects or vermicules, or both, comes smut. Thus, the crop from the straw-mixen is healthy, whilst that from the fern is diseased.

JULY, 1777. The Writer, convinced, from this and other observations, that fern retards very considerably the maturation of manure, has not used it since, except in cases of great scarcity of litter for the barns and stack-frames.

But he does not hereby mean to decry fern wholly---it may be very eligible in many situations---nor does he mean to convey an idea, that the manure produced from it, is of an inferior quality to that produced from straw; but, on the contrary, to expose that received vulgar error:---for he is of opinion, that manure from fern *thoroughly concocted*, is as meliorating, and as free from *infection*, as that which is made from straw; and, where it can be kept separate, fern may be very eligible cart-horse-litter.

HORSE-RAKING DUNGED SWARD.	}	28. Finished carrying off the
SCARIFYING SWARD.	}	fern-rakings. The rake left
them in rows, out of which they were shook into heaps, and returned		in

D

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in carts to the Farm-yard for litter. This is very neat, and *must* be a very good job ;---the surface is disencumbered, and the digested dung worked thoroughly into the sod.

Experimentally, raked one rake's width harder than the rest.---Tore much of the clover and rye-grass up by the roots.---Will it invigorate those plants which are lacerated but not eradicated, or will the frost perish the exposed fibres? Remember,---the upper part was raked in the afternoon, preceding the *very sharp* night.

JUNE, 1775. No obvious difference---the whole field a very good crop---upwards of two loads an acre.

WHIP-REIN PLOWS. 30. Last week fetched home two *Yorkshire Plows*, (to be drawn by two horses without a driver)---and to-day got one of them to work.---Man and horses as tractable as could be expected from a first essay, and made very good work.---Whip-reins against every thing, for Adscumb! (a light soil) A boy and a horse (2s. 1d. a-day) are saved, and the soil beneficially trodden :---besides, two horses *in rank* move quicker, much quicker, than three *in file*, and seem to carry off their work more cheerfully.

SOOT. } 30. Last spring, I set two men to sow foot over
SOWING-CART. } wheat.---They stripped themselves naked, and, poor
devils, not being used to it, narrowly escaped suffocation.---I was hurt to see them, and then made a resolution never to sow any more soot, except I could contrive an Implement which would scatter it with some degree of comfort to the labourer.

Since then, I thought of one.---Last week I built it, and tried it to-day; but the wheels are too narrow---they cut-in three or four inches :---instead of one man, it requires two men to draw it.---Ordered a pair of old wheels, much broader, to be fitted to it.

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30. JANUARY, 1775.

STUBBLE. 30. In six days, one man has *chopped* (cut with a sith against the left foot, collecting it at the same time between them) No. 34, 36, 37, 38, 39, 42, and 27, of O. 1. making together 4 acres, 2 roods, 9 perches, which, at 10s. a week, is 2s. 2½d. an acre---but the ends of some of the pieces were not worth cutting.---Supposing he cut four acres, it cost 2s. 6d. an acre. The rolling in frost, and raking in thaw, cost, as nearly as possible, the same money.---The rake leaves less upon the ground, and eradicates many weeds; but the stubble is fit only to litter the yard with.---The sith gathers it freer from dirt, and it is litter for the cart-horses.

In future,---If horse-litter be wanted, chop stubbles;---if not, rake them.---It raises a greater quantity, and leaves the surface much cleaner. Besides, raking *a-crofs* the ridges scarifies the surface at right angle to the direction of the Plow.---O. 2. breaks up like a fallow.

FEBRUARY.

WORKING CATTLE. 3. Harnessed the old oxen in all their new finery---their fringes and tassels---their gaudy bridles and housings;---the Pantheon never saw two more ridiculous Macaronies:---but what is still more ridiculous, the very men who fancied it beneath them to associate with *oxen*, are now ambitious of being the companions of *horned horses!* and their new name and finery have had the desired effect.

In the field they behaved very well; but coming into the yard, *Duke* broke loose with his trappings upon him, and put the pigs and poultry in bodily fear;---a bated bull was never more furious, and it is well that it ended in fear, and the breaking of one trace.---But I will certainly be up with him to-morrow.

4. Got a ring made to put in the ox's nose.

JULY, 1777. This thought arose from seeing a mischievous bull in Yorkshire tethered by the nose. The Writer, however, was

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very reluctant in making use of it;—and indeed, nothing but necessity (for this ox was become truly dangerous) could have persuaded him to it;—for he was afraid that it would give the men an opportunity of torturing him.—However, to the credit of their humanity, he believes it was never made use of for that purpose.

6. Rung the riotous ox.---The operation is very easy:—We attempted to *punch* the hole to receive the ring, but a *penknife* opened it much better.—The nostrils above the large cartilage which separates their extremities, are divided only by two very thin membranes, that are easily perforated. The *ring* is about three inches in diameter;—but *perhaps* an *oval* would fit easier.

SOWING-CART. 6. Re-tried it.—(See JANUARY 30.)---It answers much better with the broad wheels, and, I hope, experience, and a few trifling alterations, will complete it.

WORKING CATTLE. 7. The rung ox is as passive as a spaniel, and leads like a cur.

SWINE. 10. Yesterday a sow farrowed, and last night she over-laid one of her pigs.---This has frequently proved the case, and, *perhaps*, in future, give sows very little litter the first week after farrowing---They cannot feel their pigs---they cannot distinguish them from the lumps of litter, if much:---Perhaps, a dry platform is the most natural.

JULY, 1777. This is false theory; for if a sow farrow in the fields, she collects a quantity of grass or weeds, and makes herself a soft, dry, warm bed:---therefore, *some* litter is natural---nevertheless, *much* is undoubtedly dangerous; and, perhaps, the

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best rule is to give them more than enough before farrowing; but as soon as they have made up their bed, take the surplus away.

FARM-YARDS. } 15 Shovelling the gangways, and re-littering
MANURE. } them with long dung.

Littering Farm-yards is an excellent practice;---it *forwards the digestion* of stubble, offal straw, or *long dung* very much, and makes the yard comfortable.

WORKING CATTLE. 16. The points of the shoulder-blades of one of the oxen are swelled exceedingly His shoulders are made very awkwardly for harness---they protuberate both at the top and bottom, and leave the middle hollow.

Perhaps, choose the ox for harness, whose shoulder-blades are thin and withers fine---whose shoulders from the withers to the elbow are convex, not concave, [JULY, 1777. These are rarely to be met with.] and whose elbows are short and blunt;---but, perhaps, a collar may be contrived to fit a shoulder, be it ever so hollow.---Perhaps, drawing in yoke makes their withers foul, and not so fit for harness. This seems to be the case with *Buller*; but he is altogether a loose, cross-made lump of *dead flesh*, and totally unfit to work with horses.---A cart-ox ought, no doubt, to be handsomely made, deep-chelled, straight and clean-limbed, short-horned, full-shouldered, active, *spirited*, and carry his head high.---*Duke*, if possible, is *perfect*.

SOWING-CART. 22. (See FEB, 6.)---It is still too heavy to be drawn by hand, and cannot be drawn by *one* horse, without injury to the crop---therefore put two horses to it---one to walk in each furrow. Its construction is still imperfect:---the foot is somewhat damp, and when the cart (the hopper) is full, it binds, and forms an arch over the roller.---Something must be contrived to loosen it, and bring down a regular supply.

HARROWS.

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23. FEBRUARY, 1775.

HARROWS. 23. Began to prepare for drilling beans in K. 4. The common ox-harrows, (large harrows for four or more horses) are totally unfit for half-rod ridges.---Two are too wide, and one waddles on the top, and is too narrow,---Perhaps, a *jointed* harrow, with the horses single, would be best.

WORKING CATTLE. 24. Rung the younger oxen with *femicircles*--- (with irregular figures, resembling the letter D.)---but the Smith has made them too wide (the diameter too long): when they are reduced to a proper size, perhaps they will be preferable to *circles*. He put them in without throwing the bullocks.---It is a mighty easy piece of business.

JULY, 1777. The Writer having now more leisure, (*See* Aug. 9, 1774) was determined, in defiance of vexation and ill luck, to work oxen: at least, to give them a *fair trial*.---Self-emolument, however, had very little share in the attempt; for, from the experience he had had, he did not then believe, that *around London*, oxen are *cheaper* beasts of labour than horses: and he wishes to *confess*, that PATRIOTISM was his *leading* motive, but forbears countenancing publicly so unfashionable a virtue, lest his *loyalty* should be doubted!!!

CROOKED LANCE. 25. (*See the 23d.*)---This field was a rye-grass ley of eight or nine years old, and was gathered up, in winter, into half-rod ridges to be drilled with beans:---but the ley being *quite flat*, and of course wet (the soil a retentive, clayey loam), it broke up as tough as glue, and the harrows cannot nearly raise mould enough to cover the seed.-- I have therefore been contriving an Implement to scarify the surface, that the harrows may have more effect. It is still too wet to bear the horses: an Implement which can be drawn by the horses walking in the furrow is therefore necessary; and that which I have made,

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made, resembles a horse-rake with a joint in the middle, and the two arms crooked, to fit exactly the round half-rod ridges. Instead of teeth, the arms are furnished with blades, four inches apart, ten inches long, and about two and a half broad at the top, growing narrower towards the point, resembling nearly the point of a hanger.

Tried it to-day.---It fits the ridges exactly; but the points of the blades stand too forward---the angle which their fronts make with the shafts is too acute---they do not cut, but tear up the furrows.

STACKS. 27. The late stormy night has shifted almost every pillar of the wheat-stack.---It is astonishing how it stood the tempest out!---Had it fallen during the rain, the damage must have been considerable.

In future,---Attend well to the frame, before the corn be put upon it.

DRAINING. 27. The good effect of setting-out the ridges of the twenty acres, and opening the cross-drains, is glaringly obvious.---Last spring, a man could not walk over it without danger of sticking in the mire.---This spring, it is fit for a race-ground, notwithstanding the late wet weather.---But the *beavies* the rains fall, the firmer they make the surface.

LEYING. JULY, 1777. This is another field spoiled, by being leyed flat.---It had, the preceding winter, whilst the Farm was without a tenant, been trod by large cattle (thro' the rascality of a butcher) to mere mortar.---The whole twenty acres did not, in the year 1774, more than summer two cows. It was the latter end of May before any stock could be turned into it; the surface was so wet, and the grass so backward; nor could it, with any propriety, have been *plowed* until the latter end of April. Left this should be the case the ensuing spring (it being totally ruined as a ley) a pair of furrows were laid back to back, at every half rod, and cross-drains opened to carry off the water which these
furrows.

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furrows might collect. This was done in autumn, before the surface was again reduced to puddle, and it had fully the desired effect. Instead of the latter end of April, the plows began to work in February. These furrows became the middles of the ridges; so that instead of five, there were now but four *'bouts* to be made to each ridge.

RYE-GRASS. But the Writer does not rest the blame wholly on the flatness of this field; the seed with which it had been sowed, is in part culpable;---for rye-grass shoots much earlier in the spring than other grasses, totally smothers the tender herbage, which ought to form the *bottom*, and defend the soil from the summer's drought. In a few years, the rye-grass itself wears out, and leaves the *surface* wholly unoccupied, except by a few straggling bents. But the *jod* is left a mat of durable wiry fibres, which prevent, in future, any other grass from thriving.

These were identically the circumstances of this and two other fields of ten acres; and the Writer is of opinion, that to lay a field in itself flat, and of a retentive soil, with rye-grass, and without acclivating, is management infamous in the lowest degree.

Watered meadows are here foreign to the question.

ROLLING. *Perhaps*, this field was rolled (to reduce the protuberances, before they became too stubborn) before it was sufficiently dry.---Perhaps, this not only hurt the grass in some degree, but assisted in making it break up so intolerably gluey. However, this could not affect the whole field, as some higher parts were perfectly dry before rolling.

THE LANCE. 28. Finished the alteration, and re-tried it. It answers my best expectations:---The blades, by being set farther back (so far, that in work, their points are seen some inches behind the wood

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wood-work), instead of tearing up the furrows, [See FEB. 25.] press them down, and make incisions of a proportionate depth to the weight which is put upon the handles, and their position prevents them from casting the stubble and trumpery.

	£. s. d.
The cost of the wood-work	0 17 0
Of the iron-work	2 0 4
	£. 2 17 4

M A R C H.

PULLING BEANS. I. Began *casting* the tick beans (throwing them from one end of the barn-floor to the other with a shovel); but this is of very little service.---They are full of lumps of dirt, which are too large to be sifted out, and too heavy to be blown out;---nor does casting separate them.

This is a bad effect of pulling beans; and I was anxious to remove, or at least to palliate, it.---After some successless attempts, I put about half a bushel into a sack, and thrashed them for a few seconds.---They were then shook in a wheat-riddle, and came out a very good sample.---The flail bursts the clods, and the *wheat-riddle* lets the dust and the small refuse-beans thro' it.

This is quite a discovery; for there is an advantage of pulling beans, which (besides the benefit the soil receives) will more than pay for the extra labour in cleaning: They are as hard as old beans, tho' *housed* immediately after the deluging rains of last autumn.---The stubbornness of the roots, I apprehend, keeps the mow open, and admits a circulation of air.

WORKING CATTLE. I. Yesterday, harnessed the young oxen, and put them into a team of horses.---Those very oxen which were last year so unaccountably rebellious, are now, (tho' they have been well fed and done no work these seven months), as tractable as horses! They

E

were

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were led into the field like a brace of pointers, and scarcely made one licentious effort.---Each *ring* is worth its weight in gold!

The convex collars, too, are every thing which is clever*. They bite on the fleshy part of the shoulder, and leave the bones full room to play.

SWINE. 7. Finished killing the fatted hogs.---They have been at clean pease---

5 hogs, 1 week,—11, 2,—9, 1,—7, 2,—5, 1,—3, 2,—2, 2, or one hog sixty-two weeks; during which time, they have ate nine quarters and six bushels of pease, or a bushel and a quarter a-hog, a-week. They weighed 23, 25, 27, 26, 30, 26, 28, 22, 25, 23, and 26, in all 279 stone, (of 8lb.) which at 3s. the market-price, is 4l. 17s.

JULY, 1777. The Writer made a calculation on the cost of this pork, but it is not sufficiently correct.---As near as he could *guess*, it cost him 3s. 2 $\frac{1}{4}$ d. a stone.

FENCES. 9. Finished planting the quicks. (See 31. Dec. 1774.)

Digging the trench, putting in the plants, and moulding them with finely tilled soil of the adjoining field, took sixteen days work: therefore, 97 rods cost 1 l. 6 s. 8 d. or 4 d. a rod.

They were planted about four inches a-part:---therefore, each rod took half-a-hundred—They cost 8 d. a-hundred collecting; this is therefore, 4 d. a rod more.

In future,—Three-pence a-rod is a fair price for planting quicks in this manner.—In the present case, the men had their trade to learn, and did not hurry themselves.

JULY, 1777. A description of this mode of planting quicks will be given in the DIGEST.

* JULY, 1777. As the Writer then conceived.

FENCES.

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FENCES. 10. Finished making the Brush-hedge, (a hedge without stakes or edders, made by setting the rough fence-wood nearly upright in the bank) behind the transplanted quicks of Barn-field.

These quicks, perhaps twenty or thirty years old, were grubbed up *entire*, some of them eight or nine feet high, and re-planted as near to each other as their roots would admit—some six inches, some a foot asunder, and the interstices filled up with young plants. A Brush-hedge placed on the east side keeps them warm, and makes immediately a fence, fit even for hogs. The expence stands thus :

	£.	s.	d.
Forming the bank with a plow (not ten minutes work) -	0	0	0
Digging the trench, taking up and putting down the quicks, about ten days work (but the men were intolerably idle) at 20d.	0	16	8
One and a-half load of <i>bushes</i> , and fetching, - -	0	10	6
Making the Brush-hedge, - - - -	0	3	4
A hundred of young quicks, and pricking in, - -	0	1	0
	£.	1	11 6

The hedge measures 19 rods, and therefore costs about 20d. a rod.—Its being an *immediate* fence is its chief merit. Perhaps, if it live, plash it when the dead hedge fails, and it will be an excellent fence, during the lease.

JULY, 1777. The branches soon began to wither: the roots, *immediately after transplanting*, could not collect sap enough for the *entire* shrubs; therefore, cut them down hedge height. But they are *still* puny, and many of them dead.

If old quicks be transplanted, they should be cut off a few inches above ground, before grubbing; and be re-planted in a *puddle*.

SERVANTS. } 14. *David* persuaded *Thomas White* (the Bustler)
 PLOWING. } that he could not plow M. 2. with a small Cat's-head
 PLOWMEN. } plow, and *White* was fool enough to believe him,
 and sent him into another field. I ordered him back, and shameful

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work he made—His *coulter* stood within two inches and a half of the breast of the plow, and of course every handful of trumpery that accumulated choked her and threw her out. His *mould-board* (put on under his directions) worked in the ground at least a foot behind the land-board.---This of course threw her *out of land*, and, in endeavouring to get her *in* again, this and the fin of the share threw her above ground.

I set the coulter as forward as the coulter-hole would admit---six or eight inches from the breast---and cut away the mould-board, *under ground*, to the same length as the land-board, leaving the upper part to turn the furrow; and never did plow go steadier nor make better work---and perhaps, with one-third less draught.---I gave her to the plow-boy, not higher than the handles, and a better furrow could not be turned.

The plowman's behaviour must proceed either from ignorance or obstinacy.—If from the former, it is proof positive that few know how to *set* a plow; for he is esteemed the best-plowman in the country! If from obstinacy--but I believe it was from both---I took this method to cure it.---I remonstrated with him on the scandalousness of running away from a field which had been dunged for tares (*vetches*), and the season of sowing so far spent. He was piqued at the boy's making better work than himself, and grew sulky.---I left him.---Coming into the Twenty Acres, the bull, broke-in yesterday, had *likewise become restiff* (he laid down, suffered himself to be dragged on the ground---they were obliged to turn him out of the team). --In the evening, gave a pitcher of ale, by way of a christening, and ordered the bull to be called *David*.---*Perhaps*, this may get the fellow laughed out of his obstinacy. *Remember to notice the effect.*

HARROWS. 16. Tested the *jointed, concave* harrows. (See 23. FEB) They fit exactly the half-rod ridges.—I am quite delighted with them

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them; and Thomas Good-old-way cannot smother his approbation.

The handles make them truly *bandy*. £. s. d.

The cost of the wood-work, - - - - - 1 0 0

Of the iron-work, - - - - - 2 10 0

£. 3 10 0

JULY, 1777. A draught of these Harrows will be given in the DIGEST.

DRILLING. 18. What a disadvantage attends the drilling of beans! When other people were *sowing* at random, we were only *preparing* for the drill.—The rains are set in—They have gained, and we have lost a very fine season.—However, if by curtailing the intended quantity, we can get part in; and by *hoeing* keep them clean, and *overtake* the broadcast; perhaps, drilling may, nevertheless, be the better process.

JULY, 1777. How comforting is Hope!

SERVANTS. 18. Just fo---(See the 14th.) He was the laugh of the whole Yard.—This for a while increased his fullness; but finding the laugh grow louder, he forced open his countenance, and next day bedighting it with a grin, laid his complaint in good humour.—I promised him, that whenever he altered his ugly temper, I would alter the bull's ugly name. He has, since then, been perfectly pliable, and behaved himself as he ought to do;---and the name of the bull is no longer *David*, but *Blueman*.

Is not this better than bickering?

HARROWS. 22. Tested the *fine* concave harrows, on the same principle as those of the 16th, but much lighter. Those were made for four horses; These for two:—Those lacerate at every two inch and half;

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half; These at one inch and quarter:—Those are for *roughing*; These for *finishing*; which they do very highly.

Plows. } 23. Began to break up P. 3. for oats, with a
DEPOSITING. } Whip-rein plow, but could not go on.—This field is too stiff for the light Yorkshire plows, especially at present; for being deposited *quite flat*, the water has stood on it all winter, and run the soil, which has formerly been chalked, to a cement.

In future,—Keep this field in half-rod ridges.

24. A large plow and four horses make very good work in P. 3.

Therefore,---HOWSOEVER ELIGIBLE A LIGHT PLOW AND TWO HORSES MAY BE FOR LIGHT LAND, A LARGE PLOW AND FOUR HORSES ARE ABSOLUTELY NECESSARY TO STIFF LAND.

SOWING OATS. 24. Finished sowing oats at Norwood.-----

Perhaps, in future, plow stiff land for oats in January or February, and sow in March. These stubbles (which were) and those of Woodside, broke up the beginning of last month, harrow as fine as a garden, notwithstanding they came up very stubborn, and consequently lie rough. But being since tempered by the rains and frost, the clods *fall* like lime that has been flaked, and are shattered to powder by the slightest touch of the harrows.

JULY, 1777. This is plausible theory; but the crops which resulted from this management, did not recommend its practice.

WHIP-REIN PLOWS. 24. Began breaking up S. 1. with a pair of Whip-reins, and charming work they make. They cut it up seven or eight inches deep with ease. This is cheap plowing—but the soil is a sandy loam.

WHIP-

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THE LANCE. 24. Lancing the Twenty Acres.

Where the furrows are whole and smooth, it makes very good work. But where they are broken and lie rough, some care is required to prevent its pulling them up.

What a keen-eyed critic is Practice! No flaw can escape her—I had thought this Implement perfect!

QUICK-SETS. 24. Watering the quicks of Foot-path fence with *dung water*---*yard liquor*. Carried it out in a water-cart, and poured it into the trench with pails.

Here the advantage of planting quicks in a trench is evident.

WINNOWING. 25. Three men have been all day in making up six quarters and seven bushels of oats.—This is more than half as much for cleaning as for thrashing. A winnowing machine of twenty pounds cost, would buy itself the first winter.

JULY, 1777. And yet, strange to tell! the Writer has not yet purchased one. This proves the prevalence of custom, and the danger in adopting bad practices: It is the custom of this Country to *make-up* with sackcloth-fans.—The Writer found two on the premises.—They were set a-going—and they still go round.

THE LANCE. 28. On Saturday, to ascertain its merit, left three or four lands unlanced. The rough harrows seemed to cover the seed as much on these lands, as on the rest;—but they did not penetrate the soil, nor *shake* the furrow, nor *let down* the seed;—they only *scratched*—and when we came to fine-harrow them to-day, the difference is obvious: The ridges do not lie round—there are many flat places, where the seed lies on the surface, as when sown.

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Throughout the rest of the field which was lanced, the seed is well covered, and the surface is fine : perhaps, remarkably fine for such a livery, leathery, water-shaken Ley. If one may judge from appearances, the Lance has already earned its cost.

JULY, 1777. And yet the Writer never used it since—and hopes never to use it again.—He hopes never to break up such another gluey, wiry, hide-bound Ley ; nor ever again to see a field so basely plowed as this was. A field in tolerable tilth, and *well plowed*, needs no lancing.

PRACTICE PERFECTS BOTH THE ART AND THE ARTIST.

FARMS. 28. Began to plow N. 7. for oats.—The lower end of this field is a nasty, boggy soil, not worth plowing ;---the upper part, rich, mellow, and plowable by a pair of Whip-reins.

Continued breaking up O. 3. This, too, is an awkward field to plow.—Here, it is a stiff clay ; there, a sharp gravel. One part is plowable by two horses ; the other requires four. One patch is fit for beans ; another for pease. One fits for barley, and another for oats. The middle of the field may be plowed any day in the year ;---for each end the critical minute must be watched. O. 1, and 2. and many of the pieces in P. are under the same disagreeable circumstances ; strewed with boggy patches, totally unfit for arable, while the much greater part is as unfit for grass. This is teasing to a degree which cannot be conceived by theory, nor described by writing.

JULY, 1777. The Writer has leyed the clayey and boggy patches, and keeps the gravel in tillage.—The clay produces hay, and the bogs a long grass, useful in topping up stacks and making bands for the hay. *This*, though *minute*, is material to a stack-yard.

Perhaps,

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Perhaps, this is making the most of a *patched soil*, which, at best, is uncouth, uncomfortable, and unprofitable; because the labour, attendance, and attention, are greater, than on a Farm of *fields of uniform soil*.

WORKING HORSES. 29. Yesterday, put a strong hack (a saddle-horse) into the plow-team.---He hung back a little at first, but soon went and worked very well.—To-day, put him to one of the Whip-rein plows.—He was a little frolicksome; but two *fair falls* broke him in perfectly. To-day, put another into the team—He went and worked like a cart-horse.

WHIP-REINS. JULY, 1777. Cast-off coach-horses or saddle-horses, if strong, tho' slightly lame, do very well for Whip-reins. If the work be light, they step quicker, and, if not too gay, are preferable to heavy cart-horses---*for Whip-reins*.

TRENCHING-PLOWS. 29. Plowing for carrots with *Ducket's** trench-plow in S. 2. and tried her in G. 1.

In *that*, she made very good work; she fetched it up ten or twelve inches, and left the surface as fine as it would have been made by half-a-dozen common plowings:—but the soil is as *light* as an *ash-heap*.—In *this*, she could not act;—the surface-plow choaked at every ten yards;—but the soil is *stiff* (not very stiff), foul, and clingy.

Perhaps, one trench-plowing of a light, clean soil, for barley, is as good as any number of common plowings.—But *perhaps*, two plows are necessary to trench a *tenacious soil*. Mr. Ducket's plow has great merit *in a loose soil*.

* Mr. Ducket, the inventor, or the improver of the trenching-plow, and several other implements of Agriculture, is a most ingenious, aboriginal Farmer, near Richmond in Surry.

F

CABBAGES.

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30. MARCH, 1775.

CABBAGES. 30. Finished planting early cabbages.

Remember, the roots of the plants, planted on the first land from the gate, were dipped in train-oil, to preserve them from grubs: Last year, at least one plant in four suffered by them.

Experimentally, put a grub which had already lodged itself in one of the roots into the oil; it was instantaneous death.—Perhaps, if the oil is not too powerful for the plants, it will not only preserve but invigorate them.

OCTOBER, 1775. Several of the plants died, and those which survived were not better than the rest of the patch.

JULY, 1777. The grub, no doubt, is a great enemy to cabbages, and a preventive is worth looking for. If train-oil alone be too strong, *perhaps*, dilute it.—*Perhaps*, foot—*perhaps*, brine may answer the purpose.

SAIL-CLOTH. 30. Brought home a body full of oats in chaff, from Wood-side, thus:—Spread a sail-cloth in the waggon—drew her into the barn—filled her with shovels—covered up the oats with the skirts of the cloth—drew her into Front-barn, and shovelled them out. This is a mighty simple mode of conveyance, and particularly convenient when sacks are scarce.

Sail-cloths are very useful things.

SWINE. 31. Fencing Garden-field against the hogs, which have already destroyed a number of the cabbage-plants.—They are in perpetual mischief.

This evening, took a pair of dog-couples, and coupled two of them together. For a while they were as obstinate as hogs, each contending for his own *way*: but after eating a handful of barley together, they became more amicable. If there be no material evil attendant,

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I will couple all the young ones, bow the old ones, and try to teach even hogs subjection.

A P R I L.

A NEW DRILL. 3. Re-re-re-ried the drill.—Not yet compleat!

HARROWS. 4. Tested the fine *flat* harrows, on the same plan, and of the same dimensions, as the fine *concaves*—(See 22. MARCH) except that the beams of these are straight, of the other crooked.

JULY, 1777. Because one man excels in poetry, painting, or chimney-sweeping, it does not follow that all of the same family should be excellent.

The Writer, from seeing the wonderful works of the JOINTED CONCAVES, had conceived it *barbarous* to drag a harrow by the corner. But how eligible soever a pair of square harrows jointed together, and drawn side-foremost, may be for *round ridges*, he is fully convinced of the admirable simplicity of the common harrows, and of their utility on a *flat surface*. Their greatest demerit lies in their not being capable of having handles fixed in them;—and *for couching*, handled harrows are preferable.

WORKING CATTLE. 4. Yesterday, sent a man to Colnbrook to meet four oxen from Gloucestershire, which arrived safe this evening: three of them five, one four years old. They are large powerful oxen, and made for going; but, being bought in the middle of spring-lead-time by a Dealer, and in a distant county, they come very high.

SERVANTS. 4. Last week, caught David pilfering oats in chaff for his horses.—(Alas! how the Davids have degenerated, within

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these last eight-and-twenty hundred years!) For this, I abridged him in his weekly allowance.—He again rode restiff.—This morning, I took his team from him, and ordered him into the barn to thrash.—He would not, but loitered about all day, *demanding* his team.—In the evening he *begged* it.—On condition of his thrashing beans for half an hour, I have returned it him.

A manoeuvre of this kind saves a great deal of that *damning*, which *in-door* farming-servants habitually expect.

NEW IMPLEMENTS. 5. Began drilling pease! But the drill is not yet complete;—it scatters the pease too thick.—O for shame! to have the drill to *seek*, when the pease ought to be green above ground!

6. Drilled three pieces of M. 1. The drill does its work well in this loose mould;—but the Regulators do not yet please me.

WORKING CATTLE. 7. Harnessed the last of the new oxen. They all behave very well, except *Hail* (a great aukward beast, at least seventeen hands high); but I hope a *ring* to-morrow morning, will help to civilize him.

Hounsome commenced ox-carter.—He purposes driving four *borned horses* alone.

FENCING. 7. Finished spring fencing this evening.

I have this year, agreeable to the custom of the Country, *allowed* wood (given each Fencer the right of taking home a bundle of fire-wood every night). This is an infamous custom.—I caught *Musgrove*, the other night, carrying home as much prime wood as would, with a little spray, have made three bakers bavins.

In

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In future—give them their price, but do not give wood;— for if they are not thieves already, this will make them such.

THE DRILL. 8. Finished drilling M. 1. The Bristle-Regulators answer perfectly.

DRILLING PEASE. 10. Finished drilling pease.

In future—Plow deep or trench-plow for drilling pease.—M. 3. was plowed much too shallow;—there is no *crumb* (loose mould) to make the drills in;—the pease are not buried deep enough.

HAZARD OF FARMING. 10. This morning one of the Carters—through *carelessness*, no doubt—overturned the large harrows, and threw two of the horses upon them—*Peacock* and *Dumplin*.—*Dumplin* received only one tine in his thigh; but *Peacock's* condition is shocking: he lay, until assistance was called, with five or six in his body, thirteen inches long, up to the very beams of the harrows! He was obliged to be drawn into the ditch by the other horses, to get the harrow from under him, and then to be dragged out again.

Some of the wounds may be probed seven or eight inches;—they seem to run up among his intestines; and altho' no caul nor guts appear, most probably, some of them are mortal.

11. Through Smith's *carelessness* (the mother of misfortunes) *Mac* and *Rattle* broke in the other day, ran away with one of the Whiprein-plows, and broke it to pieces;—but “misfortunes never come alone.”

WORKING CATTLE. 12. Yesterday *Hounsome* attempted to drive oxen without a horse to lead them.—They set off a little awkwardly,

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and he had a boy to assist him yesterday; but, to-day, they go on very well without one.—*Bran* makes an excellent *fore-horse*.

THE DRILL. 13. Began to drill beans!—(for shame! for shame!)
Two men and one horse drilled full five acres with ease.

	£.	s.	d.
Two men at 20 d. - - - - - -	0	3	4
One horse at 15 d. - - - - - -	0	1	3
	£.	0	4 7

Not a shilling an acre! This is very cheap indeed!

HAZARD OF FARMING. 13. (See the 10th) On Tuesday there was some hope; but yesterday he died in great agony—(unfortunately I was ignorant of his extreme misery, until it was too late to shorten it).

This morning I had him brought on a sledge from the hovel where he died, and placed opposite the stable-door, where he lay in state, with this label upon him: “ See the shocking consequence of CARE-
“ LESSNESS! Let this be a warning to you all.” The youngsters flocked round him:—Those who could read, were anxiously communicative to those who could not.—May each have a lasting lesson impressed on his mind!

The Collar-maker skinned and opened him.—One tine had penetrated quite thro’ into his thorax, close to his heart; and another perforated the peritoneum of his colon, leaving some hair between it and the inner coats. In so short a time as twenty-four hours, a general mortification had taken place:—even the limbs which had not been wounded, were becoming putrid.

I saved his ears and dock to nail over the stable-door, as a perpetual caution to the Carters.

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THE DRILL. } 14. Finished drilling beans.
 DRILLING. } The drill has at last performed its work exceed-
 INVENTION. } ingly well:—it is still in the rough; but it may easi-
 ly be made a very complete Implement. Its merit, if it has any,
 lies in its simplicity—its expedition—and in that the seed, in a *loose*
soil, is covered in the act of drilling, without harrowing, or any ad-
 scititious complication.

The looser the soil, and the finer and evener the surface, the better it works. But it has not yet refused any soil, nor any surface: however, *on stiff land* the harrow is necessary to cover the seed

Perhaps, in future, drill three-'bout ridges, lengthway; or broad, flat beds, across.

The sharpness and position of the coulters make it fit for stiff or for light land.—If the surface be moist, it will even drill beans on a Ley, without plowing.

But remember—Never, in future, have an Implement to contrive when it ought to be at work: nor, *perhaps*, ever swerve far from original ideas—*from first thoughts, before they be tested.*

Except the position of the coulters (but I found that they pulled up the furrows) this is *half* of the very drill I conceived six months ago.—I *thought* that I could have gone a nearer way to work; but I lost my road, and was obliged to return to my ORIGINAL IDEAS; from a plan of which I built the drill, *exactly*, except the coulters.

JULY, 1777. A sketch of this drill will be given in the DIGEST.

COVERING DRILLED BEANS. } 15. Swept in the beans of K. 4.
 THE HORSE-BROOM: } thus:

Nailed some rough long heath, by the means of a strong broad lath, to the front of the Lance, and with this went once in a place, in every furrow.—It effectually covered the beans, and left the ridges as smooth as gravel-walks.

This

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This Implement was made in five minutes, at not six-pence expence. The blades keep the heath from breaking down, and the heath keeps the blades from cutting.—It exactly fits the half-rod ridges—wants no guiding—is easy work for one horse—and is far more effectual than the harrow.

WHIP-REINS. 16. Two pair of Whip-reins have plowed just seven acres in *three* days. Two three-horse teams, in that short, cross work (in a common field), would have made *four* of it, at least.

What a saving!	£. s. d.
Three horses 3s. 9d. a man 2od. a boy 1od. 8 days	2 10 0
Two horses 2s. 6d. a man 2od. 6 days	1 5 0
	£. 1 5 0

A saving of exactly one-half!

Surely there must be some error in the calculation!—No— not the shadow of one.— But, for the sake of calculation, suppose they plowed equal quantities—

	£. s. d.
Three horses 3s. 9d. a man 2od. a boy 1od	0 6 3
Two horses 2s. 6d. a man 2od.	0 4 2
	£. 0 2 1

There is still a saving of one-third;—and I am positive that all the horses and all the drivers in the County could not have made better work. Who would stir light-land barley-fallows, with any thing but Whip-reins!

HORSE-BROOM. 18. *Sweeping* Rivulet Mead with a straight horse-broom; made by nailing twigs of holly (prickly holly) to the front of the horse-rake, as I did heath to the front of the Lance—(See the 15th.)

I have

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I have long wished for an improvement of the common *bush-harrow*, and I have found one. Bushes (thorns or other rough boughs) soon wear down to the *wood*, and then *plaster* the surface—This, bears solely on the *prickles*. A bush-harrow of a proper size requires two horses:—This, by *touching where it acts only*, requires but one, and is incomparably more effectual—not a worm-cast can escape it. Besides, the teeth of the rake pull down the little protuberances which fall in their way, and the surface is left beautiful.

COUCHING. } 20. *Surfacing* and re-harrowing Up-field, for
THE SURFACE. } couching.

The SURFACE *grinds* the clods, and *disengages* the couch surprisingly. Where the soil is foul, the roots accumulate in such quantities, that they are obliged to be pulled over the cross-bar with a dung-drag.

JULY, 1777. This Implement was made in the Spring of 1774, before these Minutes commenced. The Writer was then *lying* some fields, and wished to leave their surfaces level, fine, and smooth. After several attempts and repeated alterations, he succeeded in an Implement, which perfectly answered his intentions. But he was not then aware of its use to a fallow. He only wished for a *Surfacer*—for an Implement which would give a beautiful, bowling-green surface. However, he has since used it, and still continues to use it, with great success on fallows. It pulverizes and *mixes* the soil, and disentangles the root-weeds in a manner highly beneficial.

A Drawing will be given under the head IMPLEMENTS, in the DIGEST.

DRILLING CARROTS. } 20. Finished the Half-acre patch to-day.
THE DRAW-DRILL. } The drills were opened by six *splayed* coul-
ters, six a foot apart, in a light beam of seven feet long, drawn by a
G T handle,

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T handle, by one man, walking backwards. The seed was strewed by hand, in these trenchlets (*little trenches*), and covered with a hand-rake.—One man was full two days in drawing the drills, dribbling the seed (this employed nine-tenths of his time) and covering it—about 7s. an acre.

JULY, 1777. These coulters were part of the wreck of a cast-away bean drill (See 14. APRIL.)—Therefore, whatever merit the Implement may have, it owes its origin to chance, rather than to contrivance.

If, however, carrots in rows be eligible, and a draw-drill be wanted, a more simple one need not be desired.

SOWING SOOT. 25. Re-began to sow Barn-Field.

Before this rain, the foot ran like quicksilver:—now, it clogs the roller of the SOWING-CART, and with difficulty leaves the hopper.

In future—Sow foot immediately after fetching;—it consolidates and gets clingy by lying in the cart.

COUCHING. 27. Continued couching (cleaning the soil from the roots of couch-grass) in Up-field.

Six women and one man were four hours in hand-picking half an acre—Two men hand-raked two or three acres in the same time. *Picking* (without or after raking) seems to be a nice piece of business (tho' common), and fitter for garden than field culture.

Perhaps—Plow—rough-harrow—surface or roll—fine-harrow—rake—burn—is the most eligible process for cleaning land from couch.

FARMS. 27. Finished cross-plowing C. 1.

What a disadvantage attends *stiff land, small fields, and straggling Farms!*

This pimple patch of two acres and a quarter, has taken four four-horse teams to give it the second plowing for barley!

What

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What a disparity of expence between this and the second plowing of P. 2!—(See the 16th.)

Four teams at 7 s. 6 d. is 30 s. or 13 s. 4 d. an acre!

13 s. 4 d.---3 s. 7 d.=9 s. 9 d. the difference of expence in one plowing!!!

But how can this be? Surely there must be some mismanagement in the case. There may be so; but it is such mismanagement as will ever attend a scattered Farm, be the Farmer ever so alert. The disparity arose thus:

In the first place, the soil being broke-up in the beginning of Winter, (and that was the proper time to break it up) when it was quite wet, this remarkably dry spring (and who can hinder a remarkably dry spring?) had baked the surface to bricks.—It was like plowing the surface of a rock. (This can never happen to a light loam.)

In the second place, the field is narrow, and crooked-hedged, (thanks to our fore-fathers!) and long teams take more time in turning than short ones. Lastly, this is a corner which lies quite detached from the rest of the Farms, and I was fully employed with eighteen or twenty Couchers, at a distance from it of nearly two miles.—The servants knew this, and embraced the favourable opportunity of being idle. This alone, perhaps, made a difference of almost one team. Besides, the field plowed with the Whip-reins, lies within a hundred yards of the stable in which the horses were fed; this field, upwards of a mile from it.

JULY, 1777. The Writer, aware of the inconvenience of arable land at a distance from the Farm-yard, wished to ley this field—it was much too stiff for barley, but was too foul for oats on one plowing. He therefore meant to cleanse it by a spring-fallow, and sow barley, by way of raising a nursery for the young grasses. However, *Business* and dry weather forbade him. He therefore gave it a summer-fallow, and sowed it with wheat in August; and with grass-seeds in the spring.

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On transcribing the preceding Minute, he referred to the labour-account of the Division C, to see whether the breaking-up, and the succeeding stirrings, bore any parity to this cross-plowing. The account stands thus :

		Teams.	Men.
Nov. 23 to 29.	Breaking-up, - - - -	3.	
April 26 & 27.	Crossing, - - - -	4.	
May 10 & 11.	Stirring, - - - -	2½.	
June 10.	Harrowing, and spikey-rolling	1.	
11 & 12.	Re-stirring, - - - -	3¾.	
29.	Surfacing, - - - -	0½.	
July 1.	Harrowing, sowing with turnips and harrowing, - - -	0½.	0¼.
Aug. 22 to 25.	Plowing in the turnips, - -	3½.	
30.	Sowing 4¼ bushels of wheat, -	—	0¼.
30.	Covering it, - - - -	0½.	
Sept. 5.	Raking and picking, - -	—	3.
		19¼.	3½.

Thus it appears, that the five plowings cost sixteen teams and three-quarters; and therefore the teams, on a par, did not plow more than two-thirds of an acre a-day. Such is *one* of the curses of *untoward soils*—*small inclosures*, and *detached farms*!

The Writer has been attentive to this calculation, and he believes it to be very exact.—It is true, some of the teams were ox-teams; but he apprehends, this did not make one furrow's difference in the days works.

SOWING BARLEY. } 29. Began couching and sowing barley in
THE FLUTE. } O. I.

Three teams plowing—three harrowing; one rolling—and one *fluting*. Rippinger all in an uproar!—eight teams (some of two, some of one horse)—sixteen men—six women, and two boys.

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29. A P R I L, 1775.

They were all fully, and, I hope, well employed.—Lovely roasting weather for the barley-fallows! It is lucky, *as it happens*, that we are so much behind-hand with our barley-sowing*.

We got in near seven acres to-day.—The FLUTE forwarded us much.—With the six splayed coulter (See the 20th.) and a pair of old shafts, one horse makes a *finer surface*, and, where the soil is clean, rids as much ground as half-a-dozen plows. It sets the surface, after being rolled, raked, &c. in regular *ridglits* (*little ridges*) nine inches apart; leaving channels (resembling the *flutes* of a column) about three inches deep.

JULY, 1777. Necessity is the mother of Invention, and the father of this barley-flute. The season was far advanced, and the Writer had more work to do, than horses to do it with.—The soil was tolerably clean and in fine tilth; but after couching, the surface was left quite smooth, and it was necessary to raise it into inequalities, by plowing, or some other process, in order that the seed might be effectually buried. The carrot-drill occurred—but the coulter stood too far apart, and did not make the channels deep enough.—He therefore put them nearer together in a shorter beam, which he fixed to the ends of a pair of useless cart-shafts, and strapped on a pair of slight handles. The alterations were made, and the Implement in the field, in a couple of hours—and fully answered the purpose intended.

COUCHING. 29. Yesterday finished P. 2.

Raking, picking and burning, eleven acres and twenty rods, took								
twenty-four men's and thirty-four women's days works.								£. s. d.
Thirty-four women, at 10 d.	-	-	-	-	-	-	-	1 8 4
Twenty-four men, at 20 d.	-	-	-	-	-	-	-	2 0 0
								£. 3 8 4

* *As it happened*, it was rather unfortunate—the drought continued too long.
 JULY, 1777.
 about

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About 6s. an acre; besides the extra-rollings, harrowings, &c. But perhaps, the soil received an adequate benefit from *these*, independent from its being cleansed from antivegetative trumpery.

JULY, 1777. The Reader may be surpris'd at not finding the Horse-rake at work—*Hands* were more plentiful than *horses*.

M A Y.

BARLEY. 2. Continued sowing barley in O.

Last night put four bushels of barley into two sacks, and immersed them in the dung-water in the Farm-yard.—This morning, dried the seed with wood-ashes, and sowed it on No. 40. and 42. The water swelled it out considerably; and perhaps, *this dry weather*, it will vegetate quicker than the seed sown dry.

JUNE, 1775. The steeped has no apparent preference to the dry—in *this experiment*.

THE DOUBLE HAND-HOE. 2. Last year, the edges of the shares were straight:—This year, I have made them circular—*convex*.—They cut with more ease, and get less foul.

JULY, 1777. This is an Implement made the preceding year, for hoeing beans in rows.—It strides a row; hoeing, at once, the two adjoining intervals.—A Drawing will be given in the DIGEST.

SPIKEY-ROLLER. 3. Spikey-rolling E. 3.

This field is so exceedingly cloddy, perhaps not any number of *plowings*, this dry weather, could bring it to a barley-tilth.—Four horses find the rolling very hard work; but its utility is very great indeed.

JULY, 1777. This field has not yet forgot this spring-fallow and spikey-rolling. The stiff-land Farmer without a spikey-roller is very much to be pitied.

ROLLING.

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ROLLING. 5. Began to roll the oats of the Twenty Acres.

High half-rod ridges are very bad to roll.—The Carter was going straight across in the common method. Every furrow was enough to shake his horses and roller to shatters.—I ordered him to go a little obliquely (enough to prevent both ends of the roller from falling in at once, but not so much as to hinder their reaching the *bottoms* of the furrows, one after the other), and the disagreeable effect ceased.—He could not have gone on, his horses were so frightened and so fretful; ---and, by mere chance, I hit off the remedy.

PLOWING: 5. Began to hoe the pease of M. 4.

In future,—Never drill pease on a ley on one common plowing: ---The grass is above the pease, and the sod as tough as matting.---*Perhaps*,---Trench a ley or a stubble;—or, perhaps, give a stubble three or four common plowings;---but trenching against the world for drilling.

JULY, 1777. The plowing here mentioned was a very *common* one indeed:---but such plowings every *young* Farmer must expect, until he learn to guide the plow himself.---*Perhaps*, A good common plowing is equal to every department of Farming, except burying completely a foul crop, or other herbaceous dressing;—and, *perhaps*, in this lies the only *peculiar* merit of the Trench-plow.

BARLEY. 10. Finished sowing barley.

E. 1. is still exceedingly rough; and as there is no appearance of rain, it would be folly to think of sowing it with barley *for corn*.—I will therefore sow it with tares and barley, to defend the clover, and give the green *herbage* to the cart-horses, or make it into hay. C. 1. is in the same predicament. This, I will endeavour to get ready for turnips, to be plowed in for wheat. Perhaps it is---indeed, it certainly

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tainly must be—good management to NEVER SOW OUT OF SEASON. P. 3. was, last year, sown on this very day.---It was caught in the autumnal rains, and entirely spoilt for malting.---When barleys sown but a few days before it were ready to cut, this was quite green.

Perhaps, in future,---Never sow barley before the middle of April, nor after old May-day. Early-sown barley is subject to frosts;---on *wet* land, to being chilled;---and, this remarkably dry spring, on *dry* land it looks wan and sickly.---But, worse than this! the fallows have missed this roasting weather;---an opportunity equal to some summer-fallows.

JULY, 1777. In a dry summer, early-sown barley has a great advantage;---but, perhaps, except the soil be very clean indeed, the opportunity of an April fallow ought not to be missed.

COMPOSTING. 10. Finished the large mixen on the Common.

It has taken about twelve men's days works, and contains about eighty or ninety loads.---It is a collection of various kinds of manure.---Perhaps, by pulverizing, and mixing the several ingredients together, each other will be meliorated.---Perhaps, a new fermentation will be raised, and the degree of digestion increased.

In future,---About three-pence is a fair price for composting by the load, or three-pence a load by the lump.

FALLOWING. } 13. Continued breaking up G. 1. *land for land,*
MINUTING. } thus :

The team began yesterday, on the right-hand-side of the field, and plowed a 'bout (an *about*, a *turn*---a pair of furrows) in each furrow *,

* How difficult the task to write intelligibly (it would be weakness to attempt to write elegantly) on infant sciences! The term *furrow* has, in Agriculture, three or four distinct significations, and must of necessity be a source of perpetual ambiguity. It signifies, the soil turned by the plow, and the trench left by the operation.---It signifies,

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(in each *inter-furrow*) until it reached the left-hand-side. The plowman then began again on the right-hand-side; and to-day, he is again working towards the left, and will thus continue 'till the field be finished.

By this mode of plowing, each furrow (each *plow-furrow*), and the fresh-formed surface of each *plit*, may lie one, two, or more days, in

nifies the interval between two ridges, and the cross-drain which receives the rain-water collected by these intervals.---*Johnson* adds a fifth; but he mistakes furrow for *drill*, or totally misunderstands *Mortimer*.

How shall the Writer conduct himself? Shall he be guilty of the sin of ambiguity or of innovation? He will not hesitate---for the one is deadly, the other only venial; and he trusts, that the See Critical will grant him a dispensation.

But he finds it difficult even to sin; and confesses, that he was never more puzzled in coining a word, than in the present instance.---*Johnson's* general definition is, "a long-trench or hollow." This includes three out of the four significations above-mentioned;---but *the soil turned*, has no claim to it whatever;---nor perhaps, does it strikingly resemble any thing:---a bad furrow, indeed, might be compared to the leaf of a book, or the list of cloth; but a good furrow is nearly square, and the ideas have no connexion.

Will analogy help us? A spade-full is called a *Spit*, and, by analogy, a plow-full a *Plit*.---A hit! Why not a *plait* or fold?---Perhaps, no other *worded* idea bears so near an affinity. But this will not do;---it conveys an idea too effeminate for the robust operation of plowing.---It reminds one of Milliners, Mantua-makers, and Laundry-maids, rather than of Plowmen and Horned Horses.

Will the operation afford us a better? What is the intent of the act? The intention is various, but the act itself is uniformly, to *turn* the soil with a *plow*, upside down---to cut off with a *plow*, a long piece of soil, of a certain breadth, and certain thickness, and *turn* it topsy-turvy.---Simply, the act is *turning* the soil by a *plow*, and the thing produced is the portion of soil *turned* by the *plow*; and if we raise a name here, *turn* or *plow*, or both, is the root or roots from which it must shoot. *Turning* would be ambiguous; because it is generally understood to mean two of these *things* made by one turning of the team---and so would *plowing*, because it has already two or three significations.

As it is so difficult to find a suitable word which has any determinate meaning, shall we look for some general term without any meaning at all? Shall we call them *strings*, *streds*, *slips* or *strips*? No; these are too insignificant for so important an operation.

What shall we do? The English language has not a word which conveys the idea either directly or obliquely, and yet this very idea will occur perpetually. Shall we apply to some other language? What! make Englishmen talk Greek and Latin, when they can transfer their ideas in English? For WHATSOEVER IS AGREEABLE TO ENGLISH ANALOGY IS ENGLISH, whether or not it has *happened* to have been spoken or written. A spade is a hand-plow; a plow is a spade worked by cattle. The portion of earth turned by a spade is, in English, a *Spit*; and the Writer will not hesitate to call the portion of earth turned by the plow, a *Plit*.

H

But

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proportion to the size of the field, and width of the lands,---*wholly exposed* to the weather. As for instance, if the field be a stubble in five-'bout ridges, and contains five acres, and but one team at work in it, each furrow will be exposed one day; if ten acres, two days; if fifteen, three; and if twenty, four days. During this interval of time, the air is let in, and the soil *sweetened*; the roots of weeds lie obnoxious to the sun, and the insects and grubs to the birds; which, while the team was working on one side of the field, were, I perceived, busy feeding in flocks on the other.

By plowing in the common way, *land after land*, the majority of the root-weeds are re-covered in a few minutes, and, perhaps, in some degree invigorated by being transplanted into fresh mould;—the birds are intimidated by the presence of the team, nor have they *time* to feed, were they ever so bold;—the insects, instead of being exposed to these and the weather, are presently lodged in *commodious cells*, fit, perhaps, for the purposes of propagation. And to counterbalance these apparent, indeed obvious advantages, I cannot discover one *evil*

But there are still three ideas which lay claim to the word *Furrow* :

The trench made by the plow ;
The collateral drains ;
And the cross drains ;

which the Writer will distinguish, when distinction is necessary, by

The Plow-Furrow ;
The Inter-Furrow ;
The Cross-Furrow.

How unthankful soever the office of Innovator may be, the Reader will be able to judge from this Note, that it is not the most delightful task in the world; for the Writer has scarcely introduced or altered any word throughout these *MINUTES* and the *DIGEST*, which has not cost him a train of ideas bearing some resemblance to those above-registered.

As a proof of the ambiguity of this term, it is clearly the *Plit*, which is meant both by *Mortimer* and *Dryden*; and which even *DR. JOHNSON* (being no Farmer) mistakes for a “small trench.”

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attendant : it is even convenient to the Plowman.—He is under no necessity of being cramped at the ends—the team may always take sufficient room for turning—and the cattle may be eased, by turning *offward* or *toward*, at pleasure.

JULY, 1777. Fallowing is a more important part of Farming, than perhaps Farmers in general are aware of ;—and the Writer was very well pleased with this mode of breaking-up, until the more eligible one of *balking* occurred. But altho' balking is more eligible for *breaking-up*, plowing land-for-land stands, perhaps, unrivalled in *stirring* ;—and yet this mode of *stirring* never occurred to him till this moment.

What a proof is here of the frailty of the human mind, and of the use of Minute-making ? After the Writer had adopted the method of breaking-up fallows by balking, he never more thought of plowing land-for-land ;—nor would it, perhaps, have ever re-entered his mind, had he not copied for the press the preceding Minute.

SOWING SOOT. } 13. Sowed seventy-six bushels on G. 2.
 SOWING-CART. } They took two men and one horse half-a-day—
 and therefore cost in sowing 2 s. 3½ d. which is about 3-8ths of a penny
 a bushel.—The chimney-sweepers charge a penny, and do not sow it
nearly so even as the sowing-cart.

This soot was sown immediately after fetching, and nothing could work better (See 25 APRIL).

THE DOUBLE HAND-HOE. } 13. Gave *Bades* half-a-crown for his
 INVENTION. } expertness and willingness in using the
 SERVANTS. } *drag-hoe*. Instead of drawing it after
 him uniformly, he *strikes*—gives it a jerk, at every step.—This is a

H 2

very

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very great improvement ; and the work goes on full as fast.—It keeps the edges free, and makes them take the grafts, be it ever so tough.

· JULY, 1777. An Inventor (of Instruments of Agriculture at least) has but done half his work when he has constructed his Implement.—The best mode of using is sometimes more difficult to ascertain than the best mode of construction. Perhaps, many valuable Inventions have perished for want of patience, attention, and perseverance in the practice of them.

A person habituated to analogous Implements is more likely to perfect a new one, which he uses day after day, from morning till night, than a stranger who takes it up but for a few minutes. And the Farming-Servant who endeavours to improve a new Implement is worthy of encouragement ; for he is more likely to succeed than even the Inventor himself ; who probably is, at best, *unbandy*, and wants that Machine-like perseverance which day-labourers are blest with, but which few Geniuses enjoy.

HOEING FURROWS. 16. Plowing a 'bout in each Inter-furrow of the wheat of Barn-Field.

Why ? I mean it, 1st. To destroy the weeds, which generally abound in the furrows—2d. To gain an even sangle—(the furrows are latest ripe—the corn puny—and the grain, of course, small and thin.)—3d. To keep the plants healthy, by preserving a circulation of air.—4th. To facilitate the weeding.—5th. To preserve the corn from blights.—6th. To keep it from lodging.—7th. To make it yield.

The intervals form breaches, which prevent the plants of one land from supporting, or being entangled with, those of another ; and, of course, encrease their *motion*.—The motion of vegetables is their *exercise* ; —and perhaps, to exercise, vegetables, as well as animals, owe their *strength* and *health*.

The attendant evils which occur, are, the labour, and the destruction of some of the plants.—The former is trifling.—A man, a boy,
and

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and two horses would do six or eight acres a-day.---The latter is more than counterbalanced by the smallest of the proposed good effects, and totally vanishes in the last.

THE DOUBLE HAND-HOE. 16. The double convex Drag-hoe has performed the first hoeing very well.---Eight acres have taken one man nine days---just 1 s. 10 d. $\frac{1}{4}$ an acre.---Three acres were exceedingly grassy---three acres remarkably foul---and the man had his trade to learn. A man in practice would hoe an acre a day.

COMPOSTING. 16. Finished the mixen of O. 3.

This was a heap of digested potatoe-halm, couch and mould, covered with *straw* dung---the whole 30 or 40 loads.---The labourers began, in the customary way, to *turn* it---to throw down the top, which was entire dung, and to bring up the bottom, which was entire mould, to cover it with. This by no means answered the purpose intended.---I ordered them to *compost* it---to *mix the ingredients*;---one man to cast the dung, the other the mould, *on a slope*. It has taken about six men's days works, and therefore cost about 3 d. a load.

JULY, 1777. A still more effectual way of composting a mixen of various materials, is to hack it down with a pick-axe or mattock, as if it were a bed of gravel, or some other hard substance to be dug away, and then cast it *on a slope* with shovels.---If the face of the mixen be kept upright, the hacking at once breaks the materials into small pieces, and mixes them thoroughly together. The Writer has, for some time past, practised this method, uniformly.

PLOWS. 17. The Yorkshire---the Rotherham---the Whip-rein-plows are totally unfit for a stiff soil:---in loose mould they make very good work.---But, perhaps, they are too short and stubbed for any soil.---

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foil.---Their shortness makes them unsteady---they are one moment buried, and the next above-ground.---This is teasing both to the plowman and his cattle.---

Perhaps, make them much longer, and add the *false coulter*---(a stay which goes from the share to the beam): the *sheath* of one of them was very much strained to-day.

HARVESTING BEANS. 19. Winnowed the trodden beans.

One man, I find, has trod between two and three quarters a-day---but he is an old man, and had his trade to learn;---therefore pulling beans incurs an extra expence in cleaning, of 7 d. or 8 d. a quarter.---(See 1st MARCH.)---*Treading*, I find, is more expeditious than *thrashing*, and does not damage the sack so much.---About 2 bushels in a 4 bushel sack seems to be the properest quantity.

FALLOWING. 20. Began to re-fallow B. 3.

This field was fallowed all last summer;---but it was so exceedingly foul, and the weather setting-in wet, we could not get in a crop of wheat with any propriety. In winter, it was gathered up into five-'bout ridges, perfect mortar interwoven with *couch*.---The men and horses worked to their knees in mire.---An extra man could scarcely keep the plow free from *couch*.---I would not even venture a crop of drilled beans in the spring, for fear of the *couch*, which lay dead on the surface in mats, and which, I apprehended, was alive in the soil.---But, surprising! on beginning to slit down the ridges this morning, not a trace of *live couch* appears:---the little which remains undissolved, is quite black and rotten.

This, I remember, was just the case of the upper part of T. 3.---It was landed-up in winter *as foul* and *as wet* as it could be worked. When we came to stir it for barley, the couch, it is true, was there, but it was without the least signs of life.

How

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How is this mystery to be cleared up? Does plowing in winter *very wet* kill couch? Both the fields lay very flat---B. 3. as flat as the *Surface* could make it.---*Perhaps*, lying in a puddle chilled the roots---and, *perhaps*, disturbing them with the plow, whilst in that state, prevented their *striking* a fresh when the water subsided.---But it had not the same effect on the *black bent*, which still predominates.

Perhaps, in future---Lay couchy land flat, and roll it in winter.---Fix a scraper to a heavy roller.---Land-up the mortar.

LEYING. } 20. Sowed over the barley of Foot-Path-Field six
PLOWING. } pounds of rib-grafs---six pounds of trefoil---and four
pounds and a half of white clover an acre.---I intended only 4,
4 and 3; but the season is so very dry, I was afraid to risk them.

JULY, 1777. The Writer prides himself on the management of this field.---Indeed, had he occasion to ley a thousand acres of *retentive* soil, he would not deviate far from the process used in Foot-Path-Field. And for the Reader's information, as well as to gratify his own vanity, he here gives its history.

In 1774, part of this field was summer-fallowed (because very foul), part of it was beans in rows (because tolerably clean), and the whole had an April fallow, in the remarkably dry spring of 1775.

By the last plowing-but-two, it was gathered up into half-rod ridges, which were cros-harrowed; and by the next plowing thrown two-into-one. These rod lands were likewise harrowed and *surfaced* across, which pulled them down considerably, and reduced them to gentle swells. By the last plowing, two of these were gathered into one large land, two rods wide.

This last operation required some plowmanship; for had it been performed by one plow, carrying an equal Plir, there would have been a lank---a hog-trough on each side of the middle

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dle of each land. To prevent this, the *insides* were plowed by a wide-sterned plow, in deep, narrow furrows; and the *outsides*, with a narrow-sterned plow, in shallow, wide furrows.---Cross-harrowing and cross-surfacing, added to this precaution, reduced them to beautiful, gentle inequalities; sufficiently acclivous for the rain-water to drain off, without washing away the soil, or giving offence to the eye.

These *waves*, which the Surfacer had left as smooth as gravel-walks, were then raised into *flutes*---sown with barley, and harrowed once in a place, by a pair of small harrows and one horse.

When the barley was up (or ought to have been up---the dry weather prevented the major part from vegetating), they were sown with the grass-seeds mentioned in the Minute.

During the hard frost of January, 1776, the young grasses were meliorated with about five-and-twenty jags of compost, containing ten or twelve loads of dung, an acre.

The ensuing summer, they were fed down by cows, and afforded a great deal of pasturage. The feeding was of infinite service; and if there are positive rules in Agriculture, this is one---
PASTURE A LEY THE FIRST YEAR.---For at harvest, the Writer was much dispirited; and during winter and spring, the whole field had a bald and shabby appearance:---there did not seem to be plants nearly sufficient to form a sward.---He put some confidence, however, in the dung and the pasturing, and his expectations have been more than satisfied;---for *this* spring, so lovely a carpet was never seen---nor, perhaps, did the sith ever know such delicious herbage.---The crop was larger, too, than could have been expected from these *fine* grasses. Had they not been beaten so closely to the ground by the unmerciful rains of this Midsummer, there would have been nearly two tons an acre.

There

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There is an advantage of pasturing *white clover*, which the Writer was not, until a few days ago, aware of.---Each joint of the stem furnishes a fresh root, (and of course a fresh plant) whenever such joint comes in close contact with the soil; and consequently, the more it is trodden, the thicker it will get upon the ground.

The *spontaneous blade-grass* is now springing up very thick among the after-grass, and bids fair to form a *natural sod*, by the time that the *artificial herbage* be worn out: and on this hinges the prime principle of leying.---*Furnish the soil with ARTIFICIAL HERBAGE, until the SPONTANEOUS GRASSES gain strength enough to form a NATURAL SWARD.* And *perhaps*, to obtrude an *artificial blade-grass*, is bad management.

PEASE: } 30. Earthing up the pease of M 1.
 HOES. } The lower part of this field is so exceedingly full of
 ketlock, the *double earth-up* cannot clear its work: the *double hoe* is
 obliged to precede it.

But this *double earth-up* does not please me.--Where the weeds are long, they hang to the uprights, and drag down the pease.—The *single* one, last year, where the rows were equidistant, did much better; but neither of them is a perfect Implement.

JULY, 1777. It would be tedious for the Writer to describe every attempt he has made at new Implements.—He was much pleased with the *double hoe*, and he wished for an *earth-up* on the same construction;—but he did not succeed:—and he is still of *opinion*, that there is not, nor can be, any Implement superior to the common hand-hoe, for earthing-up pease.

He does not, however, by this, mean to discourage any *other* person from attempting an improvement; but this is *his present opinion*.

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I. J U N E, 1775.

HOEING WHEAT. 1. Finished hoeing the wheat of the little Four Acres.

The hither side of this field is a very bad, foul crop;—the further side, as fine wheat as can stand on the ground. This wanted very little hoeing, but the other a great deal;—the weeds had almost overcome the wheat, which must, before harvest, have been smothered, had it not received this timely hoeing.

Perhaps, generally,—If wheat is thin, weeds are thick, and hoeing absolutely necessary to tolerable management.

JULY, 1777. Hoeing wheat is spirited management; but it is a tedious, expensive piece of business. If wheat be very straggling, as the above-mentioned patch was, it ought, certainly, to be hoed, or plowed-in.

SELF-ATTENDANCE. } 2. *Labourers want looking-after.*—Yesterday,
SERVANTS. } day, I was in town;—to-day, at home.—

The two plow-teams and the eight Weeders did as much work to-day before noon, as they did all day yesterday. They were happily situated for gossiping and fun;—the teams on one side of a hedge, the Weeders on the other.

PEASE. 3. Finished hoeing pease.

House-field and the two upper pieces in M. 1. have had one flat hoeing and one earth-up, and are passably clean:—The lower part of M. 1. has had two flat hoeings and an earth-up, and is so intolerably full of wild-mustard, it must undergo a tedious hand-weeding.—M. 4. has got too high for the double earth-up, and too grassy for the single one:—Besides, it was plowed so shallow, there is no mould to earth them up with; and it must take its chance, after a cursory weeding.

Perhaps,

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Perhaps, in future,---Winter-fallow, or trench-plow a wheat-stubble for pease.---Harrow it a-crofs fine,—drill four bushels, at least, in foot-rows, as soon as the soil can be crofs-harrowed---cover and roll.

If clean, give one, if foul, two flat hoeings, with the double drag-hoe;---and, if clean, earth them up with the double drag-earth-up;---if foul, with the *band-hoe*.---*Perhaps*, nothing but *this* can earth them up completely---can give them that *regular inclination*, which keeps them from ravelling; which, by covering the whole surface, smothers the remaining weeds; and which, by giving a perfect shade, mellows the soil.

DISCUMBERING. 6. Began to hand-weed the rows of the pease in M. I.

Had these pease been left unhoed, they must have been totally smothered in wild-mustard; for that which grows in the rows only, makes the whole as yellow as a field of turnips in blossom.

Perhaps, nothing but ten or twelve plowings and harrowings in a wet summer, can effectually cleanse land from ketlock (wild-mustard).---A *dry* summer, no doubt, quells the *roots*; but a *showery* summer exhausts the *seeds* of weeds:---In That, many may escape vegetation;---In This, they scarcely can.

GENERAL MANAGEMENT. 9. Mowing weedy grafs by the side of the rivulet in River-mead.

The weeds are now tender and full of sap, and make very good verdage*. Had they stood (as they did last year) until the rest of the field be fit to be cut, many of them would have shed their feeds, and their aridage have marred the hay-stack.

* *Verdage* is adopted as the general name of *green herbage*, cut and given to cattle *green*; in opposition to *aridage*, which the Writer has adopted, as the general name of *dry herbage*; whether hay, straw, or halm. *Soiling* is a *dirty*, very bad word.

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9. J U N E, 1775.

That which was cut to-day, is worth 20s. to the working-horses and oxen: Besides, the second crop will be fine enough to mix with the hay of the rest of the field, without injury.

THE WEATHER. }
TIME OF SOWING. } 10. We have had only one shower of rain,
DUNGING LEYS. } during the last three months! Yet the crops
HAY. } which covered the ground when the drought
COWS. } set-in, still hold their vigour. This seems un-
for it, except the remarkably strong dews which we have constantly
had.

Wheats, in general, look very well; and so do early-sown oats and barley; but much of the backward-sown barley is not yet up, tho' sown a month ago!

The backward meadows and up-land leys, in general, are burnt up; but M. 3. and M. 6. which were dunged in winter, and got a-head in the spring, are very fine crops of rye-grass and clover.

Grass of each species *yields*, this arid year, remarkably well. N. 1. which seemed scorched up to the very bents, and which I had laid at less than half a load of *hay* an acre, has yielded full three quarters! Instead of *shrinking*, I really think it has *swelled* after cutting. How is this to be explained; except that dry weather gives more *substance*, wet weather more *sap*?

And what seems equally astonishing; cows, this dry summer, milk well, and look sleek and healthy, in pastures as brown as fallows. But, perhaps, the substance is there, tho' in a small compass, and the adjoining rivulet supplies the sap.

FARMS. 10. Perhaps, land around the Farm-yard is cheaper at 20s. than the same soil a mile from it, at 10s. an acre.

Two

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10. J U N E, 1775.

Two teams went yesterday to *stir* the fallow of C. 1. They did not plow more than an acre! I have just been over the wheat at Norwood. ---It is, in patches, smothered in May-weed; and the wheat being in bloom, it would, perhaps, be dangerous to weed it:---Had it been near home, I should have been over it fifty times, and it would have been all hand-hoed, or hand-weeded, long ago.

I find it a pleasing AMUSEMENT to attend to contiguous crops; but a disagreeable *task*, to have the care of those which are scattered.—The stroll is inviting, while the fields are connected; but half a mile of dirty, rough, or dusty road mars the amusement.

FALLOWING. } 15. Continued breaking-up, for a *Dog-days'*
CLOVER-LEYS. } *Fallow*, for wheat, M. 6. a rye-grass and clover-
ley of three years old.

The teams do not plow more than half an acre a-day, each. The soil is so exceedingly dry and gravelly, the plowmen are obliged to have their shares sharpened twice a-day. This is a disadvantage of *Dog-days'* fallows. But are there no advantages to stand against it? Yes.---Two load of hay an acre, this year of scarcity; and a breaking-up in dry weather.

Had it been broke-up in winter or in spring, the hay of course would have been lost. Had the wheat been sown on one plowing, many roots of rye-grass would no doubt have vegetated, and have become weeds to the crop. With such a roasting plowing as this, surely they will *wither*, and by two or three *stirrings*, totally perish.

A clean *clover-ley* of *one* year old may require but *one* plowing; for here are neither *sod-worms* nor *noxious roots* to get rid of.

CARROTS:

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16. J U N E, 1775.

CARROTS. 16. Finished hand-weeding them.

The seed being sown in windy weather, and the quantity of it too small, the plants came up at *random*, rather than in *rows*. (See 20. APRIL.)

The dry season, too, has been much against them; for tho' they have been above-ground a month, they are still too weak to admit the hoe; and nothing but a hand-weeding could have saved them from being smothered in hog-weed and wild-mustard.

Perhaps, in future,---Scatter 6 or 8 lb. of seed an acre, in flutes, a foot apart, and two or three inches deep; covering the seed in such a manner as to leave obvious traces of the rows. This will give an opportunity of keeping down the interval-weeds, with the double hand-hoe, before the carrots be up. As soon as the plants are distinguishable, hand-weed the rows, and continue to hoe the intervals.

SWINE. 17. Put twelve *couple* of hogs to the four grafs and weeds, in P. 1.

The couple mentioned the 31st MARCH, went very amicably together, while alone; but, coming among the large uncoupled hogs, they were taken the advantage of; I therefore uncoupled them, until a sufficient number of couples were prepared for the whole.

They have now, all, except the sows and young pigs, been coupled a month at least.---Two of them got hung one day under a gate, but without any harm; and one of them got lamed, but whether from coupling or not is uncertain;---otherwise, they have gone on very well---have been quite manageable---have gone on the Common, with scarcely any other food,—and, considering the season, look very well. They are now gone into a field with only common fences, to pick up that, which, without the couples, must have been wasted.

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19. J U N E, 1775.

DISCUMBERING. } 19. Mowing weeds every-where for the cows.
 Cows. . } This is literally turning evil into good---weeds
 into milk. The stubs in many of the borders hinder the sith very
 much. Remember to grub them up.

WOODEN COLLARS. 20. At last I am pleased with an OX-COLLAR !
 I have had them in all shapes and forms.---My original idea was
 wood---but I mistook the construction of the shoulders of an ox.---
 They are, in general, very much concave, not convex ;---and I
 wrung them very much at the *points* and *tips*.

Finding that tallow absorbed by hair prevented a tender-shoul-
 dered horse from galling, and being determined, at any price, to
 work oxen in collars---I made them convex, and stuffed them with
 hair and tallow.

In these they *worked* very well, all spring-feed-time.---But the *bot-
 tom-pieces* hooked the traces at the turnings, and gave the whole a
 clumsy appearance.---The *spring-pins*, too, which fastened them at the
 top, were tedious, and the whole expensive, complex, and uncouth.

At length, after making many casts, I have hit off one which *satis-
 fies* me. Instead of the hair and tallow, I have substituted a *wooden bol-
 ster*---instead of the bottom-piece, an *iron spring bow*---and instead of
 the spring-pins, *catches*.

The *nine-pins*---another sort---have a simplicity in them which pleases
 me very much ; but the men do not seem to like them so well as the
 bolsters. They are not, however, yet matured*.

The idea of a wooden collar arose from this observation : When a
 horse galls, it generally proceeds from some knot or lump in the stuff-
 ing ; and be the *straw-collars* ever so hard, if they are *smooth* they seldom

* A Drawing of each sort will be given in the DIGEST.

gall.

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20. J U N E, 1775.

gall.—The truth of this observation is fully proved on the oxen's shoulders, for they are *become* as fine and smooth as the wood itself.

I have just finished one on the same principle for a tender-shouldered HORSE—and he is now hoeing potatoes with it.—Duration (including *cheapness,*) *neatness,* *ease,* and *coolness* to the horses, are the proposed good effects.

BREAK-UP PLOW. 21. Tested the alterations of the Breaking-up Plow.

This plow was made last year (out of an old swing-plow) with a *short* swing beam; but she ran upon her nose, and was difficult to hold. I have now put in a *longer* beam, and fitted it to the *carriage* of the trenching-plow.

The variations from the common plow are, the narrowness of the stern, and the position of the mould-board. Instead of that being 12 or 14 inches wide, it is but 6 or 7; and instead of this forming with the land-board the frustum of a wedge, it stands parallel to it. The one lessens the resistance—the other suffers her to keep in the ground.

WINTER TARES. } 22. Sold a patch of the tares of N. 5. at
EXHAUSTION. } seven pounds an acre !*

Surely this must be a profitable crop ! A barley-stubble once plowed, and two bushels of tares—the expence not 20s. an acre.

It is true, they are carried off, but they are carried off without any expence ; nor is the soil exhausted by a *ripened crop*. And, *perhaps,* it is not so much the *herbage* as the *grain*, which drains the soil of its treasure.

* The Writer has since sold tares at eight pounds an acre.

HONEY-DEW.

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22. J U N E, 1775.

HONEY-DEW. 22. This morning there was a remarkable honey-dew. The leaves of the oak were not *sprinkled*, as is usual, but *varnished* with a sweet, shining, viscous matter, which on some leaves had run into large drops: with a little trouble, a quantity might have been collected. I tremble for the effect!

JULY, 1777. Several oaks and other trees were blighted; but the corn did not receive any obvious injury.

DOUBLE-PLOW. 24. Earthed-up the cabbages and early potatoes with the double-mould-board plow.

A *monstrous* neat, expeditious job.

JULY, 1777. This Implement is too common to need a particular description; and too useful, in opening furrows and earthing-up potatoes or cabbages, to be left wholly unnoticed. Those whose mould boards move on hinges, and may be set wide or narrow at pleasure, are the most convenient.

THE WEATHER. } 28. On Saturday, the BAROMETER* got up to
BARLEY. } 9°. 10'—we had some showers.—On Sunday it
got down again to 8°. 30'—On Monday it reached 9°. 30'—It began to rain about 9 o'clock, and rained 'till three. This finishes a drought of upwards of three months.

The major part of the feed-barley which was sown in E. 2. the beginning of May, was yesterday as found, firm, and bright, as on the day of sowing! This rain may, indeed, make it vegetate; but it can

* A quadruple tube of sixteen inches, indexed by a tincture which rises for rain.

K

never

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29. J U N E, 1775.

never make it come in time for a crop :---Besides, the sprinkling which is already up, will be ripe long before it.

SWINE. 29. This morning one of the small hogs was found strangled in its couple :—two couple had entangled themselves together in the night, and the weakest of course fell.

This is the first *real* accident which has happened (See the 17th) ; and I do not see how this risk can be removed, without uncoupling them every night. This will be troublesome, and perhaps the labour of it more than the risk.—Perhaps, this is a casualty which may never happen again.

SELF-ATTENDANCE. 30. Deuce take the Town ! The day's work of a team lost !

A team went this morning to harrow at Wood-side.—The horses ran away with the harrows, and kicked each other, with the Carter, into the ditch. The horses escaped unhurt, but the man was lamed very much ; and, *being from home*, the horses stood kicking their heels in the stable the remainder of the day.

“ You may talk of your *Farmer This* and your *Farmer That*,
“ but I say, FARMER SELF-ATTENDANCE is the best Farmer in all
“ this country.”

J U L Y.

FALLOWING. I. Sowed C. I. with turnip-feed ; the turnips to be plowed-in for wheat.

I now look upon this field as a clover-ley, which has been once mowed, and the second crop of which is intended to be plowed-in for wheat.

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I. J U L Y, 1775.

wheat. The more *seed weeds* which now vegetate, the better—the more food for the wheat.

This is shortening the business of summer-fallowing; and, if the soil be clean from *root-weeds*, it is, perhaps, better management than stirring it thro' the throng of hay-time and harvest; besides raising nutriment for the succeeding crop.

JULY, 1777. If a summer-fallow be thoroughly clean from root-weeds, it is certainly most eligible management to sow it with the seeds of some quick-growing herbage, in the wane of July or beginning of August, to be plowed-in for wheat in the wane of September.

But to lay up a fallow in the beginning of July, which is not *perfectly cured* of its couchiness, is very indifferent management indeed. C. I. is a *living witness* for this assertion.

HAYING. I. I have adopted this method of making mix-grass and clover-hay.

Let it lie a-while to wither in swath; but while it is *tough*--before it be *crisp*--make it into light minikin cocks, and rake the bared surface. As the cocklits become dry, aggregate them; and continue to rake the bared grass till the hay be dry enough, and the cocks big enough.—If rain beat down the cocklits, catch a dry opportunity of turning them upside-down, and *lightening them up*; --not *shaking them out*.

Thus, it will always be out of harm's way, and the *leaf, sap and colour*, be preserved.

BARLEY ON GRAVEL. } I. The barley of O. and P. is, and was,
QUANTITY OF SEED. } rom its first coming up, choaked with
feed-weeds. A neighbour sowed some at the same time, in the same

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1. J U L Y, 1775.

common field (a gravelly loam), which is clean, and, at present, a fine-looking crop. We sowed *two bushels* over-plit ;—he, *five bushels* at least, half over, half under.—His came up very thick—smothered the weeds—and kept the ground moist :—Ours thin, with an abundance of seed-weeds—could not *branch* for want of rain—and the soil is of course exposed to the drought.

Perhaps, on dry land, subject to seed-weeds *, thick sowing is preferable to thin sowing.—On moist soils, tolerably clean, thin sowing is better than thick sowing.

Perhaps, generally—thin sowing gives stronger straw, and larger grain :—thick sowing smothers the weeds, and gives finer fodder.

SWINE. } 3. Another hog hung! and in the very same man-
FARMS. } ner (See 29th JUNE.). It is strange, that for six or eight weeks no accident happened, and now for two to come together!

There must be some *special* cause.—Could they be entangled maliciously? I hope not.—I rather think this was the cause :—They were both strangled on stormy nights—they were in Adscomb Farm-Yard, without litter—they got into a heap to keep themselves warm and dry, and thus got entangled; and being weak, for want of better attendance, the little ones were presently strangled.

In future, give them plenty of meat, plenty of litter, and plenty of room, in a dry place.

Brought them home last night.----Had they never gone to Adscomb, they might still have been all alive; for I should of

* This may seem a vague expression: it is a technical phrase: and that some soils have an exhaustless source of the small oleaginous seeds of weeds, while others are easily kept free from them, is a fact indubitable.

course

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4. J U L Y, 1775.

course have *seen* that they were in want of proper victuals and lodgings.

This is another inconvenience of a scattered Farm.

PLOWS. } 4. Began to cross-plow M. 6. (the second plowing
INVENTION. } of a tough rye-grass ley.)

Tried it with a swing-plow: the fods gathered under the beam, and threw her out. Took out the surface-plow of the trenching-plow, and tried her: the tough plits wedged-in between the coulter and the breast, and threw her out. Took the coulter entirely out: the false coulter drove them before her into large heaps. Put the coulter into the coulter-hole of the surface-plow: never plow went better.

This is a striking instance of the utility of making the coulter-hole at a considerable distance from the breast of the plow. Perhaps, a foot and a half is little enough. In this instance, the coulter stood at least three feet before the plow, without inconvenience.

JULY, 1777. It is dangerous to generalise ideas precipitately. The Writer, fully convinced that the coulter might be set eighteen inches before the breast of a *wheel-plow*, took it for granted, that the same rule might be applied to the *swing-plow*, and he built one on that principle: but she did not answer his expectations.—She was unsteady; and if a stone, or other obstruction, threw her out of her work into the furrow, it was almost impossible to get her *into land* again. At present, he is of opinion, that the point of the coulter of the swing-plow (a plow without wheel or foot) ought not, except it stand very high, to precede the point of the share. The precise situation of the coulter-hole depends, therefore, on the shape of the breast, and the length of the share. If the breast be straight; perhaps ten or twelve inches is a mean distance.

SWINE.

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4 JULY, 1775.

SWINE. } 4. Stewed some green clover for the hogs. They
 CLOVER. } drank the liquor, but would not eat the greens.

BARLEY. 4. The remainder of the barley of Foot-path-field, sown the 9th of May, just two months ago! is now coming up as even, as if it had been sown but a few days.—That which came up presently after sowing, is now in ear. What a motley it will be at harvest! E. 1. and E. 3. are in the same predicament.

NEW CART. 6. The *two-wheel-waggon* came home last night.

	£. s. d.
The cost of the wood-work	7 15 0
———— of the iron-work, about	7 7 0
	£. 15 2 0

I have great expectations from her, and the men do not seem to dislike her.

JULY, 1777. This is a carriage, whose *body* resembles, as nearly as possible, the body of a waggon, yet makes a very convenient dung-cart.

BARLEY. 7. By way of experiment, (See the 4th.) mowed two lands of E. 3. in order that the first and second comings-up may start fair, and come-in together at harvest.

JULY, 1777. This had not the desired effect;—the part mowed-down was in ear again, before the last coming-up had covered the clods.

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7. JULY, 1775.

SWINE. 7. Uncoupled the hogs; to try if they will stay quietly on the Common, loose.

They are awkward to serve at the troughs, and waste the wash. Oiled the couples, and put them by till stubble-time.

No accident has happened since they have had plenty of meat, litter, and room. (See the 3d.)

HAYING. 8. A fine afternoon.—Got the remainder of D. 1. and K. 2. into larger cocks: The *one-pitch* cocks, every-where, are almost fit to carry, notwithstanding the sun has not shone these three days.

I apprehend, had this hay been treated in the common mode of hay-making, (See the 1st.) it would have been black, if not rotten; whereas the flowers still retain their bloom, and the leaves their verdure.

This process may not be so *expeditious* as the common method, but I am positive, it is more *certain*.

WORKING CATTLE. 11. The *borned horses* have brought home a great part of the hay to-day. This is the first time they have gone upon the road in a waggon.

They seem to be equally as handy as *polled horses*, and answer the purpose just as well: they made the same number of journies, and the hay bears exactly the same colour and the same smell.

TARE-VERDAGE. 11. Finished the tares of H. 1. The horses have lately made great waste of them: the wheat which grew among them got *strawy* as it grew old, and they would not eat it.

Perhaps, in future,—Sow barley, or oats, or beans, instead of wheat or rye, among winter-tares: The self-sown barley, among these, is very luxuriant, but not so arundinaceous as wheat,

Perhaps,

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II. JULY, 1775.

Perhaps, something by way of *supporters* is absolutely necessary to tares. Farmer ***** had a field of winter-tares, which, early in the spring, looked remarkably well.—He is now cutting them, tho' they are scarcely worth the trouble: They are, at the root, quite black and rotten—only a small part of their tops are eatable. Those in N. 5. which have rye and wheat to support them, are green to the ground, and are, at least, of double the value of his, tho' in the spring they did not appear to be half the crop. The one is three or four feet high—the other beaten into the ground—not eighteen inches. What can be the reason of this, except the want of supporters?

HAYING. II. (See the 1st.) To try how the cocklits would make in pitch cock, *without lightening up*; I put three of them, one-upon-the-other, without shaking. In this manner I made two rows: the rest of the field, two cocklits together, shook up. The former was the greenest, finest hay by much.

WHEAT:	}	13. In the year 1773, C. I. was a remarkably fine crop of wheat.
CLOVER-LEYS.		
MELIORATION.		} To-day, I enquired of the Bailiff, who had then the management of it, and who now works for me, the process of this field.
VEGETABLE ECONOMY.		

It was simply this: A clover-ley dunged, as soon as the first crop of clover was off. The second crop of clover, he says, was not great; but the wheat was *the crack of the country*.

Does not this confirm the propriety of the idea of feeding on a firm surface, and contradict that of the volatility of vegetable food?

The second crop of clover, it is true, was not good, because no rain fell to wash in the dung: But before wheat seed-time, the ma-
nure

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13. J U L Y, 1775.

nure became incorporated with the soil, and gave the noble crop which followed.

The dung (being laid on in July) was of course exposed to the exhalation of the Dog-days' sun—and the “plant-feeding *nitrous particles*,” consequently, “dissipated.”

They might be so:—But pray, who, or what re-called these itinerant particles to the identical field from whence they took their flight? Nonsense! The food of vegetables is too gross for aerial flight.

Whence foot, then, and its vegetative quality?

Soot is *forced* up a small aperture, by a *strong* fire; not *voluntarily*, as it were, raised in the open air, by the *feeble* influence of the sun. That is rarefaction, caused by actual combustion, assisted by an artificial current of air:—This, but attraction, with a small degree of rarefaction, caused by reflection only.—Because a chimney will suck-up a Bank-note, is it therefore dangerous to expose Bank-notes to the sun in Dog-days, for fear of their being exhaled!

JULY, 1777. The Writer does not offer this loose Minute as a piece of finished philosophy: He is still, however, of opinion, that the FOOD OF VEGETABLES is neither principally *nitrine*, nor dangerously *volatile*.

CABBAGES. 15. *Mending* the rows, with the weak plants, left (at the time of planting) in the seed-bed. *Very eligible*.

HAYING. 19. The stack of mix-grass hay (See the 1st, 8th, and 11th.) takes as fine a heat as can be wished-for, notwithstanding it was out three weeks of rainy weather.

JUNE, 1776. Not a speck of mould, nor a handful of musty hay, in the whole stack.

L

WORKING

MINUTES OF AGRICULTURE.

21. J U L Y, 1775.

WORKING CATTLE. 21. Cutting tare-verdage for the oxen.

On *clover* they did very well—on the *weedy grafs* of the margins but indifferently—on *tares*, exceedingly well; they eat ready to blow themselves.

Who will assert, that oxen cannot be used as beasts of labour, without meadows to graze them in?

SERVANTS. 22. Some of the men having worked at the hay later than ordinary, I began this evening (Saturday) to pay them 6d. each, for *over-hours*.

The first man was thankful, but the second began immediately to talk of an advance of wages; whereas, had I given him his 10s. only, he would have given me a low bow, and, "Thank you, Sir."

I begin to think, tho' with reluctance, that hard work and low wages are the only means of making good servants: the rest went away perfectly satisfied with their common wages.

SERVANTS. 23. Last week, took the *best team* from *Will*, and gave it to old *Caper*.

The *best team* ruins the Carters: *Hounsome* was a very good servant before he had the *best team*; but this presently made him consequential and impertinent. *David*, too, while he had the *best team*, was a man of consequence: since I took it from him, he is very much improved. Gave it to *Wil*.—As soon as he found himself likely to keep it, he also began to set up for himself: He fancied wooden collars were wrong—and that it is not the *first carter's* business to load hay; at least, without a prong. I have given him the *rips*, instead of the *best team*, and he is all submission.

It is dangerous to grant a favour to farming-servants: and certain ruin to *seem* to grant it.

HAYING.

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26. J U L Y, 1775.

HAYING. 26. Finished hay-making.

Had the hay of River-Mead, &c. been tedded (*spread abroad*), it was so exceedingly short, a considerable part of it must have been left in the field; beside the additional expence, and the exhalation of its juices: nor could it have been made in much less time; for what was carried to-day (Wednesday), was cut on Monday afternoon.

Perhaps, in future,—Never ted a light, nor a middling crop of grafs, of whatever species. If the weather be fine, let it *make itself in swath.*—If foul, *make it in cocklits.*

Perhaps, hay *makes* * faster in heaps, of whatever shape or size, than is generally imagined; especially in windy weather.—It is amazing how much the large heaps in River-Mead dried, after they were *mixed* and shook up light:—even the *good-old* Hayers acknowledged their astonishment.

DEPOSITING. 26. The wheat on the North-sides of the ridges of G. 2.—I. 1.—H. &c. which all lie *East-and-West*, is green, while that on their South-sides, is turning yellow: There are several days' difference in their degrees of ripeness.

Those which lie *North-and-South*, are equally ripe on all sides: therefore, *East-and-West* is an improper direction for round ridges.

WORKING CATTLE. } 28. Carrying the hay of the margins,
TWO-WHEEL WAGGON. } &c. with two oxen, and the *Handy*.

This is a sight I have long wished to see in reality.—I find the idea in a Minute I made five years ago.—They (*Duke* and *Bran*) brought a tolerable load *up* to the stack with ease.---No horses could be handier.

* Withers---dissipates its superfluous sap.

MINUTES OF AGRICULTURE.

28. J U L Y, 1775.

Yesterday, I measured a load of hay brought to the stack on a waggon, and one brought on the Handy;—this was longer, wider, and much deeper, tho' the lowness of the wheels made it to the eye not nearly so large.

CARROTS. } 28. Finished hoeing the turnips of Garden-
TRENCH-PLOWING. } field, and began to hoe the carrots: but they
FOUL CROPS. } are so thin, and so foul, they will never re-
pay the labour.—Therefore, left off hoeing, and began to hand-draw
the largest of the weeds.

The foulness of these carrots proves the inefficacy of trench-plowing to kill weeds; for such variety, luxuriance, and abundance, I never saw, tho' hand-weeded very clean about six weeks ago.

But, perhaps, the loss at harvest is but half the loss of a bad crop: it encourages the weeds, and, if not a hoeing crop, must fill the soil full of trumpery.

Therefore, perhaps, it is good management to plow-in a straggling foul crop, while succulent; tho' it might, at harvest, be worth something: the land is doubly benefited, and the *loss* reduced to certainty; and, perhaps, even *this* may sometimes be removed by a crop of turnips.

SWINE. 29. Re-coupled the hogs.—They are in perpetual mischief—complaints ring at both ears.

WORKING CATTLE. 29. From the 3d of February, to the 24th July—five months—*Duke* has not had one day's ease, Sundays excepted.—No horse has worked harder.—He was a little tender-footed once or twice, but presently came round again:—he was as fit and free to work the last, as the first day.

Not

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29. J U L Y, 1775.

Not being very busy, turned him out for a few days, as a reward for his past services.

WOODEN HORSE-COLLAR. 29. This horse (See 20 JUNE) not being in constant work, I put it on to the fore-horse of the best team.

He was presently galled about the middle of the shoulder.---I mistook the horse's as I had done the ox's shoulders.---Horses do not draw so much by the shoulder, as by the chest---the bosom:---instead of a muscular hollow about the middle of the shoulder, there is a prominent bone;---I therefore continued the bolster quite round the bosom, and hollowed it out concave in the middle of the shoulder, where it was before convex.

He has worked in it tolerably well these three weeks; but it is rather too short for him---it chafes his withers.---I hope to fit him better in a new one.

The men do not like it at all.---He wore it one day to Croydon, to the great disquietude of the *Collar-makers*.---They gave both Carter and Carpenter a hint, and I was obliged to finish it, and attend to the wear of it myself.

I am not yet clear that wooden horse-collars are equal to straw ones, ---nor that wooden collars are as fit for horses as for cattle. Horses perspire more than cattle; and, perhaps, the *straw* collar absorbs the perspiration: but I have not yet given up wooden horse-collars.

JULY, 1777. This collar still hangs up in the Harnes-house, and the intended new one yet unmade: But the Writer can still repeat, that he has not yet given up wooden horse-collars.

SERVANTS.

GENERAL MANAGEMENT. } 29. The harvest is upon us all at once, and *Thomas White* asleep. I roused him yesterday, and to-day have given him a book of memorandums of work to be done, to keep him awake.

He

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He has all along been *siding* with the men; instead of assisting me to manage them, he has been assisting them to manage me.—He is now, however, acquainted with the consequence of such behaviour in future.

The last twelve months have, purposely, been an Apprenticeship to Farming.---Had it not been for the AMUSEMENT which accompanied it, I should truly have been a slave to the MINUTIÆ OF AGRICULTURE.--- I have now, however, had a full view of them, and intend that he, or one who has more spunk in him, shall attend to the *spread-bats* and *whippins* in future.---I hope, after harvest, to have leisure to enjoy some of those athletic and mental amusements, for which, in part, I came into the country.

Is it impossible to manage a Farm with the pen? Proper orders, properly executed, must produce proper management.---If the orders are injudicious, it is my own fault.---But if the execution be bad, the blame falls immediately on the *Ordereé*, not on the Labourers;-- and, of course, it may be readily rectified by a dash of the pen---But this may need a *Perhaps*:

CARROTS. } 31. To expedite the weeding, and to invigorate the
 LUCERNE. } carrots, took a large iron garden-rake, and raked the surface very hard; this pulled up the *running* weeds: the *standards* left, were readily drawn by hand.

Perhaps, clean *random* lucerne in this manner.

	£.	s.	d.
HAYING. 31. Twenty-four loads of rye-grafs hay, } off 17½ acres this year, has cost in manual labour, } for making - - - - - }	4	2	0
18½ loads of mix-grafs, off 20 acres - - - - -	3	5	4
15½ ——— mead-grafs, off 21¼ acres - - - - -	2	5	8

The

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The first was tedded—the second made in cocklits—and the last in fwath. The first was made while the heat of the earth and sun would have roasted an egg;—the second was out three weeks of rainy weather; and the last had a few showers.

This surely proves the expence and absurdity of tedding grafs; besides, perhaps, the hay's being robbed of its essence.

Perhaps, in future—If the crop be very large, turn it, before it be made into cocklits, with a rake, not a prong. This is tedious—scatters it about—and lays it flat: That sets it on-edge, snug, and expeditiously.

A U G U S T.

CLOVER. 1. Perhaps, letting the first crop stand too long, spoils the second. *Perhaps*, if it stand till it has done growing, the second does not shoot from the stem; but forms an original stem from the root, and is, of course, much retarded.

What noble second crops Messrs. A—, C—, M—, &c. who cut soon, have! how shabbily our's look!—Mr. C's first crop hardly paid for mowing: he will have at least two loads an acre from his second. If Mr. A's was now cut, he would have *time* enough for a third crop.

In future—Cut clover in the beginning of June; before the middle, be there much or little. Cutting while in full vegetation, no doubt makes it branch. And, *perhaps*, if thin, *top it* in May; and mow only once.

OXEN.

} 4 Hoed the late-planted cabbages with one
THE NOSE-HOOK. } ox and the nose-hook.

Caught him in the Pasture with the hook, and led him home by the ring. Harnessed him, and lead him, at work, with the hook, by

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the bit—full as handy as a horse—and does not tread-down the cabbages so much.

The double hook is every thing I could wish ; it retards or accelerates—draws toward, or pushes off-ward, at pleasure.

HARVESTING WHEAT. 7. Two Scotchmen have made most slovenly work in reaping Great Six Acres.—I last night gathered sixty-seven ears without stirring a foot ! I apprehend it would pay for raking. Why were they not discharged ? Because there was no other to be had.

Began to *mow* the plot of wheat in Barn-Field. I want to bring this patch into the same crop as the rest of the field ; and were it to be *reaped*, the stubble would be in the way of the plow ; besides, I embrace this circumstance as a good plea for mowing of wheat—a favourite process—and some plea was necessary to bring the Labourers to do their best. Under this they have exerted themselves, and have succeeded pretty well : they have made much better work than the Scotchmen. One mows it outward—a second lays it in band—and a third *rakes* and binds it.

SOWING WHEAT. 7. Observing the results of the experiments on sowing over-plit, and under-plit.

The experiment made in Hither Four Acres, the 5th November, is quite decisive.—The Six Lands under-plit, are glaringly the worst wheat in the field.—The Two Lands harrowed twice in a place, obviously the best of these six.—The four left rough as the plow left them, obviously the worst.

A fairer experiment could not be made : the preceding crop of beans was exceedingly even ; and the soil-process exactly alike throughout the field.

But

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But this experiment was on a bean-stubble once plowed; not on a *fine fallow*. This wants further experiment: the management of That, I think, is fully ascertained.

BARNs. } 9. Clearing the barns and killing the rats.
RATS. } Killed twenty in Home-barns, and twelve in Adscomb-barns; and the Thrashers, within these few days, have killed near forty more.

A remarkable circumstance happened: When they found themselves beset on all sides, and their strong holds broken down, a march was founded; and a large body of them, taking the opportunity whilst the Thrasher was cutting verdage, sallied out, in search of a more peaceful habitation; but by mere accident they were intercepted, and in five minutes, fifteen or twenty of them put to the prong.

Surely, killing of rats, on the eve of harvest, is a piece of business which ought every year to be religiously observed; for what would have been the consequence, had these sixty rats escaped, and increas'd till next summer?—Fifty of them, at least, were full-grown, breeding rats! Nay, even the twenty which the rat-catcher *ferretted* out to-day, would have over-run the land.

In future, employ a Rat-killer even on suspicion. If he kills none, pay him for his trouble. They have eaten some bushels—perhaps quarters of wheat, and other corn, this year.

MOWING WHEAT. 9. It has been mowed and bound by bits-and-scrap; but I made a calculation, the first day, of the cost; and it was about 5s. an acre. The crop was thin, but could not have been lett to *reap* under 7s. 6d. or 8s. an acre;—and I think we have not a reaped field which has not double the waste of this in it. Here, every ear is seen:—thousands are hid amongst the stubble of reaped wheat, which

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do

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do not appear to the eye. The greatest objection seems to be, the straggling ears in the tails of the sheaves; which, in case of wet weather, by being in contact with the ground, would soon grow: and another, the straw cannot be made up so neatly for market. The advantages comparative are, *dispatch* in case of hurry—*cheapness*—an increase of straw---and the soil's being freed from stubble, without the expence of cutting it.

JULY, 1777. If hands be scarce---the crop be thin and stand fair--the weather fine--and the straw be not intended for market; mowing wheat may be very eligible. The Writer, however, has not since mowed any: straw has lately bore the estimable price of 3*l.* a ton.

POTATOE-HALM. } II. The 29th June, planted rows of cabbages
CABBAGES. } in the intervals of a patch of potatoes.

But though the intervals were more than three feet wide, the halm is become so luxuriant that the cabbages do not thrive, and are in danger of being quite smothered.

Observing this, the other evening, and regretting, at the same time, that so much succulent herbage should be suffered to rot where it grew; I broke off some of the stems, and threw them before the cows:—They readily eat them.

This being a daggly day, set a man to work with a fickle, to cut a patch of it, to try if the cows would eat it in quantity; and likewise to try its effect on the roots.

The first was presently decided:—They eat as many as a man could wheel in a large wheel-barrow, presently; leaving only the woody part of the stems. Threw these to the hogs:—They greedily eat or suck'd them—the refuse might be hid in the crown of a hat.

If

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If the cows still continue to eat the halm, and the roots suffer no bad effect, what a saving! For tho' the potatoes were planted wide, there is verdage equal to a middling crop of tares, besides the surface being left open for the cabbages; which may be hoed and earthed-up with the hand-hoe, as if no potatoes were there.—And, *perhaps*, checking the rising sap may *reflect* it to the roots, and, instead of an evil, prove a good. The succulence of the herbage must create milk.

Two of the Labourers have just brought home an arm-full each, and thrown them to the hogs.—They are devouring them most greedily;—they do not *chew them for their sap*, as they do tares and clover, but chew and swallow stems of half an inch diameter.

They have scarcely left a trace of them. I begin to fancy it good management to plant potatoes as a verdage, independant of their roots. What an enthusiast! I even arrogate a *discovery*.

BUILDING. } 12. The Carpenters have done building—job-
THE FARMERY. } bing—gate-making—and tarring—and, thank
my stars, they are off!

It is now near eighteen months since I commenced *Master-Carpenter*, and have had my ears grated with the din of saws and mallets.

I must confess, however, that the anxieties and attention which the *immediate* superintendance occasioned, were frequently relieved by the approved design, and the rising convenience. And what is still more flattering (but it may be the suggestion of vanity), there is a symmetry and perfection in the whole, a tittle of which I do not, at present, wish to alter. May I long retain the pleasure of this reflection!

Soor. 12. Observing the result of the experiments in G. 2.—I. 1. and I. 2.—I find, that which was sown and washed-in with a

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shower before the drought set-in, has been obviously of service.—But where it lay on the surface, till almost harvest, without rain, there does not appear any benefit. This is very obvious in I. 2. part of which fell under the first, part under the latter circumstance.

Perhaps, in future—If the soil be much out-of-heart, sow it twice with foot; once with the seed, to make it strike, and to cherish the young plants during winter;—and again in spring, to assist the bloom, and fill the ear. *Perhaps*, the sooner the spring-sowing is given, the more straw; the later, the more corn. *Perhaps*, April is the best month; or, *perhaps*, as soon as the land will bear a horse and harrows; being careful to embrace the opportunity, before the wheat get too high, or dry weather set-in.

If the soil has strength enough to send up the plants, and support them thro' the winter, but not to fill the ear; give the second dressing only.

Twenty bushels are the least that can be given each dressing: a rich soil wants not foot;—a soil much out-of-heart wants forty or fifty bushels at least.

FARMS. 15. Ox-harrowed A. 2. and gathered it up into five-'bout lands.

This field, tho' it has lain fallow two years, is still such a meagre, thin-skinned piece of poverty, that it would be folly to risk a crop of wheat without a good dunging; and it lies too far from the dung-hill: it must therefore lie dry till spring, for a crop of oats and mix-grass.

This dirty corner is a very bad bargain. Except N^o 1. there is not a field worth the expence of one plowing. N^o 3. and 5. were dunged for wheat, which was scarcely worth reaping; and the oats this year, tho' sown in March, will hardly pay the contingent charges. Besides, the incontinuity of it renders the management doubly expensive.

Perhaps,

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Perhaps, get it into fward as fast as possible, and thus let it lie till the two or three last years of the lease: It may then, perhaps, be worth plowing;—at present, its *heart* is entirely torn out.

JULY, 1777. This is a little paltry Farm of seventeen or eighteen acres, which lies contiguous to an extensive Common, to which the Writer meant these fields as an assistant sheep-pasture. The Common, however, is such a *rotting* one, that the Writer has not yet risked a flock; and the Farm hangs on his hands as an arable Farm, at the distance of a mile from the Farm-yard.

He was led to believe, too, that this Farm was good land, in good heart; but he finds himself very much mistaken; and publishes the foregoing Minute as a caution to such Gentlemen as may be about to purchase, or take a lease of *incontiguous, arable* land; for if it be foul and out-of-heart, it is *dear* on a lease of at least seven years, *rent-free*.

SUB-PLOWING. 16. A land of early sown turnips, in Garden-field, missed; the soil of course was over-run with weeds:—gravel-bind was predominant.—Put old Nimrod to the sub-plow.

Sub-plowed,	Raked off the weeds;
Harrowed,	Turn-plowed,
Carried off the weeds;	Harrowed,
Sub-plowed,	Rolled.
Harrowed,	

These several operations were performed by one man, one boy, and *one* horse, in three hours. A dozen men could not have made it (about sixteen rods) so clean, fine, *round* and firm; so fit for planting favoys and colewort on, in the same time. Nothing can equal sub-plowing, for clearing the surface from running weeds; and, indeed, from every thing, except a perfect bed of couch: the second subbing was eight or nine inches deep.

WORKING:

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WORKING CATTLE. } 17. The tares being all eaten, turned
HAZARD OF FARMING. } the oxen into the clover-after-grass, of
Ley-lands, last Thursday—a week ago;—but, to prevent their *blowing*,
let them first fill themselves on the meadow-after-grass of River-Mead;
—and for the first day or two, I attended them myself; keeping them
stirring.

While these precautions were taken, all was well; but last night, the Carters, in a hurry to get to Croydon, to see their brother-blackguards, the Felons from New-Gaol, carelessly (Carelessness! thou spawn of Ignorance! Thou haggard pandar of Ill-luck!) turned them hungry from the plow *immediately* into the clover.—This morning *Bran* lies dead.

It seems a little strange, that a field of only six acres, after having been eaten-down, near a week, with from four to eight oxen, and some days with four or five horses, should now have this effect. Nothing but *turning them in hungry* can account for it.....

In future,—on the slightest suspicion of blowing, feed them well with hay or verdage, before they go out of the stable; and never suffer clover, whether red or white, to get too high, before they be turned to it.

This forms a capital disadvantage of cattle; for there is no guarding against carelessness; nor are they safe adjoining, nor near, to a field of clover or other succulent herbage, except the fences be very good indeed.

The horses and oxen are now on a par—*Bran* and *Peacock*—with about an equal number of sick and lame on each side. But I would rather have lost two *Peacocks* than one *Bran*. The loss of him has thrown us all off the hinges. I had laid out four teams for the wheat-season, besides the odd horses, to get on the composts. We shall not only be an ox short, but *Bran* was a *leader*, and the prettiest little ox we had.

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HARVESTING OATS. 18. Fifteen load of oats, off Seventeen Acres, took twelve men, two boys, and seven horses, to cock, rake and carry them. The cocking and raking took about five men, or $10\frac{1}{2}$ d. an acre. The carrying, therefore, took seven men, two boys, and seven horses, worth 1l. 11s. 6d. or 2s. 1d. a load.

But had there been strength enough to have cocked them fast enough for two pitchers and two loaders, the *horses* would have carried in half as many more. However, this does not reduce the price much, as the *men* were employed. The distance was medial—not half a mile—and they had done in good time. Perhaps, 2 s. is a middling cost of carrying oats *into barn*.

POTATOE-HALM. } 18. (See the 11th.) Tho' they
POTATOES AND CABBAGES. } have not had it regularly, nor in great quantities, the increase of milk is very sensible,—the milk rich,—the butter perfectly—remarkably sweet—and the cows seem to increase in their affection for it.

This process, tho' stumbled upon, seems very eligible. The whole soil receives a perfect fallow; for the intervals of the potatoes are tilled, before the cabbages are planted; and the intervals of the cabbages, after the potatoes are taken up. The soil gives four crops: the halm, the potatoes, the cabbages, the sprouts. The halm nurtures the infant plants, and smothers the running weeds. I see but one plant out of a thousand, which has missed! Many of those planted alone in fresh-tilled earth failed.

There is nothing to fear but the damaging of the roots—and I have left a patch uncut, by way of experiment.

WINTER TARES. 21. Last October, I made an experiment on the quantity of seed-tares, by sowing one land of H. 1. twice as thick as the
the

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the rest of the field, which had about two bushels and-a-half an acre. The result is, the part which had five bushels, is rather, but not obviously, better than the rest.

Another experiment I made in sowing under and over the plit of a barley-stubble. The land sown *under*, looked shabbily during winter, and in spring,—when it was harrowed; but it is now on a par with the rest of the field—a very good crop. The seed was plowed-in very shallow, and the soil as loose as a garden.

In future,---Sow over-plit the usual quantity of two bushels of tares, and half a bushel of supporters of any kind, which are strong and succulent.

SOWING WHEAT IN SPRING. } 21. In the spring of 1774, sowed
SEED-WHEAT. } experimentally, part of a field with
wheat;—part with barley. The summer proved wet, and wheats in general were blighted; but this patch in particular: the straw was as black as bean-halm, and the grain as light as chaff.—It was merely a slough of bran, without flour to fill out its wrinkles.—The Millers would not grind it, and the pigs and poultry would hardly take the trouble of eating it.

Last autumn—after having found, by a few grains, that it was vegetative, I made several experiments on a larger scale;—and to-day I have been attending to their results.

Thro' the several experiments, I can find no obvious difference between the crops produced from this worthless rubbish, and those raised from wheat worth 7s. 6d. a bushel; except in I. 1. where That from the blighted is obviously inferior. This, however, does not prove that sowing blighted wheat is ineligible:—it rather shews, that a change of seed is favourable to the crop; for the rubbish in question was produced in the adjoining field (an identical soil) to the field

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Field above-mentioned—and I am by no means convinced, that sowing light wheat, *in autumn*, is bad management.

But, what is very striking, the same wheat sown, *in spring*, never vegetated. It was sown among summer-tares in three separate fields; but not a blade from it appeared.

Perhaps, it had just fertility enough to propagate in autumn; but its vigour being dissipated during winter, its vegetative virtue was lost.

POTATOES. 21. Observing the rows, off which the halm had been cut; the dry surface I perceived was mottled with wet spots. On examining farther, I found that each spot was centered by a stump of halm. On touching these, they were covered with *vegetable-bloods* which had followed the amputation. One, whose top was pendant, had spilt at least a table-spoonful; for it had completely wetted a spot as large as the palm of the hand.

Is this the ordinary perspiration (for the halm had done *growing*), or does it flow from the roots?

CARROTS. 22. Experimentally mowed a swath across the carrot-piece—even with the surface—and raked it to a perfect fallow:—scarcely a green speck to be seen. If this does not hurt the roots, it is a most eligible method of keeping them clean.

JULY, 1777. This patch of carrots was so infamously bad, no decision could be drawn.

PLOWING-IN HERBAGE. 22. Begun plowing for wheat in C. 1.

There are a great many turnips (See 1. JULY), but more ketlock; it is two foot high.—Set *Thomas White* and *David* to work, to plow it in. After many efforts, they at last hit upon the ingenious method, of first

N

mowing

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mowing it, and then poking the swaths into the furrows, by little-and-little. This is, at least, employment for four people. Surely there is a better way than this.

23. Hung the timber-chain round the beam of the plow—before the coulter,—so as to drag-down the ketlock, and tuck it in under the plit. It answers the purpose very well, without rolling, or any other preparation. Some of the weeds being very long, a few of their tips stick out; but these are not of the least bad consequence. They will soon wither and disappear.

POTATOES. } 23. (See the 21st.) The pendant
VEGETABLE ECONOMY. } stem still bleeds profusely. I timed
ATMOSPHERIC HUMIDITY. } its dropping---it drops once in two
minutes—30 times in an hour---720 in 24 hours. It has been cut five
days---It has therefore discharged, at that rate, 3600 drops, and still
continues the ejection; and from the same roots there are two other
branches; tho' this is the main stem.

I observe in general, that the higher they are cut---(the more branches and leaves there are left) the less they bleed. It is only the bare stumps that do it very perceptibly; and these I see, bleed themselves to death. The liquor is limpid, soft, and somewhat brackish.

24. This morning, there is a table spoonful in a cabbage-leaf, which I placed last night to catch it, and it still continues dropping.

25. This evening the stump is quite dry---It was cut the 17th or 18th; and has therefore bled about seven days---say just a week.

It will be, at least, curious, to calculate the quantity of fluid ejected, during the seven days of evacuation; and therefrom to draw the quantity of element conveyed to the atmosphere, by the vegetable world; for, perhaps, had not the halm been amputated---had the vegetable been left entire---the same, or nearly the same quantity of moisture would have been exhaled in imperceptible perspiration.

If

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If this stump ejected an equal number of drops each day, it evacuated 5040 drops in seven days. In physic, 16 drops are a drachm---8 drachms an ounce---16 ounces a pint : therefore, from one stem were ejected, in one week, two pints and a half of element.

These potatoes were planted in rows, three feet asunder ; and the plants a foot apart in the rows : therefore an acre of these potatoes contains 14,520 roots. Supposing that each root (or bunch of roots) furnishes two stems, there are in an acre of such potatoes 29,040 stems.

Therefore—an acre of potatoes conveys from the earth to the atmosphere, daily, 10,371 pints, or five tons of element.

In another point of view—if one stem perspire $2\frac{1}{4}$ pints, and every three square feet contain two stems, every foot square furnishes 48 cubical inches, weekly.

Therefore—a field of potatoes, in full halm, exudes, weekly, a sheet of water equal to its own superficies, and one third of an inch in thickness.

Every other vegetable, and every animal, must likewise furnish their several proportions ; and perhaps the oceans, rivers, and other naked waters do not supply the atmosphere with such copious exhalations as is generally imagined.

JULY, 1777. These ideas may be familiar to the able in philosophy : to the Writer—and, he believes, to the Many—they are new ; and he makes no other apology for publishing them, crude as they are.

INVENTION. }
 IMPLEMENTS. } 24. Re-tested THE DOUBLE-SHAFT PLOW, after
 PLOWS. } having lain eleven months dormant.
 Altho' I was by no means *convinced* of the inutility of this Implement ; yet a reluctance, or rather an indifference, about re-trying it, made me *suspicious*. I wanted that *anxiety* which, *perhaps*, always attends inventions of REAL USE. I do not mean the

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anxiety of a man who hunts novelty; but that of the man who is hunted by invention.

Perhaps, generally—WOODEN SIMPLICITY is preferable to *iron complication*, in Implements of Agriculture:—*this plow*—the *wheel-rake*, and the *iron-surfacer*, have cost me more than all the other contrivances I have thought of; and not one of them has answered my expectations.

But my theory never betrayed me so much as in this instance. Let me recollect my original ideas.—They were these: a plow workable in any soil, by two oxen *in yoke*:—for then, seven years ago, I had no idea of oxen *in collar*.—In order to bring the resistance and the impelling power as near together as possible, and to clear the furrow effectually, I conceived a share fixed to the bottom of the plow, instead of preceding it: and, instead of a *beam and chain*—a *pole* five or six feet long, to pass from the body of the plow, immediately to the yoke; so that the point of resistance would be but a few inches behind the heels of the cattle. To lessen the resistance of the super-sliding plit, I conceived a very hollow breast; and, to turn it effectually, a concave stern very much over-hanging.

But, convinced of the inferiority of yokes, I wished to adapt these favourite ideas to collars. A pair of *expensive* double shafts was necessary; and to these a great deal of iron-work. Here I ought, and perhaps should have stopt, if a pair of old shafts had not tempted me to proceed. I built the body, and hung it by a very strong, simple hinge, to these shafts, which hinge regulates, in a moment, the width of the plit. To regulate its depth, a notched iron stay passes from the shafts to the handles: this too is strong, and readily altered.

The share is a right-angle triangle, fixed underneath the body of the plow*; and the coulter, the frustum of such a triangle, fixed to the land-side of it. The share hooks on to the plow, and the coulter

* The Hypotenuse forms the edge, which is about two feet four inches long, and projects about three inches from under the plit-side of the plow.

into.

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into the share ; fastening at the top by a flower-de-luce skrew. The whole apparatus, tho' strong and compact, may be shook to pieces and put together again in five seconds. If I am a judge, the whole is too *ingenious* to be *useful*.—Vanity at least tells me that it has some claim to the first : Experience says, flatly, that it has no right to the latter.

The lodging of the mould was what I never dreamt of ; tho' the hollowness of the bosom, and the situation of the share, both of them aid in it.—This, in a crumbly soil, is alone sufficient to damn her : but *the increase of resistance* sends her to hell headlong.—When the share precedes, the body of the plow has only the *loose* plit to turn : but here, (especially in a stiff soil) *the spring* of the plit is added to its weight ; the plow becomes a *wedge*, which *forces* open the soil, while the share cuts it ; and, perhaps, shares, in general, are placed too near the breast ; especially for tough leys.

I have taken her to pieces, for the last time, and have already found uses for many of the materials.

I am thoroughly convinced that the share ought to precede the plow ; I put the same two horses to a whip-rein plow, and tried her in the same soil—she did her work much better, and with far less strength.

I am likewise convinced that the farther a plow hangs behind the cattle, the more steadily she goes, and the neater work she makes : the smallest deviation in shafts makes a hook in the furrow.

JULY, 1777. The Writer wished to have given a sketch of this Implement ; and has been endeavouring to gather together its scattered fragments—not as a monument of his own folly, but as a guide to future projectors of plows.—The materials, however, are too much defaced to take an original likeness : and, indeed, the only useful lessons which could have been drawn from the delineation, are briefly these :—

THE SHARE OUGHT TO PRECEDE THE PLOW—AND THE PLOW OUGHT TO *follow* THE CATTLE.

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28. A U G U S T, 1775.

WORKING CATTLE. 28. *Captain* is now under the Leech's hands for a surfeit—and *Lyon*, it seems, has got the red-water.

Altho' we have not been without eight, nine, or ten working cattle during the last six months, yet we have never been able to make two teams, of four each, for more than a few days together. We have seldom been without one, or more, sick or lame. Surely I am out of luck, or the idea of cattle being subject to fewer casualties than horses, is a false one.

SERVANTS. 28. The harvest-month was up on Saturday night; but the barley, some oats, beans, and spring tares are still to be cut, and come in. The men very sensibly wanted a continuance of harvest wages, 3 s. instead of 20 d. a-day. I told them, that they should be paid for over-hours, if such should happen; but that I would promise no more than common wages. I find they are all come this morning; and the year's wages of a day's man, constantly employed, is now ascertained. Forty-eight weeks at 10 s. is 24 l. and the harvest month 3 l. 10 s. is 27 l. 10 s. a-year, no beer.

HARROWING WINTER CROPS IN SPRING. 30. Part of the tares of H. I. were harrowed in the spring; and I recollect that each side—the parts left unharrowed—was free from a weed, which half-smothered the rest of the field.

Harrowing wheat in spring is also *allowed*, to bring ketlock and poppies; indeed, I have frequently observed, that wherever the ground happens to be broken in spring, ketlock soon appears; tho' the rest of the field be free from it.

Perhaps, it is bad management to harrow winter crops in spring; except they be hide-bound, or to remove some particular obstruction.

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DEEP-PLOWING. 4. Yesterday a great quantity of rain fell—the roads were sheets of puddle. But on riding over some fallows, which lie as fine and flat as a bowling-green, I was surprized to find them still firm.

The cause did not occur, until I recollected in conversation, that these fields were plowed remarkably deep; and, perhaps, their present firmness is owing to the quantity of cultivated mould—to the deepness of plowing. For had there been but half the depth of porous soil, its absorption, perhaps, would have been satiated, and the mould reduced to mortar.

Is not this a strong evidence in favour of deep-plowing of wet soils? Instead of the superfluous moisture being checked by the SUB-SURFACE in the immediate region of the feeding fibres, it is suffered, by the porosity of the soil, to drain away beneath them, and leave, at least, a sufficient quantity of vegetative mould, still dry enough for the purpose of vegetation. For tho' the roots of corn *may* strike two or three feet deep, this, perhaps, is no reason why six inches is insufficient to bring even wheat to perfection.

Therefore, perhaps, on wet land, it is necessary to prepare a certain depth of soil for the nourishment of the vegetable, and a still greater depth as a drain of the superfluous moisture.

But how, in this point of view, does deep-plowing affect dry soils? Superficial reasoning says, "the reverse, to be sure:" But this I doubt.—A retentive SUB-SOIL creates wet land—an absorbent one dry. The retentive, by being made porous, becomes absorbent;—and perhaps the porous, by pulverization, consolidates, and becomes retentive; especially if aided by compression.

Therefore, perhaps, deep-plowing is universally good management.

PLOWING. }
SEMI-CULTURE. } 4. Finished raking and picking C. 1.
SERVANTS. } This field (See 23. AUGUST.) was plowed in
laid up round from a level; for tho' these were plowed by a good
Plowman,

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Plowman, they are lank-sided.* The harrows, too, pulled up some of the weeds and trumpery which was not sufficiently buried, and the field had a most uncouth appearance; notwithstanding the plow and harrow had done their utmost.

By opening the inter-furrows (which by cross-harrowing had been quite filled with clods) with the double plow, a ridge of clods stood awkwardly on each side of them, and assisted in making the ribs of the lands still lanker.

I therefore set two men, with garden-rakes, to rake these clods back into the lanks, and to pick off the trumpery. It has cost about 2 s. an acre.---Perhaps 10 s. an acre is not equivalent to the benefit which the crop may receive; for the rain-water must have hung on each side of the lands, and have chilled the wheat;---whereas now they lie dry, and decently round.

Had I not found, by former experience, that semi-culture---horti-agriculture---semi-gardening---gardenly agriculture---a cursory digging, hoeing, or raking, is not so labour-consuming, as at first sight it may appear; I should have been startled with the idea of expence. But what is the expence of 2 s. on an acre of wheat?

It would not, perhaps, be eligible to reduce each field to a garden; but I would wish to see an *arable field* and a *kitchen-garden* bear some resemblance.

In Agriculture--as in every other department of life--there is a middle way, difficult to hit; and Labourers fit for gardenly agriculture are difficult to be met with. A man brought up in *the good old way* is habitually a sloven, and incapable of instruction. One tutored in a garden is too tenacious of his profession, not to be too nice; an acre requires *one day's work*---the former *cannot* perform it, and the latter *will not* in less than *two*.

* Have a flat hollow place on each side of the ridge.

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7. SEPTEMBER, 1775.

<p>THE WEATHER. PROGNOSTICS. THE BAROMETER. SELF-ATTENTION.</p>	}	<p>7. Strange weather! Sultry days and deluging nights. It is impossible to keep the barley from growing. The glass was never so low (since I have had one) as on last Sunday morning:—It was down to 6°. 20'—and I never saw the rain more in earnest. Last night, it was below 8°. while a tempest blew, and a deluge of rain fell.</p>
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The Vegetist, perhaps, more than any other man, is subject to the power—I had almost said the caprice—of the elements. Nor can the most consummate experience guard against it. *Prognostics*, even to the vainest Connoisseur, are often vague;—and the Barometer, tho' it may balance the air, does not, sufficiently, indicate the weather.

Therefore, ---THE FARMER WHO HAS, ANY OTHER DEPENDANCE, THAN HIS OWN WATCHFULNESS OF THE FAIR OPPORTUNITY, MANAGES BUT INDIFFERENTLY.

<p>DISCUMBERING. RAISING MANURE.</p>	}	<p>7. From the pea-rakings, weeds and trumpery, brought home and strewed in the fore-part of the Farm-yard—to be trod by the passing and repassing of the cattle, hogs and horses,—carried out seven or eight jags of <i>dung</i>;—as much as will, in a very little time, make five or six loads of good manure. Surely, this is better than burning it.</p>
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Brought in some couch and other weeds to re-place it with.—It is scarcely possible, that either root or seed can remain vegetative, after being incessantly troden, sometimes wet and sometimes dry, for a month or six weeks in the yard, and after being piled and composted in the mizen.

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THE WEATHER. 7. Provoking! Yesterday, we turned all the barley that was mown, and by ten o'clock this morning it was in tolerable order. Got twenty hands to work;—all Up-field was ready;—but before we got the fourth load into the stack, and the fifth loaded, the rain set-in almost heavy enough to float it in the field.

WORKING ON SUNDAY. 11. The barley which was cut on Thursday, was yesterday morning beginning to grow:—*Turned it between church and dinner.*

Surely an Enthusiast would as readily excuse this, as he would the Archbishop of Canterbury's driving his carriage, or his Majesty's building ships, on a Sunday. One is *natural necessity*; the other, probably, *the work of ambition.*

THE WEATHER. } 11. Yesterday evening, it rained hard, and
FALLOWS. } last night it poured. I sent one of the ox-teams
DEEP-PLOWING. } to finish landing-up G. 1.—Followed it down.
—On walking across the part to be plowed, I sunk to the mid-leg at every step—fairly down to the sub-soil. The mould was not mortar, but absolute puddle.

The lower end of the tares which were sown about three weeks ago, were entirely under water. The men put off their shoes and stockings to draw the cross-furrows.

It is very *lucky* that this (about half an acre) is the only piece which remains flat—except H. 1. the very piece mentioned the 4th of September, and this is still plowable—the rest is all laid-up in five-bout lands. Indeed I claim some management, as well as *luck*.—It is the result of caution, learned from last year's experience. And,

Perhaps generally, low-land fallows should be got out of the water's way by the beginning of September.

POTATOES.

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POTATOES. 12. (See 19. AUG.) Made a fair test of the effect on the roots. Took up two rows of equal length—the halm of one cut—the other uncut:—the uncut, obviously the best. The *number* of roots, no doubt, was the same; but the *quantity* was nearly double. The roots of These large and fine; of Those, small, and probably had not waxed since the halm was cut;—but they did not appear shrivelled.

Quere, Does not the gain of the halm more than balance the loss in the roots? *It is said*, when the halm begins to turn, the potatoes have done growing. And,

Perhaps, in future,---Cut the halm when the roots are large, but before the tops have lost their succulence;—if possible, soon enough for the halm, and late enough for the roots.

THE WEATHER. 12. This has been a very fine day. Got nine loads of barley into stack, in pretty good order. Carried till dark, when it set-in to rain—and,

13. Rained till this morning. Cleared up—a fine forenoon.—Got the barley into tolerable order, and was about to begin to cock.—The carriages and stack ready—when a heavy shower came, which still continues to pour.

With three or four teams, and ten or a dozen men, nothing is done. By the time that the plow-teams have got into their work, they are taken off to turn barley—the rain comes, and all is undone;—besides, the little which the teams do land up, cannot be sowed—the fallows are mere mortar.

WORKING CATTLE. 13. At noon, unharnessed the oxen—put their harness into Adscumb-stable, and turned them into the very fields where they had been at plow. They have constantly, for this week or ten days, been taken off about this time of day; and the carter and

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plowman gone to making of hay,—turning or carrying barley,—*until dark.*

This is a great advantage of cattle : Horses must have attendance, work or play. A boy turns out the oxen, and they are done with for the day.

COMMONS. } 13. Last year, we made nothing from the Com-
COWS. } mon. The cows *feasted* on the meadows, and the
SUCKLING. } hogs were *starved* in the Yard, at Adscomb.

This year, the Common has not only been their pasture till within a few days, but has afforded the run of four heifers, and two or three horses.

Suckling in summer is unprofitable : lean calves are dear—fat ones cheap. In winter, spring, and autumn, it is advantageous. Cows, in summer, are consequently a burden to a suckling Farmer. What an advantage then is a Common, whereon they are not only jostled gratis, but yield a clear profit of twenty or thirty pounds? And it would be ridiculous to think of any other cow-management than this.

From the time of shutting up the meadows to the time of opening the after-grafs, stubbles and common-fields, let them run on the Common, or in Norwood. From *this* time to *that*, spare no expence nor care upon them. After the herbage is gone, feed them with grains, malt-duft, turnips, cabbages, or any other aliment succedaneous of hay. Let straw substitute this, if possible; if not, perhaps, suckling in winter may pay even for hay.

STRAW-HAY. 14. The second cut of clover, all over the country, except that cut very early, is totally lost. Ours had been spit-dung by this time, had we not carried it mere grafs, and mixed it with some oat-straw saved for the purpose. Notwithstanding there is as much

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much straw as hay, it was so full of sap, the stack now smokes like a chimney. The straw is sopped with sweat; and, if it does not fire, it must be excellent fodder.

This is certainly a good plan of management.—I drew it from last year's experience and observation.—It is convenient to save a stack of oats until summer (See 22. Nov. 1774.); and the second cut of clover is at best precarious. By this management, the straw is converted into hay (the cows eat the little which we mixed last year, as greedily as they did middling hay), and the clover, in case of dripping weather, is saved from the dunghill.

THE WEATHER. 18. Saturday, a fine day—turned all the barley. Yesterday, fine.—It was, in the evening, in very fine order. Last night, fine.—Began cocking about seven o'clock this morning; but before we could get one jug into the cart, it began to rain, and has rained ever since. Thus the morning was lost, and worse than nothing done. This is the third time we have had the mortification to *taste*, without the satisfaction of *eating*.

The atmosphere may be subject to some certain law of Nature; but this law may have been ruffled by the meddling of man.—The Seasons in the West-Indies were more regular before the forests were broken:—but whether this law be still entire—whether it be still original, or has been mutilated, it is so exceedingly intricate—so totally incomprehensible to man, that *to him* it is mere matter of *chance*; and the attentive Farmer, who loses his crop by the weather, has the same cause of repining, as the cautious gamester who has made an unfortunate bett, or the adventurer whose share in the Lottery proves a blank.

EARLY SOWING. 18. Early sowing has many advantages. The crop is got off while the days are long:—The *chance* of being caught
2. in,

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in the autumnal rains is *lessened*:—The crop is not so liable to the devastations of domestic animals of every species, as the straggling, late crops are.

Our own hogs are perpetually in Foot-path-Field.—Mr. R****s, I found to-day in the barley of E. 3. and, from the destruction they have made, they must have lain in it for some days past.—Went down to Woodside.—P*****s pigs have eat at least one-third of the crop of beans in B. 4. notwithstanding he has been warned at least half-a-dozen times.—Mr. M*****s horses have done five pounds-worth of damage in Up-field, Rippinger, and Bench-field: He had repeated notice given him without effect. Laid hold of them last Sunday morning, and locked them in the Farm-yard. He sent a message, that he would pay any damage to the amount of five pounds. I trusted to his word, and sent him his horses, with an account of half the damage ---I had laid it at 5£.

At this time of the year, stock of all kinds are abroad. It is *convenient* for people who have nothing out, to take it for granted that all is in, and their care at an end. It is, therefore, next to an impossibility to preserve a backward, straggling crop.

TARES. 19. The tares of Scrubs, while green, were beautiful. The heavy rains took them just as they were beginning to ripen, and beat them flat to the ground. The weeds and grafs presently grew through them, while the continuance of the rain, and the attendance of the barley, prevented their being cut.

With much difficulty (they have cost not less than 6s. or 8s. an acre—nobody would cut them by the acre) finished cutting them to-day. But the pods are rotten, and I am afraid the first hot day will open them, and scatter the head-tares in the field.

Seed-tares are a very uncertain crop.

STACKS.

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20. SEPTEMBER, 1775.

<p>STACKS. BARN-ROOM. SELF-ATTENDANCE. SERVANTS.</p>	}	<p>20. A fine day at last, thank God! Turned the barley, and got it into rare order; but lo! when we came to open the stack, tho' covered with two very good cloths— one side was almost rotten, four or five feet down! We were obliged to carry a load and-a-half into the field again to dry and sweeten---it stunk like a dung-hill.---This is a proof of the utility of BARN- ROOM.---Shook the remaining worst to the out-sides, and let the stack lie open till sun-set to air---then threw in a load to fill it up round.</p>
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A stronger proof of the necessity of SELF-ATTENDANCE need not be produced. I sent *Thomas White*, about eleven o'clock, to uncover and air this stack (he has been a stack-maker these twenty-years). He went up---threw off the cloths---and moved a few pitches from the inner part toward the out-sides, and thus left it. About one, *being that way*, I went up the ladder, to see what condition it was in; when, to my surprize, I found it in that above-described. Had it not been for SELF-ATTENDANCE, the stack must have been aired in the evening (after the first load had been brought to it, and the evening's work consequently broken) when the sun had lost its power; or, ten times worse, the dry barley have been laid over the layer of *long dung*, and the whole stack inevitably spoilt, part rotten, the rest muly;---and what still strengthens the evidence, he is not generally a careless fellow.

TURNING BARLEY. 20. There is a right way and a wrong in doing every thing; barley may be turned well or ill. The heads of rakes and the tines of forks are infamous.---The handles of either, or any other long stick, is much better. Those break the swaths, and confuse them heads-and-tails:---These preserve them entire, and lay them much lighter. But a corn-fork, without the *thumb*, is the best; for be the swaths ever so much broken, this turns them clean, and lays them light. It will do very well with the thumb.

PLOWING.

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21. SEPTEMBER, 1775.

PLOWING. 21. Hither-Field was laid in very high round ridges for wheat; and I wanted to lay it still high and dry for tares, on one plowing. How was this to be done? To have gathered upon the same lands would have laid it too high;—to have gathered in the inter-furrows would have laid it too flat; nor could two of them have been laid sufficiently round in one; and consequently the lank, left in the middle, would have been under water all winter.

I hit off this method:—I plowed them in double lands; but instead of filling up the old inter-furrow with the first pair of plits, I dropt them short of it, leaving the old furrow quite open. This pair I plowed fleet, the next three or four deep, and the out-sides of the lands as fleet as possible.

Thus it lies almost in the same lands—sufficiently round—and drier for tares than for wheat.

BARLEY. } 22. Finished carrying at Adscomb.
THE WEATHER. } Considering the weather we have had, it is
QUANTITY OF SEED. } surprising to see what condition the barley
is in. It is true, that it has all lost its *colour*, and totally spoilt for
malting; but in the fifteen acres of O. I do not think there is fifteen
shillings-worth of damage done by *growing*.

Foot-path-Field, not lying so open, has fared worse; but, upon the whole, I seem to be better off than my neighbours.—Farmer M's was grown into a mat, and Mr. C. it seems, turned his hogs into a field of eight acres.

But, perhaps, there is something due to management. It was never *thoroughly* dry at the top, without being carefully turned three, four, or five times over.

Or, perhaps, it was more owing to the quantity of seed. This being small, produced a strong, reedy straw; which not only kept it open in
the

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the swath, but prevented the ears from being beaten into the ground by the heavy rains.

The crop too is beyond expectation. From twenty-six acres in O. and P. we have carried thirty-six middling jags,---and some of it is very well headed.

TILLAGE. 23. While we were taking up the barley to-day, in F. 1. I observed two or three lands very foul—quite grassy—the rest of the field very clean :—the difference glaringly obvious.

I recollect that this part had one plowing less than any other part of the field. The hither side was sown with turnips, on one plowing;---the further had three.---This was a good crop : That almost choaked with weeds.---Plowed up part of it, and re-sowed it.---The part not re-plowed is the part infanced.

THE WEATHER. 25. (Monday) During the late rainy weather I made these observations :

The *Sun* never set clear, except one night, and the next day was fine.—Last Wednesday evening he was lucid till within a few minutes of setting, when he seemed to drop behind a dusky, gloomy mountain :—it lightened very much all night, and next morning thunder'd and rain'd a good deal.—On Thursday he set amid some broken clouds ; but whenever he appeared, it was with a vividity which shew'd the transparency of the atmosphere :—he did not, as before, seem to immerge in an ocean of vapour. We have had remarkably fine days ever since.

The *wind* was chiefly to the westward, and generally high.—It once got round to the eastward, and stood for some time, but without any change of weather.

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25. SEPTEMBER, 1775.

The atmosphere was seldom free from large towering *Clouds*—some vertical, some oblique, but few horizontal. On Monday and Tuesday they became less unwieldy;—they seemed to spin themselves into threads of vapour, which scudded across the zenith with great rapidity, sometimes bending to the earth, causing drizzling showers.

The *geese*, during the intervals of sun and wind, repeatedly washed themselves with a glee which shewed an agreeable expectation, and always preceded heavy showers.

The *red-breasts* whistled faintly *under* the shed and *in* the hovels till Friday morning, when they sung aloud *upon* the barns and houses, seeming to proclaim the agreeable change.

The *flies* bit, but not very remarkably: yet I could guess, by the uneasiness of my horse, the quantity of rain which was coming.

Until Wednesday evening I do not recollect seeing a *cobweb upon the ground* for the month preceding.—Some barley, which we then spread in the field to dry, was covered in five minutes.—~~Before~~ sunset the whole earth was so completely strewed, that one was ready to idea the soil itself to be spiders.—They have continued since to spin out their threads so profusely, that they fly about the fields in ropes; and by perpetually coming across the face, make it disagreeable to ride through the lanes and fields.

The *Glass* was up and down, sometimes twice in twenty-four hours; but generally it portended the rain pretty truly.—Nothing, however, marked the change so discriminately as the *spider*.

It is the received opinion, that the weather is influenced by the *Moon*;—and whether or not *Saturday's moons* are generally worse than others, the late moon was certainly born on a Saturday.—She chang'd last night—therefore the weather changed two days before the moon.

BARLEY-

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28. SEPTEMBER, 1775.

BARLEY-HERBAGE. 28. Began to mow barley for hay.

That which did not vegetate till after the drought, is still as green as grass;---the milky grain quite puny, and winter at hand.---The tares, which were sown among a part of it, are now in bloom, and very luxuriant;---and, should the herbage be well got, perhaps it will pay nearly as well (this year of scarcity) in *hay*, as if it had ripened in time for *corn*.---Where the tares were sown, in Foot-path-Field, there is from a load and-a-half to two loads an acre. The sprinkling which came up at the time of sowing, is now very fine barley.

Perhaps, chaff-cut the whole together, and feed the cart-horses with it; with little, or no other hay nor corn.

POTATOES AND CABBAGES. } 28. Finished taking up the pota-
THE DOUBLE PLOW. } toes, and earthing-up the cabbages,
with the double mould-board plow. Finished the fifty rods in twenty-four minutes,—which is about an acre in an hour and a quarter, or full five acres a-day.—One man and one horse (with whip-reins) is 2 s. 11 d. or 7 d. an acre. Besides being a *very neat* job, it throws the dung and pulverized mould of the potatoes to the roots of the cabbages, and lays them up dry for the winter.

The cabbages look but poorly, especially where the halm of the potatoes was left uncut.—Two lands planted, *alone*, at the same time, are double the crop—to appearance, at present.

OCTOBER.

SHEEP. } 1. About three weeks ago, Farmer
HAZARD OF FARMING. } S— sent in 102 sheep to eat-off the
turnips for wheat—to run in the stubble, &c. at 2 d. a-head a-week; with a shepherd to attend them.

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Perhaps

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Perhaps this, tho' a low price, is more profitable management than buying-in lean flock, and selling it out again, when the after-grass and stubbles are fed off. There is no attendance.—no sending to market—no *risk* attends it. Last night, two pointers, belonging to a sporting Inn-keeper, bit several of these sheep;—two of them were torn very much, and were obliged to be butchered.—These dogs, it is true, were traced home, and satisfaction demanded; but Farmer ~~M~~ had three ewes worried the night before, without being able to recover any damages.

RAPE.	}	5. Part of B. 3. a fallow for wheat, was sown the
TURNIPS.		25th July, with turnip-feed,—part with rape-feed.
SHEEP.		A hundred sheep were turned in the latter end of

September. They eat the rape down to the clods before they touched a turnip (or rather turnip-tops). After they had been in a few days, one side of the field looked like a fallow, the other like turnips untouched.

This is proof positive that sheep,—*these* sheep at least—prefer *young* rape to *young* turnips. They are Wiltshire sheep which have been some time on the hills of Surry.

BARLEY.	}	5. The lower part of Foot-path-Field
QUANTITY OF SEED.		was sown with one bushel of barley and one
THE FRESH PLIT.		bushel of tares an acre. The pigeons
FLUTING.		laying upon them during the six or eight

TOP-DRESSING. } weeks they lay in the ground, there could not be more than half-a-bushel of barley an acre. The roots stood ten or twelve inches from each other; yet there is a very fine crop of herbage, and in the inter-furrows, where some of it came up at the time of sowing, is headed with exceedingly fine long ears of barley.—

I brought

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I brought home one root of forty-eight straws; and I afterwards counted several of from forty to fifty.—This is positive evidence, that *a small quantity of seed will produce a large crop of barley*. But if the soil be foul, it should be kept well hoed; or a greater quantity of seed sown on the fresh-turned plit.

There are two or three advantages arise from sowing immediately after the plow:—The surface lies light and porous—the seeds drop into the little cells and crevices, and are more effectually covered.—It is observable, that the corn sooner appears, than when it is sown over the stale plit.—But, perhaps, the greatest advantage is this:—The corn starts with the weeds.—But when it is not sown immediately after the plow, the weeds have sprouted, and are ready to break the surface, before the corn has had an opportunity to vegetate; and they thereby gain an advantage which they never after lose.

This was perhaps the case of the barley sown over the flutes in Upfield and Rippingier, where it was obviously weaker, and fuller of weeds, than that sown after the fresh plit of the plow.

But this charge is not to be laid wholly to the flute, but mostly to the foulness of the soil;—for in Foot-path-Field, where the soil was clean, a finer crop was never seen.—Perhaps the flute, in the former instance, unlocked and nurtured the minute seeds of the *bog-weed*, more than the plow—for it ground the surface to perfect dust.—And if used presently after the plow, it must be of infinite service to barley; for to several roots which I drew to-day, I found very few fibres above three inches long—in general under two.

Therefore, barley feeds near the surface, and perhaps top-dressing would be of great service to it.

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8. OCTOBER, 1775.

THE WEATHER. }
 WORKING ON SUNDAYS. } 8. (Sunday) On Thursday the *sun* set
 HARVEST SUPPERS. } foul: on Friday he rose clear, but
 gaudy.----The *clouds* presently hid
 him :---Not large vertical clouds, but a uniform grizzle occupied the
 whole hemisphere.---The *wind* got up a little, and the clouds seemed to
 break ;---but *between twelve and one it thickened in the wind's eye*, began
 to rain, and poured a deluge all the afternoon.

The night was fine ; but yesterday morning it rained again very
 hard.---*About noon* it cleared up, and a lovely afternoon succeeded :---
 the night fine, and this morning remarkably so.

On Thursday evening the *red-breasts* were remarkably tame.---On
 Friday morning one rushed eagerly into the barn, while the doors
 were opening, and while another chirpt faintly under the ox-shed.

On Friday forenoon---not the morning---the *cock* crowed incessant-
 ly.---Not a *cobweb* to be seen---the *glafs*, *creeping up*.

On Friday morning, began to make the barley-herbage into pitch-
 cocks---(the ground was so cold and damp it did not wither in swath).
 In the afternoon I intended to have carried some of the fittest of it ;
 but just as we finished cocking, and were about to begin to carry,
 the rain set-in. This is the third or fourth time we have been taken
 in the critical minute, which is intolerably teasing.---I had laid by
 the ox-teams on purpose to get it together ;---and had the fine weather
 continued but six hours longer, we should have got it in exceeding
 fine order. It was lucky, however, that we got it into cocks ; for
 that preserved its sap and colour.

Yesterday evening, lightened and topt up the cocks, dragging
 some of them out of the water. This morning shook them out,
 turned the hay, and got it into tolerable order.

I lost one fine Sunday this year, and took a lesson from the folly.---
 After dinner got the *teams* to work, and *carried* all Foot-path-Field in
 very good order.

I hope

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I hope no harm is done—not even to religion; for I fancy that I see his Grace of Canterbury's *team carrying* him, perhaps, from a vicious scene of luxurious guttling. — It now rains!

I have given the labourers, who were all very ready to help, a *Sunday's-dinner*, and some ale in the evening; but sent them home sober to their wives and children.—Farmer ***** made his men so intolerably drunk the other night, that one of them was suffocated by the liquor; leaving a widow and four children to be kept by the parish.—Such is the effect of *Harvest-suppers!*

SERVANTS. 10. What an absurd custom to change servants at Michaelmas,—the very height of wheat seed-time!—Wheat, it is true, ought to be in before Michaelmas; but where lives the Farmer whose wheat is all in? Instead of four, I can make only two tolerable plowmen.—What a shame that a week of fine weather should be murdered at this critical time of the year!

How much better the custom of the North of England, where Martinmas (the 22d. November,) is the only time of changing servants.—A more eligible time could not be devised by the Farmer.—The strangers enter in a scene of tranquility, and have all the winter to become familiar in;—while here, they blunder, in the bustle of wheat seed-time, totally ignorant of the field they are to hurry to, and of the brute and implement they are to work with.

Paid off *David, Will, Jack, Joe*:—Tyburn never sent Hell a more highly finished group! I hope I shall never pay-off another *'Round-Towner*. May the consignment of West-countrymen arrive safe, and turn to better account!

Last year, I was obliged to take such as I could get;—their lodging-room was not finished at Michaelmas;—and I was obliged to pick up the starving refuse in winter.—This year, I have culled in time.—I expect them more ignorant, but less vicious.— Ignorance may be

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improved; but Blackguardism cannot be mended. It is dangerous, and exceedingly disagreeable, to have a set of known scoundrels about the house.

THE WEATHER. } 10. Although my heart is more at ease
HAZARD OF FARMING. } to-night, than it has been since the late
rainy weather set in—yet I cannot suppress my astonishment, that not one Writer on Agriculture has touched on the *bazard of Farming*. They suppose the crop in the barn before it is cut—and calculate the quantity of produce, according to the state of the soil; without taking in the idea of the uncertainty of weather.

But how ignorant! Our barley this year, including loss of fodder and extra labour, is at least 25 per cent. worse for the weather at harvest, and 20 per cent. more for the drought after seed-time. One neighbouring Farmer turned his hogs to his barley, and another's was scarcely worth carrying home. I had some second cut of clover offered me;—I calculated *the bazard of a late crop*, and would not give the price demanded.—It was sold, cut and cocked; but rotted in the field, and was left as a dressing for a future crop. Yet a Y---g or a V---o would have laid it, rain, snow, or sun-shine, at 30s. or 40s. an acre.

Insurers have averages—Merchants bad debts—and Farmers bad weather.

THE SUB-PLOW. 10. Sub-plowing N. 4.

Sub-plowing (cutting the roots of weeds *under-ground*, and at the same time loosening the soil without *turning* it) is a favourite operation. I have long conceived its utility, but could not find an Implement which would work wet or dry, foul or clean. The *Tbanet skim* (or more properly *skim*) is a fair-weather, clean-soil, Implement:

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ment:---the *half-moon horse-hoe* did its work tolerably well, where the surface was tolerably clean; but it is apt to choke-up between the coulter, and does not sufficiently clear its share.

I conceived an *equilateral triangle* with three coulters; but Theory convinced me, that the more coulters the more resistance—and the sooner it would choke-up. I next stumbled on a *diagonal blade* (the hypotenuse of a right-angle triangle) with two coulters. I made a frame of two old plow-beams—steadied it with the wheels of the horse-hoe—fixing the draught-chain to the ends of the beams:—it would not do a bit—she run upon her nose—it was impossible to keep her down behind—and, the resistance lying all on one side, she would not stand to her work, but slid away *into land*, forcing the frame into the diagonal direction.

A counter-resistance was therefore necessary.—I put on a partial land-side;—but still she was not steady: I therefore continued the land-side as far backward as the tail of the share, and joined them together with a third line, the whole forming a right-angle triangle, and filled up the area with a piece of thin elm. And, instead of drawing by the points of the beams, I put on two old cats-head *copses* (the *regulators* of a plow) in order to lower the point of draught, and thereby throw her more on her haunches.

She has been finished some time; but I had not an opportunity of trying her before to-day. With a very little practice I *learnt* to make good work with her. Indeed, I cannot find a fault, much less conceive any further improvement,—except longer beams, and a stouter fore-coulter.

JULY, 1777. This Implement worked very well in a *loose* soil; but it is too large and unmanageable in *stiff* land. The Writer apprehends, that a common plow, with a very wide share, and no mould-board, is the most eligible sub-plow of *general* use.

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CHANGING

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CHANGING SERVANTS AT MICHAELMAS. 12. What a vile custom! All hurry and confusion, and nothing done:—Teains standing idle, while the seed lies on the surface for want of harrowing-in;—and such a day as we cannot expect again, before next May! How easy would it be for the Farmers to transfer it to Martinmas!—But their *Grand-mothers* changed servants at Michaelmas.

WHEAT. 14. Last year, we made a bushel of tail to every fifteen bushels of head: This year, to eighty-four bushels of head we have but one bushel of tail. Last year, the tail was all bran: This year, all flour.—Such is the difference between a bad and a good wheat year.

PLOWING-IN HERBAGE. 14. The turnips and ketlock of Barn-Field have got to such a height, that no plain plow can bury them, nor will the sheep eat them off; they got so much a-head during the late wet weather. Therefore, took the Trench-plow, and attempted to lay them in double lands, as I did Hither-Field (See 21. SEPT.). But the lands were not high enough, nor the Trench-plow fit for it; ---therefore, gathered two lands into one, and they lie tolerably.---I could wish that the ridges were fuller, and the skirts finer. However, the rough round harrows are of great use to them; and, at a pinch, it is a very good job.---The fine round harrows, and the double-mould-board plow, make them lie very neatly.

SWINE. 20. The 7th September, put up eight store-pigs for porkers. From that time to the 28th of September, they eat forty-two bushels of potatoes, boiled and given warm. From this, to the
different

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different times of their being killed, they had four bushels of barley-meal with water.

	ft.	lb.				£.	s.	d.
Sold seven, weighing	76	2	—at 3s. 2d.	-	-	12	1	5½
Butchered one, - -	10	2	- - -	-	-	1	12	5½
	86	4				£. 13	13	11
Suppose their dung worth			- - -	-	-	0	5	0
						£. 13	18	11

	£.	s.	d.
They were worth when put up, 18s. each,	7	4	0
Forty-two bushels of potatoes, at 1s. - - -	2	2	0
Four bushels of barley, at 4s. - - - - -	0	16	0
Firing, 8s. grinding, 1s. attendance, 10s.	0	19	0
	-----	11	1
		£. 2	17 11

The gain by fattening - - - - -
or 7s. 3d. a-piece, or 8d. a stone.

Last year, there was a *loss* on fattening *large* hogs (See 7. MARCH.). And *perhaps, generally*, fattening of small porkers is more profitable than fattening of large picklers.

SUB-PLOWING. 20. Landing-up the upper part of M. 1.

This soil has not been *turned*, since it was plowed for pease, last spring. No garden can be finer;—it is a pleasure to see it break up. ---It was subbed by two oxen—harrowed—rolled—raked, and burnt once :---the lower part of the same field was turned by four oxen—harrowed---rolled—raked, and burnt thrice. This cost 2l. 9s. That but 12s. 10d. an acre; and is, of the two, the best season*.

* *Season* is a technical term, which signifies (*here, at least*) *the state of the soil at seed-time*. Thus, if at seed-time the soil be clean, in high tilth, and neither too wet nor too dry, the Farmer is said to have got a *good season*—or a *fine season*. If it be cloddy, a *rough season*, &c. The Writer is not very partial to the word; ---because it is in some degree ambiguous; ---but he cannot find a better, without committing the unclassical crime of innovation.

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When once the surface-weeds are turned-in, there is no end to the labour of getting them out again :—but taken while on the surface, they are easily got-rid-of, and the business is ended.

If the soil is foul with *root-weeds* or *worms*, it should afterwards be turned :---but to plow-in *surface-weeds* is *barbarous*.

Sub-plowing breaks the soil very much ; but its principal merit lies in disengaging the weeds ; and Dog-days the fittest time for it.

Perhaps, *sub* a pea-stubble,—cleanse it,—turn it,—turnips,—barley, &c. &c.

SELF-ATTENDANCE. } 20. (See 30. JULY.)---“ Can a Farm be
BUSTLING. } “ managed with the pen ?” No,—nor with
BUSTLERS. } twenty tongues, without SELF-ATTENDANCE,
or a brisker Orderée than *Thomas White*.---I am clear, that with five men I will do more work than he does with ten.---I gave up the reins to him for a few days ; but, where should we have been by this time, if I had not snatched them out of his hands before barley-harvest !

Perhaps, to manage a large scattered Farm with any degree of propriety, requires an attention and alertness which nothing but self-interest can give.---I confess, that I had not half the opinion of my own management, before I had a glimpse of his.

The principal object (in the executive department) is to keep the *teams* and *day's-men* going ;-- to see that neither of them stand idle for want of orders. And this, if the teams, men, and *odd-jobs* are numerous, requires a great deal of assiduity and attention. The nearer they are kept together, the more easily they are managed. —If dispatch be necessary, somebody must be, or *seem* to be in a hurry. ---Somebody must set the example :---Somebody must call, or all hands will sleep on.

A Bustler

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A Bustler should think of nothing but bustling. --He should have no concern of his own--no wife and family to alienate his attention--his interest should be interwoven with that of his employer--he should be active, austere, and communicative.--Many things occur in conversation, which, without it, would remain latent. One in the house is worth two at a distance.--Twenty little wants are seen and forgot for want of immediate communication --He should be always at home, that the attention of his leisure-hours may be employed on his next day's duty.--One acquainted with the customs of the country is preferable to a stranger.

PLOWING. 20. There is not one Plowman in twenty that can land-up well; not one in fifty, neatly. They begin and end with their plit too deep. This, instead of laying the *ribs* of the lands convex, leaves them hollow--hog-troughed, lank-sided.

The five-'bout lands of the Four Acres, which *David* laid-up from a level, and those of H. 1. which he backed-up, are beautiful. The lands of N. 2. lie very neatly; they are four-'bout lands, plowed into seven 'bouts. Five-'bout lands (except they be harrowed down) thrown two-into-one, are too wide to be laid round by once plowing; witness Barn-Field, where even the trench-plow leaves them flat.

Good plowing requires *some* practice, -- *neat* plowing a *great deal*; -- the first step is to plow a *clean* furrow, -- the next a *strait* but furrow, -- the next to *land-up well*, -- the platform of perfection to *land-up neatly*.

BUTLER. 21. Discharged *Thomas White*, as *Bustler*. -- Why? Because he is totally unfit for the purpose I intended him (See 30 JULY, and yesterday); he has no idea of managing even the men, much less of assisting me in managing the Farm. The little thought
and

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and attention he is possessed of, he employs on his own little concerns :—so that while I depend on him, I am deceiving myself.—He is a good feedfman, and a good market-man, or I should have parted with him six months ago.—I believe him an honest, well-meaning man, and that he would do any thing to serve me ; but like Alderman *B---ll*, he seems “ conscious of his inabilities.”

He is a very good *workman*, and I have promised him the choice of work whenever he may want it. I dare prophesy that he will find himself much happier in this capacity than in that of *Bustler*.

STACKS. 21. The *round* cock at Adscumb, and the *round* stack at home, were both ruffled by the late storm, and were obliged to be mended.—The *square* stacks every-where saved themselves entire.—Round stacks, too, take more thatch and thatching—therefore square stacks are preferable to round ones.

THE WEATHER. } 23. Last Thursday night, Friday morning,
SUCCESSION. } and yesterday, there fell so much rain, that we can neither plow for wheat nor harrow it in.—Neighbour R— has yet sowed but a few acres of wheat :—he cannot get upon his fallows.

How many advantages flow from sowing wheat on a clover ley, especially in a wet country !—The dung is got on in frost and snow, when nothing else can be done.—The roots and seeds of weeds, the grubs and insects are destroyed by the inclemency of the winter, or gathered by the starving birds.—The manure is impartially imbibed—equally incorporated with the plant-feeding stratum—not huddled into a rough, porous fallow, in large cakes, fraught with animal and vegetable weeds—not buried deep, and suffered to escape beneath the influence of the sun—nor carried on, when the teams ought to be plowing-for, and harrowing-in the seed.

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I have not a neighbour who did not waste the late fine weather in getting on his dung ; the wet is now set in, and should it continue, many of them must inevitably lose their wheat seed time

But what strikes me most, at present, a cross-furrowed clover-ley, on the wettest soil, may be plowed, sowed, and harrowed in five-⁶bout lands, be the weather ever so wet.

But a Farmer who sows his wheat on a clover-ley, runs no risk of the weather ; for as soon as harvest is in, he lands-up his leys, sows, harrows, and cross-furrows before the wet weather set-in.—He need never have a grain to sow at Michaelmas. He has all the autumn and winter to prepare for his spring crops—to get on his dung—and to carry his clover hay to market in.

JULY, 1777. This is very convenient theory ; but it is not always practicable. Clover-leys, it is true, are seldom too *wet*, but they are sometimes too *dry*, to be plowed before Michaelmas. This, however, is no disadvantage to the clover-ley Farmer ; for his spring-corn fallows receive the benefit of the dry weather, and his wheat seed-time is always secure, when the autumnal wet sets in.

OPENING INTER-FURROWS. 24 If land be laid-up well, in half-rod-ridges, perhaps this is an unnecessary piece of business—perhaps pernicious.—If they lye on a sufficient acclivity, and that acclivity stand on a deep cross-furrow, drained by a good ditch, there is no fear of water standing in the furrows for want of opening.

Those of the wheat at Wood-side are strewed with clods of all sizes ; the soil harrowed very rough, and the largest, of course, rolled into the inter-furrows ; yet, during the late rain, there has not a drop of water stood in them.

The rain which falls on narrow ridges does not form a *current* in each furrow ; but steals away gently among the clods, till it creeps
into

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into the cross-furrow:—to remove them is therefore *unnecessary*.---But these clods by remaining, stop the flight of many vegetative particles--each clod acts as a filtre:---to remove them is therefore *pernicious* *.

HORSES. } 25. This morning put the four odd horses
WORKING CATTLE. } to the rough round harrows, and the fine flat ones, to harrow-in the wheat on the rod-wide beds of Barnfield. The land is so very wet, it is impossible to get upon it—the *horses* cannot even draw in the inter-furrows—and had it not been for the OXEN, I cannot see how it is possible that we could have covered the seed in this field, except by hand.—They drew up to their bellies in quick-sand—no horse could have dragged his legs after him—he must have *mired-down*.

The leg of a horse is largest at bottom—and he has not only the super-incumbent mud, but the super-incumbent air to pull against.—The leg of an ox is tapering to the toe;—he, therefore, has no weight of mud to lift, nor forms a vacuum under his foot.

DEPOSITING. 25. Five men have been employed most of this day in cross-furrowing H. 1. This field is such a complete level, that tho' there is a good cross-drain at one end, the water stood in the inter-furrows all the way to the other,—where I was obliged to make a another cross-furrow.

In evidence of the necessity of cross-furrowing, that end which lay dry was *imprintable* by the foot;—while the middle of the ridges at the other (where the water did not stand above three inches deep) were mere puddle, tho' they lay twelve inches above the surface of the water:—in stepping across the furrows, I sunk at least four inches in the flush, and two or three upon the tops of the ridges.

* This does not hold good if the land lie nearly level.

Place

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Place the base of a sugar-loaf, or a cone of sand in water, and it will presently reach the vertex. Such, perhaps, is the nature of the ridges of a sandy loam, with a retentive sub-soil.---Perhaps, while a spoonful of water lodges in the furrow, the whole ridge is a puddle.---How obvious then the necessity of cross-furrowing a winter crop?

CROSS-PLOWING. 25. In the middle of every *slit* of H. 1. the water stands.---Be the Plowmen ever so clever, this will always be the case in a level field, plowed in *gathers and slits* with a *fixed-wrist* plow:---Therefore, a *Turn-wrist* is obviously preferable to a *fixed-wrist*, for cross-plowing.

WORKING CATTLE. } 25. (See yesterday). Fine-harrowed the
HORSES. } furrows, and *opened* them (this lies in wide flat beds) with the double-plow and two oxen.---The poaching yesterday had made it worse than ever;---they not only worked up to their bellies, but sometimes rolled on to their broad-sides, yet pressed forward with a great deal of composure, and not much seeming difficulty.---They do not lift their legs in the perpendicular direction like horses, but draw them out obliquely:---This lightens the pressure of the mud, and admits the air to pass freely beneath the foot, without that smacking noise which attends the struggling of horses.

HALF-ROD RIDGES. } 27. Harrowing-in wheat in M. 2. with
ROUND HARROWS. } the round harrows.
WORKING CATTLE. } It is an equal pleasure to see the rough ones let down the seed, as to observe the gardenly neatness of the beds, after they are finished by the fine ones; especially when drawn by oxen:

R

I drove

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I drove them myself for two or three hours. I am clear in that we have not a horse that is handier than *Brown*;—I am also clear in that oxen are equal to every department of Husbandry, long road-work, *perhaps*, excepted.

We have had two teams constantly going for two months without any casualty.—They have been kept all the time on the after-grafs, and in the common-fields, at a *trifling* expence. They have worked on the gravel of Adfcomb for near a month, yet not one *favours* a foot, though unhod;—and they have lately been driven by two of the smallest boys I have.

STUBBLE. } 28. This evening, brought home the last load of
LITTER. } stubble. It is all that was chopt off N^o. 1. Nor-
wood---five acres, at 3s. an acre. This can never pay for cutting.

I see, that this year we have chopt eighteen and-a-half acres, off which we have carried six middling loads.—Eighteen and a half acres at 3s. (no beer) is 2l. 15s. 6d.—or 9s. 3d. a-load. Stubble fit for litter may, this year, be worth 10s. a-load;—but there is a great deal of difference between buying stubble at 10s. a-load, and paying 10s. a-load for cutting it—especially, perhaps, on stiff land.—On light land, *perhaps*, it is better off, at any price, than on.—On stiff land, *perhaps*, it is more valuable on, without the expence of chopping, than off.

But if litter be wanted, chop stubble, at any rate, off any land, in any year, rather than litter with fern.

SUFFLATION. } 29. Last night, the Suckler, in a great hurry,
CABBAGES. } drove one of the cows out of the suckling-house into the yard, calling out, “The cow is sprung.” She was swelled prodigiously, and as he ran her about, I perceived that she continued to swell, till she threw-up a great quantity of phlegm.

This

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This seemed to ease her ;—but presently she swelled more than ever ;—her hide was a perfect drum-head.—I considered what to do ;—I was resolved not to stab her, so long as she kept her legs.—In a moment, (whether I gathered the idea from reading, or conversation, or reason, I am still at a loss) I conceived that SALT AND WATER would be of service. In less than a minute, three or four horns of strong brine were poured into her.—She immediately run on to the Common, and took a circuit of about a minute :—when she came in, I fancied that her off-side began to sink.---I poured down three or four horns more---still keeping her running.---When one man was tired, another relieved him :---She presently began to dung, with other obvious signs of amendment. I then gave her a little more brine, with a small quantity of black pepper in it,--keeping her gently stirring.-- She was almost tired ;---her belly now began to sink on the near side,---she breathed more freely,---and staid and dinged profusely.---In ten minutes she began to chew her cud.--I kept her in the house all night,----she sweat profusely,----and this morning she is perfectly well.

On examining the matter thrown-up, I found it to be phlegm and *cabbages*.---I was totally at a loss for the cause, before I saw this ;---for she had not been in, nor near any clover, or other succulent herbage. A sledge-load of cabbages had been brought into the yard for the store-hogs ;---the cows fell greedily upon them, and this was no doubt the effect.

The saving of the cow does please me more, than the simplicity of the cure * :---it may be the saving of many. I do not attribute it wholly to the SALT AND WATER nor wholly to the *running*---but to both.--With This alone she grew worse :---That, perhaps, would not have operated so quickly, without the exercise.---The rapidity of the effect was astonishing ;---it could not be five minutes between the first dose, and the first discharge by stool.

* The Writer has since learnt, that this is not a new, but a well-known remedy.

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The dose was three or four handfuls of salt to about three pints of water. This was given the two first times;---the last was the same proportion, with about half an ounce of pepper :---of this she had three or four horns. But I believe the first cured her.

THE WEATHER. 29. Last week has been an exception to the maxim, "A rainy Sunday a daggly week;" for a wetter Sunday, nor a drier week, has seldom happened.

FIRE IN CHIMNEYS. 30. This morning the kitchen-chimney took fire.---With some difficulty and expence it was extinguished.

A remarkable circumstance of neglect attended this chimney.---The upper part had not been swept for twenty years :---it was almost grown up with oily wood-foot. This burnt with such rapidity, that I was apprehensive some wood had taken fire. I never saw a Foundery-chimney blaze out so furiously.

In future, in case of such an accident---if a blunderbus or gun is at hand, discharge it up the chimney;---smother the fire of the grate or hearth with long dung or wet straw (the smother will help to extinguish the flames). Fix a blanket, rug, &c. well soaked in water, before the mouth of the chimney, as close as possible; so that no draught of air can get in to feed the fire. If another chimney above or below opens into the same flue, the mouth of it must be served in the same manner;---or if a smoke-hole be on the out-side, it must be stopped :---shut the doors, and keep going up and down to the several rooms and closets adjoining the chimney, till it goes out, or make its appearance. If some hidden draught of air feed it, and it seem dangerous, endeavour to get to the top of the chimney; *stop it with long dung, or wetted straw, and keep pouring water thro' it**. On

* This is by much the most effectual means of extinguishing a chimney,---and was the only one which took the least effect on the chimney in point.

the

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the slightest *symptoms* on the inside (by smoak or heat), supply the place plentifully with water.

But, perhaps, a fire in a chimney built with any degree of care, and which has been *clean* swept within the twelvemonth, is totally harmless.—I should, however, have blamed myself exceedingly, had I not bestowed the precautions which I did on a chimney of which I was totally ignorant,—tho' perhaps they were needless.

JULY, 1777. The Writer has a satisfaction in communicating whatever he esteems to be USEFUL KNOWLEDGE; and he hopes to be pardoned for publishing the foregoing Minute, altho' it is not peculiarly agricultural.

COUPLING OF HOGS.

FUTURE MANAGEMENT.

HAZARD OF FARMING.

31. Terrible luck! The coupled hogs have gone on remarkably well all stubble-time.—They were usually turned into a field in the morning, and fetched home in the evening, without any other attendance. Since the stubbles have been done, they have run after the acorns.—I was apprehensive of an accident; and they having broke into Mr. R——'s fields, I ordered them to be kept in the yard, and fed with cabbages which are spoiling.

But *there is no dependance on servants*; they were let out, no further care taken of them, and two of the best found hung in their couples this morning.—At the high rate which lean hogs now sell at, they are worth at least four guineas.

What is to be done? I purpose putting up five or six to fatten, and selling off the remaining shoots as fast as I can. But what is to be done next year? Either rear none, or as many as will repay a boy's attendance? Let me calculate—-a boy at 5 s. a week is 12l.—- Fifty hogs at 5s. is 12l. 10s. So that an otherwise clear profit of 5 s. a head on fifty-two hogs will go to pay the boy. We have not

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room in the yard for above fifty store-pigs; and five shillings a-head will cut deep in the profit.

Perhaps, in future,--keep two or three open sows;--breed all the year;---at three months old couple them, and let them run on the Common or in some other hog-pasture till they be worth 20s. a head.---As they reach this value, uncouple them.—As soon as ten are at large, hire a boy to attend them;---give them the stubbles, acorns, &c.---Sell such as are saleable in autumn,---keep the young pigs over the year, and breed on.

As to the couples, I am clear that they rather forward than hinder the growth of the shoots. They seem to contend and drag each other about, *on the road*; but *while they feed*, they are quite amicable. This obstinacy, *off their feed*, prevents their wandering, and preserves them in condition.—No hogs can look better, nor can have been reared at less expence than mine this year, and I am by no means sick of couples: I only blame myself for letting hogs of so much value run thro' the woods and hedges with so little looking-after. And for this I cannot blame myself, but the servant; and who can guard against the *carelessness of servants*?

I am not quite satisfied with the preceding process.---*Perhaps, in future*, make *rearing*, not *fattening*, the object of the hog-process, at least while lean hogs hold their present prices. Keep three or four breeding sows;---reart all their pigs, winter and summer; treat them as an *object*;--give them all the milk that can possibly be spared;--give them the damaged and tail barley, pease and beans. Buy pollard, linseed and graves, damaged sugar and molasses. On wash, and the Common, keep them till harvest;---give them the run of the stubbles,---plump them up with potatoes and acorns (if any),---and send them to market.

Keep

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Keep them coupled, without constant attendance, till the acorns begin to fall. Be careful to see them at home and well-littered every night, and mind as they grow, that the couples be eased.

Fifteen shoots, at 15 s. a-piece, is not equal to a boy at 5 s. a week. Our loss by couples, even this year, does not nearly amount to half a boy's constant attendance; besides, perhaps, there is an advantage to the hogs by coupling.

It is not certain how the two last were hung; their fellows had dragged them from the place where it happened; but they were found near each other, and I am of opinion that they were both hung in the same place, between two hurdles. A more ingenious trap could hardly be contrived to hang coupled hogs in. The hurdles over-lapt each other about the length of the couples, and were fastened as usual at the top, but not at the bottom. This was their *muce* into an oaken wood. Perhaps, the master-hog forced his way between the hurdles; the other, instead of following (indeed it was impossible he could), got his head on the outside, and being unable to draw back his fellow, was of course strangled. The survivor, tired with pulling, retreated, and dragged about the deceased.---Or, perhaps, the foremost doubled himself, and got thro', and, by struggling, got his head on the outside of the other hurdle; thus it became a matter of life and death, and the weakest of course fell:---This gave the other an opportunity of extricating himself, and dragging about his dead partner. They were both found within ten yards of these hurdles. Let this be a lesson, in future, to *beware of burdle-places*. If hurdles are found necessary, mind that they be fastened at both top and bottom.

Within

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Within fifteen months we have lost

	£.	s.	d.
A cow, worth	8	0	0
A horse, worth	10	0	0
An ox, worth	9	0	0
Four hogs, worth	5	10	0
	£. 32	10	0

Besides losses by the weather, and fifty other lesser casualties. All Farmers must have some; --yet it seems unfashionable to talk of the *bizar*d of farming, or make use of the word *loss* in calculations on agriculture.

NOVEMBER.

SOWING IN RAIN. 1. Yesterday morning sowed and harrowed-in wheat, while it rained hard. The plit was fresh, the surface as loose as a garden, and it was likely for a rainy day.

There is, I find, an advantage and a disadvantage of sowing in rain; for tho' the surface be open, yet the grain does not *roll* into the crevices, but *sticks* where it falls; and after it had been harrowed, I could see many grains uncovered,--some on the very tops of the largest clods. But it proved a rainy day, and a very rainy night.---This morning scarcely a grain is left uncovered.---Besides, we may not perhaps be able to come even into the inter-furrows of this field till a fortnight hence; and then it would have been thrown over a stale plit and a gluey surface, difficult to harrow.

And, perhaps, it is good management to sow wheat, in a wet season, *on wet land*, while it rains, till the harrows *plaster* the surface.

OXEN. 1. There are not many better teams in the parish than that made of *Brown*, *Duke*, *Jolly*, and *Hale*; and very few so handy.

I took

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I took them this morning to draw some cross-furrows--they were every thing one could wish. The boy rode the leader--they dragged the plow down to her beam, while they worked up to their knees in mire.

TEAMS. } I. Turned out all the odd horses
GENERAL MANAGEMENT. } (except one) to live on the rough grafs
till the straw-yards be opened.

The late rains have driven us almost from both plow and cart, and I apprehend two teams will be full as much strength as we shall want till spring feed-time. This will be a saving of hay, corn, and attendance; and hay and oats, *this year*, are worth saving. I hope, too, before Christmas, to be able to turn the ox-team into the straw-yard.

Present profit is certain profit.

JULY, 1777. What an old-fashioned maxim this, for a new-fashioned Farmer to follow! And yet how dissonant soever it may sound to the ears of "spirited Farmers," it is now-and-then applicable to GOOD HUSBANDRY

RENT AND TAXES. 2. At last we have finished sowing wheat in Barn-Field.

If attendance-and attention will gain a crop, this field is secured. I find that the ten acres summer-fallowed, and sown with turnips, have cost fifty teams and eight men; which at 8s. and 1s. 8d. is 20l. 13s. 4d.—Twenty-two bushels of seed, at 5s. 6d. is 6l. 1s.—Together 26l. 14s. 4d.—or 2l. 13s. 5d. an acre, for labour and feed.

From such a fallow, and such a quantity of turnips and ketlock buried in it, there is certainly a prospect of near three quarters an acre; say half a load (two and-a-half quarters), at 12l.—the straw to pay all subsequent expences.

S

I was

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2. NOVEMBER, 1775.

I was hugging myself with the apparent profit of this field ; not recollecting that there are two years enormous rent and taxes *--- 3 l. 12 s. 6 d. an acre, to come against it. This totally absorbs the profit, and leaves an apparent loss of 5 s. 11 d. an acre ; besides the exhaustion of soil ;---for it has had no addition of any kind whatever.

What is to be gathered from this ? That Farming is a bad trade ? It may be such---but this does not prove it. But it proves that

RENT AND TAXES RUIN THE FARMERS.

For, supposing the rent to be 5 s. an acre a-year, with the same proportion of taxes---there would be an apparent profit of 2 l. 5 s. an acre ;---at 10 s. an acre, a profit of 1 l. 11 s. 6 d.---at 15 s. a profit of 19 s.---at 20 s. a profit of 6 s. 6 d.---at 25 s. a loss of 6 s. †---at 30 s. a loss of 18 s. 6 d.---at 40 s. a loss of 2 l. 3 s. 6 d. an acre.

Thus, while the Farmer at 5 s. an acre, is gaining from a thousand acres 2250 l.---the Farmer at 40 s. is losing 2175 l. a-year.---And yet we are told ‡, that the way to make a Farmer rich is to raise his rent !!

REARING OF HOGS. } 5. During the last eighteen months we
COW-KEEPING. } have reared forty-five hogs.

		£.	s.	d.
4 of them are now worth	50 s. each,	=	=	10 0 0
8 ditto	- - 35 s.	-	-	14 0 0
7 ditto	- - 25 s.	-	-	8 15 0
19	carried over			£. 32 15 0

* In rent and taxes, the Writer includes rent, parish-rates, great and small tithes, fences, &c. Whatever is a charge on the crop, and is neither labour (including wear and tear), manure nor seed, is rent and taxes.

To expedite the calculations in this Minute, the pound-rates are supposed at 5 s. in the pound ; and the acre-rates at 5 s. an acre, a-year.

† The Writer is not so unfortunate as to pay 25 s. an acre all-round. On a par, he does not stand at quite 18 s.

‡ By more than one.

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	£.	s.	d.
19 Brought over	32	15	0
8 fatted; valued lean, at 18 s.	7	4	0
4 hung, worth at the time	6	0	0
2 sold for	2	14	0
3 butchered---(worth at the time of accident)	1	15	0
3 staggery, (worth when taken)	1	10	0
6 young pigs, worth 10 s. each	3	0	0
45 reared to be worth	£. 54	18	0

What have they cost? This is difficult to calculate.

The large hogs that were fatted, eat the chief of the cabbages and turnips of last year; for the above were all very small or unfarrowed when these cabbages were finished. •

	£.	s.	d.
Suppose they eat the value of	1	1	0
Bought 8 and 5 bushels of pollard, at 1 s. and 1 s. 6d.	0	15	6
The sows and young pigs had a quarter of head-barley	1	10	0
—————'s grains, worth	1	1	0
	£. 4	7	6

Besides this, they have had the grains of the brew-house, the skim-milk (this year very trifling), the wash of the kitchen, the pollard of the bolting-mill, the stubbles, the pea-rakings, the acorns, &c. &c. &c. But certainly, forty or fifty hogs, which have constantly been in the yard all night, and frequently in the day-time, must have made dung equal to twice the *sale* value of these trifles. But supposing it only to stand against them, and that their attendance has cost 5l. 12 s. 6d. (it has not cost so much), there will remain a neat cost of 10 l. and of course a neat profit of 44 l. 18 s. supposing they had all done well. As it is, or had half of them died after they had reached these values, it would still be the *neat produce*.

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Deduct the four hung, and the three given away, there is a *neat profit* left of 37l. 8s. or 374 per cent.

What branch of Farming can equal this in profit? Not suckling, I am sure. And perhaps, in future, let REARING OF HOGS, not *suckling* nor *rearing of calves*, be the object of COW-KEEPING.

Perhaps, let each cow make her own calf---and convert the surplus to butter and hog-wash. Let rearing of hogs be the end---cow-keeping the means: and, rather than stint a farrow of pigs, sell a young calf to a suckling-Farmer, or one, half fat, to the butcher.

“ Have but one end, employ the rest as means.”

SERVANTS' BEER. 5. This rainy day, calculated the cost of *Farmers' ale* and small-beer.

From five bushels of malt, I find, are brewed, on a par, forty-four gallons of *strong*, and eighty of small: This, reckoning the small four to one, is sixty-four gallons of ale.

	£.	s.	d.
Five bushels of malt, at 5 s. is	1	5	0
Three pound of hops, 1 s. is	0	3	0
Brewing, 2 s.---fire, 1 s.---wear and tear, 1 s.	0	4	0
	£. 1	12	0
Deduct grains 1 s. yeast 1 s.	0	2	0
	£. 1	10	0
Sixty-four gallons at 5 d. $\frac{1}{4}$		1	10 8

Not 6 d. a gallon! not 1 d. $\frac{1}{2}$ a quart for the ale, nor 1 d. $\frac{1}{4}$ a gallon for small beer!—A rainy Sunday good for something.

The last brewing, I find, costs but 5d. a gallon; but it is below par.

I am

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I am quite pleased to know, that I can gain a man's heart for 5-8ths of a penny;—nay, *oblige him for half a farthing!*

JULY, 1777. The Writer is convinced from this calculation, that it is cheaper to give day-labourers 9s. a-week and small beer (the common wages of this country), than to give them 10s. and no beer. But, so many disagreeable circumstances attend giving-out beer, he still continues to give them 2 d. a day, instead of small beer.

FALLOWING. } 5. Yesterday finished breaking up B. 4.
BEANS. } I blame myself exceedingly for the bad management of this field. Had it been *all beans*, the crop might have paid the contingencies:—Had it been *all fallow*, a crop of wheat might have been got next year. The fallow is very friable and clean;—the bean-quondal*, as tough as glue, and in some places full of couch. It would be ridiculous to attempt a wheat-season, and the beans will not repay even the *rent* of the whole. I have turned it up for the benefit of the frost, to be crossed and re-stirred for oats and grass-seeds in the spring.

What lessons can be drawn from this mismanagement?

Never crop the ridges and fallow the furrows of a four-acre-field again.

* Here again the Writer was puzzled for a word (See 13. MAY). A field which is cropped with wheat, is called a *wheat-field*; and after the crop is off, a *wheat-stubble*.—But what is it after the stubble is chopt off? It would be as ridiculous to call it still a *wheat-stubble*, as to call a field out of which beans have been pulled up by the roots, a *bean-stubble*.

He has ransacked *Johnson* from A to Z, and cannot find any thing which is near to his purpose; except the awkwardly anglicised Latin adverb *quondam*. He will not, however, condescend so far as to debase his book with such an uncouth *Latin* word: He has therefore reclaimed it by an *ENGLISH* termination.

Nor

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Nor expect a wheat-season after *tick*-beans, tho' carefully hoed, on a soil not *totally* free from root-weeds.

The 10th of April is quite out of season for sowing *Mazagan* beans:--a few planted on that day, were scarcely worth drawing for the hogs.

CHANGE OF SEED. 5. Last year I searched the country round for some feed-wheat off a very poor gravel, to sow on the stiff clay of Norwood. At last I succeeded;—we had a load from a Butcher of Wickham.—The sample was thin, shrivelled, and looked as beggarly as the soil it grew on. This year a more beautiful sample cannot be shewn: its boldness and colour strikes every one who sees it. From eighty-four bushels of head, there was but one bushel of tail;—and This a much better sample than the original seed!

I apprehend, generally, that a change of seed is beneficial to the crop:

I am convinced, that a *poor gravel* is a good change for a *stiff clay*.

It succeeded very well on the *sandy loam* of Hither-Field. But this is a *wheat year*.

COULTERS. } 9. I wish to hit-off a simple contrivance, which
PLOWS. } will, in some degree, answer the purpose of trench-
plowing— which will totally hide the sod, and give a sufficient quantity of *crum**, without the additional resistance, or the complexity of the Trench-plow.

The *fin-coulter* does very well where the surface is firm and clean; but where it is loose or foul, the trumpery drives before it, and prevents its acting.

Yesterday I *bent* a coulter, and this morning tried it. It buries the grass and gives a plenty of *crum*; but it increases the resistance, and unsteadies the plow.

* Friable mould free from grass and roots.

However,

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However, it had by no means a fair trial, nor was it well bent. The oat-stubble on which it was tried is intended for beans, to be dibbled in every other seam †; it cannot, therefore, lie too snug: but this coulter breaks the plits, and leaves the surface rough and open. It is therefore unfit for beans to be dibbled-in on an oat-stubble. But I do not see why it should not answer for wheat on a clover ley: Nothing can be more simple; *therefore*, nothing can be more worthy of attention. Perhaps, the land-side of the plow should also be angular—or perhaps concave; and give the coulter a flexure to answer it:—but the former would give the most crum.

There is another disadvantage of a *bent coulter* on round ridges: The rhombic form of the plits makes them difficult to be turned on the out-sides of the ridges: it is therefore best adapted to wide, flat lands.

For a wet country, nothing equals the *plain* swing-plow. *Wheels*, indeed, may be useful in a dry *flat* field; but among narrow, high *ridges*, they are very unhandy.

SEMI-CULTURE. 9. Sowing and raking the cross-furrow of H. 1.

This is not only a gardenly, but a very good job (See 25. Oct.). The wheat was just coming up when this last furrow was opened, and the tender blades consequently suffocated by the plit, which was turned upon them.

This sowing and trimming will at once give a fresh supply of plants, and, by levelling and raking the mould away from the trench, prevent its mouldering into it again by frosts, or being washed into it by heavy rains.

* The interfice between two plits.

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PLOWS. } 9. I cannot yet please myself with plowing this
FLOWING. } oat-stubble for beans (See yesterday): I cannot
DRILLING. } turn it in neat, regular, whole plits By breaking
up so tough last spring, the old plits are not yet incorporated; but
separate from each other in plowing. This leaves the present ones
too unequal, and the surface too rugged, for the beans to be dibbled
in alternate seams.

I borrowed a strong Yorkshire-shaped plow of a neighbouring Farmer, in hopes that she would cut it up cleaner: but her *chip*---her *head*---her *keel*, is too short; she has no steadiness, and will not make equal work with the common swing-plow of this country.

I am in hopes of contriving an Implement, which, after the five-'bout lands are laid round with the concave harrows, will draw drills, or at least *lines*, to direct the dibblers, instead of the seams. I hope the *crooked rake*, with twelve-pennyworth of alteration, will answer my purpose.

Dibbling in alternate seams may be eligible on flat lands, where a plit of seven or eight inches wide can be uniformly carried; but where plits of unequal widths are obliged to be taken, perhaps it is an ineligible process. Perhaps, fifteen or sixteen inches is an interval quite wide enough for beans.

WORKING CATTLE. } 10. Another casualty! Another in-
HAZARD OF FARMING. } stance of the hazard of Farming!

The ox *Hawk* strained himself last spring seed-time. His tokens of pain were the same as those of a horse in the gripes. He kept looking toward his flank, and beating his belly with his hind legs.

For

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the first day or two he voided nothing but a white, viscous slime. The Farrier bled and drenched him several times, but he was three months before he could be re-harnessed. After working a few weeks he was taken with a violent scouring; but it presently went off. He has not worked since (about a month ago); and though he looked lank, and seemed to be pinched-up, I thought him recovering.

This morning he was found lying under the hedge, with his four legs under him, and his head erect, in the identical posture of sleep. The man who found him, surprised that he should sleep so found, went up to him, and shook him by the horn to wake him. He must have died without a struggle.

I suspected that the intestine malady had been the cause; and on opening him, a quantity of water and excrements were found loose in his abdomen. The maw and other of the larger members of the viscera were searched for the aperture without success. It must have been in some of the smaller intestines.

Perhaps, a fracture of some vessel or membrane caused an inflammation—this brought on a corrosion—and this perforated the intestine.

In future,—keep a strained ox till he can be fairly sold—but not longer.

DRILLING BEANS: 11. (See yesterday) Took out all the blades of the Lance, (See 28. FEB. 1775.) except three on each side, at sixteen inches apart; the middlemost two, twenty-four inches apart. With this and one horse I drew *lines* very true, and perfectly discriminate. I sent the blades to be *splayed**, in hopes that I shall be able to draw *flutes* sufficiently deep to enable us to drop the beans with one hand, and cover them with the other, going backwards.

* Their backs to be cleft open; so as, in work, to leave small trenches behind them.

T

With

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With four hoes fixed in the same Implement, I mean to hoe the four equal intervals, keeping the inter-furrows clean by plowing, and the double row on the ridge by hand-hoeing.

CROSS-FURROWING. 11. I find that seventy-five acres of tares and wheat, which we have already put in, have cost thirty-four days work—or 2 l. 16 s. 8 d.—or 9 d. an acre.

I purposely spared no useful expence; some of the fields having two, some three furrows across them. Wherever I found the water stand, I applied the plow and spade.

I purposely evaded the idea of expence, till I had made this calculation; and I confess I am surpris'd to find it so low. However, to this is to be added the drawing of the furrows with the plow: This cost a team, at least—say 9 s. 4 d. $\frac{1}{2}$ or 1 d. $\frac{1}{2}$ an acre.

Thus for 10 d. $\frac{1}{2}$ an acre, some of the wettest land under heaven (above the level of deep water) is made dry.

Had proper plowing, and 10 d. $\frac{1}{2}$ an acre been laid out on the Four Acres in 1773, the crop of wheat would have been at least 3 l. an acre the better for it.

FALLOWING. 13. The lower end of part of Barn-Field (sowed with wheat) is strewd with little tufts of grass, which still look green, and I am afraid will strike root. The upper end is very clean. This had a cross-harrowing between the third and last plowing; but the wet setting-in, That had not.

Before the last plowing, a sward was almost formed. (It is not couch, but a diminutive succulent blade, which seems to shoot spontaneously

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rareously from the soil, wherever it is broken). This proves the utility of cross-harrowing fallows between the plowings.

TWO-WHEEL WAGGON. 14. Took a pair of iron-arms and six-inch wheels from a dung-cart, and put them under the Handy. I may be vain, but I am clearly of opinion, that a more perfect Farmer's carriage for a level country cannot be conceived. She hugs a load-and-a-half of straw, or a load of hay, cleverly;—and, with the iron-arms, runs much lighter than a waggon.

I have put-by the waggons till next hay-time; for their narrow wheels are ill adapted to Croydon Common in winter.

She is a most eligible dung-cart, and will carry as much chaff, cavil, &c. as two or three of the common ones.

I am so perfectly pleased with my two-wheel waggon, that were I providing implements for a Farm of a thousand acres, in a country tolerably level, I would not build a waggon, nor a common dung-cart; but two Handies to each team. There would then be no shifting from cart to waggon, and waggon to cart; no running half-a-mile after a dung-cart, while a waggon stood-by, nor the reverse; but the implement at hand would be sure to be right, and sure to be handy.

I would have them all made on one identical scale; so that each fore-ladder, tail-ladder, head-board, and tail-board, would fit each and every carriage.

A *single-horse Handy* would be very useful. How clever to fetch a few trusses of hay or straw from Adscumb—a little cavil or chaff from Wood-side—corn-in-chaff from Norwood—or to send to Town, by way of an errand-cart!

JULY, 1777. Notwithstanding the Writer's partiality for two-wheel waggons is in some degree abated; and notwithstanding he is convinced that *one* waggon, and two or three *small* dung-

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carts, are very convenient on a large Farm; he is still very well pleased with his Handy, and means to give a Drawing of it in the DIGEST. The present wheels are about six inches too low.

LOCKS AND KEYS. 17. This rainy day, collected and numbered the padlocks and their respective keys. On a slate, against each N^o. wrote their several stations. Hung the slate and the keys on the same peg; so [that any-body who knows I. from II. knows the key which opens any door or gate about the Farm.

Since Michaelmas, the new servants have spent half their time in running about with wrong keys in their pockets.

Cut the numbers with a file.

OXEN AND HORSES. 17. On Wednesday the ox and the horse-teams, four in each, were plowing together in K. 4. It came up very tough:—the *horses* fretted, and were bathed in sweat;—while the *oxen*, with seeming unconcern, chewed their cud.

EXHAUSTION. 18. I am adjusting the first year's accounts, and wish to ascertain the profit or loss on each crop; but I am baffled with the *dungings*.—I am at a loss to know how much to charge for the expenditure of VEGETABLE FOOD on a crop of wheat, beans, or barley.

This rainy weather, I have been hunting for a general rule, and have found one, which, at present, pleases me very much.

To five shillings for every field-load of corn or pulse, add fifteen for every quarter of wheat, and five for every quarter of any other grain;—

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grain;—and allow for every ton of hay, whether meadow, mix-grafs, clover, or tares, ten shillings.

I have tried it on the perpetual round of fallow-crop,—spring-corn,—clover,—wheat, and it fits exactly.

I would not wish to lay less nor more than twenty jags (about thirteen or fourteen loads) of dung or strong compost an acre, on the spring-corn stubble; and I should expect from middling land, on a par of years,

THE FIRST YEAR :

One load and a half of clover, the first cutting, and	£.	s.	d.
three quarters of a load the second,	1	2	6

THE SECOND YEAR :

One load and a quarter of wheat, yielding $2\frac{1}{4}$ quarters 2 7 6

THE THIRD YEAR.

One load of pease, or beans, yielding 2 quarters 0 15 0

THE LAST :

One load and a half of oats or barley, yielding $3\frac{1}{2}$ quarters	1	5	0
	£.	5	10
Twenty jags at 5s. 6d. a-jag (including labour) is	£.	5	10

JULY, 1777: This is by no means laid down as a certain rule: the price of dung, and the crop for which it is put on;—the price of labour, and the quality of the soil;—will make it ever various. It is the *thought*, rather than the *rule* itself, which is meant to be published. It opens a wide field for experiments on manuring.

The Mathematics cannot produce more positive facts than these:—VEGETABLES EXHAUST THE SOIL ON WHICH THEY GROW;—DUNG REPLENISHES IT. But the exact quantity of *improvement* equivalent to a certain quantity of *exhaustion*, is a doctrine little understood.

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The Writer has ever since calculated by the above rule, with some trifling alterations; and on the maturest reflection, he cannot make any amendment to it, as a general rule, raised on theory.

OXEN. } 22. This being a cold frosty night, and the grass
HORSES. } almost done, took up the oxen for the winter.

They were turned out to after-grass the beginning of August. Until a little before Michaelmas, they worked incessantly, without any other food. Since then they have had a little hay night-and-morning; but the whole have not eat thirty trusses.

It is impossible to calculate their expence with certainty, because they were generally mixed with other stock; but suppose one team eat twelve acres (they did no such thing) at 10s. 6d. 6 6 0

And twenty-four trusses of hay (they eat thereabout) at 50s. 1 13 4
£. 7 19 4

From the beginning of August till now, is near four months: The horse-team has cost from 25 to 30 l. during the same time—*at least three times as much.*

HORSES. 22. During the last fifteen days, five cart-horses have eaten twenty-seven trusses of hay; that is, about

	£.	s.	d.
Ten trusses a-team, a-week, at 50s.	0	14	0
Six bushels of oats, at 24s.	0	18	0
Say for chaff	0	4	0
	£.	1	16 0

Six shillings each working-day, rainy days included.

To reduce, in future, the expenditure of hay to a certainty, I have *allowed* them with hay as well as with corn: I allow each horse $1\frac{1}{2}$ bushels

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bushel of oats, and one truss of hay, a-week, with as much chaff as they will eat. The hay is meant merely to *rack-up* with (to eat in the night while the Carter is asleep). I hope by-and-bye to ascertain the quantity of chaff, and reduce the keep of cart-horses to certainty. (See 21. MAY 1776.)

HARROWING. } 23. Yesterday afternoon the frost began to
WET FARMS. } give. I embraced the opportunity to fine-har-
CLOVER-LEYS. } row K. 4. but it was still too hard :—the harrows
had not gone ten yards, before one of the tines tore its way out of the beam.

Remember, in future,—a slight frost prevents harrowing ;—a very slight one, fine-harrowing.

This morning the frost is entirely gone. Tried it again.—The surface is now perfect bird-lime ;—it will not part from the harrows,—the man and horse working up to their knees in dirt. O! the joys of farming in a dirty country !—without the assistance of clover-leys.

Neighbour — has now a large field of dunged summer-fallow lying in a state of absolute mortar ;—and Neighbour — not much better. The Farmer who sows a handful of wheat, in a stiff, wet soil, after the middle of October, in a dripping autumn, ought to be smothered in a dunged summer-fallow.

But how can he guard against the elements, even so early as September? By having a large quantity of clover-leys.

STRAW-HAY. 23. (See 14. SEPT.) Though it took a very kind heat, it cuts out as white and as dusty as a grist-sack. It had too much water-wet in it ;—the sap was not strong enough to drive it

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it out; but it was strong enough to make the straw as brown as a nut.

In future,—If possible, mix it perfectly full of sap, but perfectly free from water-wet.

However, mouldy as it is, the cows eat it very greedily; but the dust seems to be troublesome to them. To-day, took a jag of it to the barn, and thrashed it.—This breaks the cakes, and rids it from a great part of the dust.

27. The cows could not eat the best meadow-hay with more avidity, than they do that which is *thrashed*. They do not waste a straw of it.

Gave some of it to the oxen.—I think they eat it as greedily and as clean as they do very good clover-and-rye-grass hay.—There is no obvious difference.

In future,—let nothing but absolute necessity, or downright negligence, prevent me from collecting at least twenty load of straw-hay.

This winter I am afraid the straw will run short. Perhaps, buy some of the Tithe-man to save it with; or perhaps, thrash out some early oats of next year for the second cut of clover.—It is converting 15 s. worth of *straw* into 50 s. of *hay*; besides, perhaps, saving the second cut from the dung-hill.

CHAFF-CUTTER. 27. Till now, I have employed an itinerant Chaff-cutter, at 1 s. the quarter of sixteen striken-bushels. He would cut about four quarters a-day.

I have two men in the house, this year, who can cut chaff; and have provided a chaff-box to fill up vacant hours and rainy days; and, perhaps, to cut it cheaper.

OXEN.

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OXEN. 27. It is very remarkable, that while they worked on a sharp gravel, in the midst of a hot, burning summer, their feet stood exceedingly well; but now that they work in a wet country, in wet weather, they are become tender; and a frost, or a gravelly road is death to them.

Perhaps, the heat and drought hardened their hoofs, and made them permanent;—the wet softened, and rendered them abrada-ble. Their fore-feet are worn to the very quick.

As in case of frosts we shall want them at dung-cart, shod them *before*.

This was done *without casting* them. One man held the ox by the ring, while a boy suspended the foot by a rope, thrown across a cart-saddle, to prevent its cutting his back.

POTATOES. } 30. An acre and three quarters has pro-
TRENCH-PLOWING. } duced this year only eighty-five bushels of
potatoes, not fifty bushels an acre. The soil was turnips drawn,
and trench-plowed without dung.

I was in hopes that trench-plowing, by bringing up *fresh mould* (allowed to be affected by potatoes), would have given a greater pro-duce; but *trench-plowing* and *dunging*, I find, are very different things.

Perhaps, generally—Ten miles from a large town, and from water-carriage, potatoes are not worth planting, as a crop. A few are necessary for the kitchen, and useful for the hogs; and planted early in a compost-fallow for wheat, they may pay the rent—pulve-rize the soil—compost the dung—and answer very well.

U

OXEN.

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OXEN.	}	4. Last week <i>Jolly</i> , one of the team, was taken with a violent scouring. The Farrier has drenched and bled him, but he does not recover.
HORSES.		
HAZARD OF FARMING.		
SELF-ATTENTION.		
SERVANTS.		

This is the sixth casualty of working-cattle within nine months.

An ox strained	-	-	-	died.
An ox lamed	-	-	-	laid-by a month.
An ox blowed	-	-	-	died.
A bull surfeited	-	-	-	laid-by a fortnight.
A bull had the red water	-	-	-	———— three weeks.
An ox scours	-	-	-	dubious.

In the same space of time we have had

A horse tined	-	-	-	died.
A horse tined	-	-	-	laid-by a month.
A horse lamed in the hip	-	-	-	useless, (came round.)
A horse	-	-	-	went blind.
An old horse	-	-	-	died of age.

Within fifteen months,

A cow died of the red water.
 A cow now scours—her life doubtful.
 Two large hogs hung, thro' mere casualty.
 Thirty acres of barley, thirty per cent. worse for the weather, &c.
 &c. &c. &c. &c. &c.

What a collection of hagar evidences of the *bazard of Farming!*
 But surely they can never be the *ordinary* casualties of Agriculture; they must proceed from extraordinarily *bad luck*, or from *bad management*.

Let me endeavour to trace back their causes; and, if possible, raise
LESSONS OF FUTURE MANAGEMENT.

The

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The strained ox.—This was done in Norwood-Fields.—The two ox-teams were *bunting* a fallow.—I remember I went up to them in the middle of the day.—It was very hot.—This ox *loll'd the tongue* a good deal;—he was in the weaker team. I ordered the Plowman to go gently, and to bring home his plow at night; for I saw that it was too strong work for them. He brought home his plow, with the ox in the condition mentioned the 10th of NOVEMBER: But whether he obeyed me in the other instance or not, I am doubtful; I rather think the ox was purposely over-drove; for oxen were then quite “*a new kick* :”—But this is presumptive evidence only.

What is to be *learnt* from this?

A young, slender ox, not in exercise, may be worked too hard, in a close field, on a hot day.

A fulky cruel servant is dangerous.

Perhaps, an ox in collar can exert his strength more than in yoke.

The lame ox. This was caused by a piece of flint getting between his claws, and insinuating itself into his foot.

Perhaps, *in futuro*,—pick their feet every night.

The inflated ox. (See the Minute of the 17th of AUGUST.) This was evidently the *carelessness* of the Carter.

Memorandum. A THINKING SERVANT is very valuable; but rarely to be met with.

The surfeited bull. This probably was caused by over-heating him the first day he was harnessed.

In future,—Use them gently, and break them in by degrees.

The bull in the red water. He was *taken in time*, and easily cured.

The ox which scours. I am totally at a loss for the cause.—His food of late has been very good clover-and-rye-grass hay. He has not worked harder than the rest of the team (which look, and are very well), for he was always a slug. I am apprehensive that he was sold as an ailing ox: His skin and coat were never kind;—and I recollect

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his frequently moaning, while he was in the house last spring; yet he never refused his meat, and worked tolerably.

Out of the four Gloucestershire oxen, two of them are remarkably plain; and this is the third.

In future,—Never trust to a dealer to buy in oxen.

The two horses tined. The cause was the *carelessness* of the Carter, and the viciousness of one of the horses.

Memorandum. Carelessness is not easily guarded against; but a vicious horse may be sold.

The lame horse. This was a wrench in the hip, by drawing mud out of a pond, and the cause, ten to one—*carelessness*.

The horse which went blind. The cause seemed to be in Nature. Every means was taken to prevent the bad effect.

The horse which died of age. Upwards of thirty years old.

The cow which died of the red water. Being totally unacquainted with the nature of the disease or the remedy, I left the management entirely to the cow-leech; through whose *carelessness*, rather than mismanagement, I believe she suffered.

I have never *since* left the care of a sick or lame brute wholly to the Leech, or Farrier; for, tho' I have not administered, I have attended the administrations;—and have seen that the patient was not neglected.

The cow which scours. I conjecture, that the disorder was caused by the quickness of transition from the low feed of the Common, to the rich succulent after-grass.

In future,—Raise them from the Common to richer feed by degrees. Perhaps, turn them into the after-grass, as soon as the hay is out of the field,—before the bite is got too long.

Perhaps, in future,—Never refuse two guineas for a scouring barren again.

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The hogs which were hung. I blame myself more in this instance, than in all the rest.—Not for coupling hogs, generally; but for suffering hogs, of their value, to remain in couples in acorn-time. But I have the pleasure of reflecting, that my motive was good neighbourhood; for Neighbour — gave me to understand, that they were unwelcome guests in a field of his turnips. I therefore kept them in couples, tho' in the yard, to guard against that *carelessness* of servants, which was the immediate cause of their death.

In future,—Be the consequence what it may, clip-mark and uncouple such as remain unfold, when the acorns begin to fall.

The barley. Had the seed been got into the ground three weeks or a month sooner, the dry weather would not have hurt it so much, and it might have been carried before the wet set-in: But would it not have been truly ridiculous to have missed so favourable an opportunity of getting the land clean, *in expectation* of such a dry summer and wet harvest as may never *happen* again? The soil received a tith equal to a summer-fallow;—its face now shews the good effect: and were the same circumstances to happen again I should most certainly act in the same manner, and *expect* a *tolerable* summer, and *tolerable* harvest, and, of course, get-in my barley in *tolerable* time.

This article must therefore go to the side of bad-luck, not to that of bad management.

Thus, of sixteen casualties, seven originated in Nature, (without any apparent factitious cause) and nine in positive or presumptive *carelessness*.—Does not this prove,

THE HAZARD OF FARMING,

THE NECESSITY OF SELF-ATTENTION,

AND THE VALUE OF CAREFUL SERVANTS?

JULY, 1777. The Reader may be well assured, that it cannot be pleasing to *expose* the above disagreeable facts. The Writer, however, should have blamed himself exceedingly, had he *concealed* them.

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them. The inferences drawn, he flatters himself, may serve as hints to the inexperienced Agriculturist, and the facts themselves be useful to the industrious Farmer;—by convincing the *rack-rent* Gentlemen of landed property, that there is *bazard* of *farming* as well as of *play*, and that *ill-luck* is not always at *White's* or *Newmarket*.

PLOWMANSHIP. } 5. I began to double the high five-bout lands
 DEPOSITING. } of L. 1. as I had done those of F. 2. (See 21.
 SEP.) *imagining* it impossible to lay the field sufficiently dry by *slitting* them—or, which is the same thing, by beginning to *gather* in the present inter-furrow: But, *on trial*, I found myself mistaken; and tho' it requires some plowmanship to lay them *round*, I was lucky enough to hit on the right method the first trial.

The first plit, I plow about five inches thick, dropping it into the old inter-furrow* ; the second—seven or eight inches thick, burying the first, without suffering the second to fall-over into the first-made plow-furrow † ; the third,—nine or ten inches, hiding the *mane* of the second, and forming a *seed-seam* between the *crests* of the second and third; the fourth, fifth, sixth and seventh—nine or ten inches square, with a *beel-plate*, fixed about six inches above the *wrist* of the plow; the eighth and ninth—seven or eight inches thick, and ten or eleven wide, or according to the width of the land. The ninth is the last plit of the *first* land; but every succeeding land has a tenth—a sub-soil plit—a *crum-furrow*—which forms the new inter-furrow; this is fetcht-up four or five inches below the bottom of the outside plow-furrow of the preceding land, leaving a hand's-breadth be-

* The thickness of the first plit ought to be regulated by the depth of the old inter-furrow.

† The crest of this plit forms the crown of the land.

twcen

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tween the edge of the inter-furrow, and the outside-plit, as a footing to the latter, to prevent its being torn into the former by the harrow.

JULY, 1777. The Plowman who can make and reverse half-rod beds with propriety and neatness (these are hardly separable) is invaluable, on a wet retentive soil; for there is not one in ten—not one in twenty, equal to the task.

The Writer does not wish to see even wet land laid-up in *sharp* ridges; but he would always have the *crown* some inches higher than the *skirts*;—the face of the land forming exactly an arch of a *large* circle: and at the same time to see the inter-furrows, formed out of the sub-soil, some inches below the sub-surface. For be the beds ever so truly convex, they will, during rain, absorb a much greater quantity of water than is necessary for the purposes of vegetation; and if the inter-furrows are not deeper than the plow-furrows, the plits must be bedded in a puddle during winter, and the roots of the corn be consequently chilled. On the contrary, if the inter-furrows are lower than the sub-surface, the superfluous water has always an open receptacle to fly to, and the vegetative stratum will ever be left sufficiently dry.

But if the vegetative stratum can be kept sufficiently dry by the means of deep inter-furrows, why so nice about the convexity of the surface? Because, if the surface abound with lank places, or even be quite flat, water will stand *during* heavy rains.—Wherever water stands on loose mould, a puddle is formed.—Every puddle is reduced to a crust, as soon as its moisture is dried up:—and a *baked* surface, of a tenacious soil, is certain injury to the crops. On the contrary, if the surface be made sufficiently acclivous to shoot off *heavy showers* quick enough to prevent its being *puddled*, it will ever remain light,
kind,

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kind, and porous, and be, of course, ever genial to those superficial ramifications, which the roots of wheat (at least) *are said* to make after the ears are formed.

The Writer owns himself heartily tired with endeavouring to make this Minute and Observation intelligible: he hopes, however, that the Reader will be less impatient; for, perhaps, there is not a more important part of aration, than that of acclivating a retentive soil.

CHAFF-HOUSE, 7. One or the other of the Home-barns has perpetually been taken up with the chaff-cutter, or his materials. To prevent this inconveniency in future, I have converted a straw-hovel into a chaff-house, with bins and other conveniencies. To-day is the first opening of it.—It pleases me very much indeed—and the barn-floors will be always free when wanted.

PLOWING. 7. (See 23. SEP.) I wished to expose the foul part to the frost, in order to get it as clean as the rest of the field, in the spring.

On Tuesday last, I took a plow into the field (undetermined how to proceed) to find out a method of *exposing* it to my mind. I began to plow it in 'bouts,—to lay two plits back-to-back, perfectly covering the unstirred interval. This laid it in very high ridglits with deep trenches, and fully answered my purpose. But the horses were obliged to draw on the land to be plowed, and the soil was too poachy for them to draw there with comfort; besides, the field is already in ridges, and their outsides are difficult to plow in this manner.

Therefore, instead of plowing it in 'bouts of *bouting-it*, I *balked-it*, thus:

I gave the plow all the *land* I could, and dropped the first pair of plits short of the old inter-furrows; in which inter-furrows, the
horses

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horses drew. The second pair, in the same manner, I dropt short of the plow-furrows of the first pair, and so continued till the rod-ridge was *slit* out.

The plow carried a width of about eighteen inches, about twelve of which she turned upon a *balk* of six or eight; so that altho' but a part of the soil is stirred, not a green speck appears—nothing but mould and roots are seen.

I observed that the more exactly the *plits* lie upon the *balks*, the greater quantity of surface is given, and the more it exposes the *edges* of them both; but it leaves the *plits* whole, *glazed*, and unporous: whereas, by leaving the *balk* something narrower, and letting the edge of the *plit* over-hang the preceding plow-furrow, the inverted sod is shivered into ten thousand pieces.—The roots are of course disengaged, and effectually exposed to the inclemency of the winter.

Altho' this method of plowing is entirely new to me, I was presently convinced, that it is not *original*; for I had not gone two 'bouts before the Plowman, with a scratch of the head, and a patriotic grin, told me, that it is *his* country-method of plowing, and calls it *raftering* (I suppose from its giving an appearance similar to that of an uncovered roof); but *balking* is most expressive of the act, and *exposing* of the intention; but as there are different ways of *exposing*, I have named this **BALKING**.

JULY, 1777. The old inter-furrows ought not to be left open; but be filled by two *plits* laid one-upon-the-other; and the beasts of draught ought, if possible, to draw double.

BEAN-FLUTE. 9. (See the 5th.) Yesterday began to rough, and to-day to fine-harrow the lands; and the bean-flute (See 11. Nov.) being finished, tried to draw the channels.

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The soil harrows as fine as a garden ; but being neither wet nor dry, the splayed coulter do not work to my wish ; the mould is moist enough to stick to them, but not wet enough to slide off. The first shower of rain will, I hope, remove this difficulty.

SAW-HORSE. 9. Little contrivances are sometimes great conveniences.—Wood to be burnt in a stove should be cut into short lengths, and the common saw-horse makes the cutting of it a tedious labour-consuming piece of business.

To-day I thought of, and a jobbing Carpenter presently put together, one which shortens the work, and consequently lessens the labour considerably.

It stands perfectly firm ; and the piece to be cut lies still without holding.—The saw always passes freely ; for the *saw-carf*, instead of binding, is always kept gaping, till the parts separate, and by their own weight fall on opposite sides of the horse.

I should suppose (but I may not be a judge) that it has simplicity and utility enough in it, to recommend itself to almost every branch of workers in wood.

The common tottering cross-cut saw-horse requires two men to hold the piece, to make it equally as firm as this. Nor can twenty men prevent a short piece from *binding* the saw, without a wedge. The piece to be cut, is fixed in two seconds.

JULY, 1777. It is the Writer's ambition to communicate USEFUL KNOWLEDGE ; he will therefore give a Drawing of this petty IMPLEMENT in the DIGEST.

OXEN. 17. *Brown* has been lame with the ulcers between the claws, attended with a slight hide-bound. The Farrier bled and drenched

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drenched him.—He has had three or four holidays, and is well. *Duke's* hide is harsh, and he loses flesh.

This morning began to drench each ox with a handful of common salt dissolved in a pint of water, and intend to repeat it, well or ill, every Sunday morning, fasting. I am in hopes that this will cleanse them, and keep them healthy.

JULY, 1777. This was continued for some time; but there was trouble attending it, and the men left it off by degrees. The bullocks, however, kept very healthy the remainder of the winter, and during spring-feed time.—In May they were sent down to the salt-marshes, which gave them such a thorough cleansing, they have not been foul since.

OXEN. 18. The frost has stopt the plow. We have not fillers for more than one team at dung cart: another *horse*-team would therefore eat hay and corn, and stand idle in the stable, and the Carters go to sleep in the hay-loft. But the *ox*-team has been all day in the straw-yard, and the Plowman and Carter done each of them a day's work. Certainly this is an advantage of OXEN.

CART-HORSE CHAFF. 18. Five cart-horses, in fourteen days, have eat about ten quarters of chaff (wheat, barley, and cut). Just one-quarter a horse, or four a-team a-week. I now only want the *value* of a quarter of chaff, to ascertain the gross charge of cart-horse keep.

FARMS. 21. The oat-straw of Adscumb Farm barn is as good as middling hay, so fine and full of herbage (grown on the ley of the Twenty Acres). At home, we have nothing but bad barley-

X 2

straw,

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straw, or the refuse of wheat-straw; yet it is convenient—indeed necessary—that the milch-cows and oxen should be near home; and that the young stock and dry cows should be at Adscomb. But *Home* and *Adscomb* are two distinct estates, and, by the leases, we cannot remove the straw from one to the other.

This is a very great disadvantage of holding distinct Farms under different Landlords. The Home-Farm not being large, we are often in want of litter, while heaps of straw are rotting elsewhere. But worse—we cannot afford to save a sufficient quantity of barley or oat-straw for straw-hay, and at home it must be consumed. Such are the inconveniencies of a straggling, patched farm!

The advantages of a compact, ring-fence Farm are innumerable: It is managed with ten per cent. less expence, and fifty per cent. less trouble. I would sooner manage a thousand acres in one entire convenient Farm, than a disjointed piece of patch-work, of less than three hundred.

OXEN. 21. (See 22. Nov.) From that time to the 15th of December—twenty-three days—the Ox-carter had sixty-five trufs of hay. But he had six oxen to feed with it two days and nights; and five, two days and nights more; besides an odd horse at different times: therefore, *the team of four oxen* did not eat more than sixty trufs in twenty-three days, or two trufs and $\frac{5}{8}$ ths a-day.

It was good clover-and-rye-grass hay, worth from 50. to 55s. in London; but at *Home*, 48s. is a very good price for it, this year: On a par, 45s. is the value of it.

Thus the *gross charge* of a team of oxen eating hay, and working every day, is on a par of years 22 s. 6d. a-week.

But surely four oxen eating half a load of hay, will make near a load of dung a-week. A load of dung at *Home* is worth from 5 to 7s. 6d. But say $\frac{1}{4}$ of a load, at 6s. is 4s. 6d.

Therefore,

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Therefore, the *neat cost* of a team of working-cattle, *during the six winter-months*, is eighteen-shillings a-week, or *three shillings each working-day*.

If this is not the truth, I am of opinion it is *very* near it.

OXEN. 21. (See 27. Nov.) Shod their outside claws *behind*. *Cast them*.—I am convinced it is necessary to shoe oxen which work constantly; their hoofs are worn so thin, 'tis difficult to shoe them.

IMPLEMENTS. 26. After the seed-wheat was in the ground, I began to make out a list of Implements. I have now completed it—collected them together—adjusted them for the winter—and called them all over. I find it so *convenient*, that I mean to repeat it twice a-year, in future; once after wheat, and again after barley seed-time; in or about November and May.

THE LIST.

CARRIAGES and their Tackle.

- 2 Waggon,
- 1 Handy,
- 4 Dung-carts,
- 4 Dung-forks,
- 2 Dung-drags,
- 1 Shooting-bar,
- 1 Dung, or water-cart,
- 1 Sowing-cart,
- 2 Harrow-sledges,
- 2 Plow-sledges,
- 3 Pair of ropes,
- 1 Jack and greafe-pot.

Plows and Tackle.

- 1 Trenching-plow,
- 1 Break-up plow,
- 3 Team-plows,
- 2 Single wheels,
- 3 Whip-rein plows,
- 2 Spare-shares,
- 2 Double-plows,
- 1 Sub-plow,
- Coulters,
- 1 Spare-copse,
- 3 Plow-hatchets.

ROLLERS,

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ROLLERS, &c.

- 1 Spiky roller,
- 1 Double plain roller,
- 1 Single plain roller,
- 3 Surfaces.

RAKES.

- 1 Round horse-rake, } *
- 1 Flat horse-rake, } *
- 2 Hand-rakes.

HARROWS.

- 1 Pair of round rough harrows,
- 1 Pair of flat rough harrows,
- 1 Pair of round fine harrows,
- 1 Pair of flat fine harrows,
- 3 Pairs of common horse-harrows,
- 1 Pair of man-harrows.

DRILLS, &c.

- 1 Ducket's draw-drill,
- 1 New drill,
- 1 Barley flute (see rakes).

HOES.

- 1 Berkshire shim and wheel,
- 1 Horse-hoe,
- 4 Drag-hoes,
- 2 Hand-hoes.

WHIPPINS.

- 7 Iron trace whippins,
- 2 Sets of hempen trace ditto,

- 5 Single hempen trace whippins,
- 1 Double-chained whippin.

HARNESSES.

- 20 Bridles,
- 16 Ox-collars,
- 15 Horse-collars,
- 10 Pair horse-hames,
- 4 Pair of tugs,
- 5 Cart-saddles and cruppers,
- 4 Breechings,
- 4 Pair of plow-traces,
- 12 Pair of long-traces,
- 13 Back-bands, cruppers, hip-traps and pipes,
- 7 Pair of hempen harness-hames,
- 5 Pair of hempen-traces,
- 3½ Pair of whip-reins.

STABLE-TACKLE.

- 8 Hempen halters,
- 4 Curry-combs,
- 4 Brushes,
- 1 Ox nose-hook,
- 3 Whips,
- 2 Chaff-baskets,
- 1 Chaff-box,
- 2 Chaff-sieves.

FIELD-TACKLE.

- 1 Sithe,

* Or lances, or flutes, or brooms.

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- | | |
|--------------------|----------------|
| 9 Short-forks, | 2 Bushels, |
| 8 Hay-rakes, | 2 Shoals, |
| 1 Drag hay-rake, | 2 Shovels, |
| 2 Corn-forks, | 32 Sacks, |
| 3 Pitching-prongs. | 1' Sack truck. |

STACK-TACKLE.

- 3 Ladders,
- 2 Sail-cloths,
- 1 Mow-cutter,
- 1 Pair of steel-yards.

BARN-TACKLE.

- 2 Flails,
- 7 Wooden riddles,
- 1 Wire riddle,
- 2 Sail fans,
- 1 Wicker fan,
- 2 Skreens,
- 3 Wire sieves,

SUNDRY TOOLS.

- 1 Pick-axe,
- 1 Fold-pitcher,
- 1 Iron-shovel,
- 1 Yard-scraper,
- 2 Scoops,
- 6 Couching-baskets,
- 4 Iron wedges,
- 1 Wedge-beetle,
- A set of carpenter's tools,
- Sundry smiths, coopers, collar-makers, and bricklayers tools.

Perhaps there are many petty implements of agriculture which are improveable; and tho' the improvements may be petty, yet when an implement is in making, it had better be made well than ill.

Some time ago I hit off a PLOW-WHIPPIN, which pleases me better than any I have seen; because it is strong, light, durable, and fit for any plow or harrow.

A PLOW HATCHET, too, I thought of, is much preferable to the common hammer.

A LARGE HOE I find useful for cleaning the yard, and very useful for opening cross-furrows*.

* See IMPLEMENTS, in the DIGEST.

I. JANUARY,

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I. JANUARY, 1776.

SUR-DRAINING. 1. The new leys, and meadows of Wood-side lie very flat; the water has lately covered the grafs in many places. This morning took a plow, and drew furrows through the lanks and hollows in which it stood, making out-lets into the ditches.

Perhaps, the grafs will come sweeter and earlier in the spring, and the cattle be permitted to feed later, and sooner, without poaching the foil.

DIVISION OF FARMS. 8. Perhaps, a Farm should be divided agreeable to the nature of the foils, if various.

Arable land should lie in large, regular, rectilinear fields.

The size of the fields should be as that of the Farm.

The Farm-house should be near the Farm-yard; the Farm-yard near the Barns; and the Barns near the centre of the arable land.

Manure is necessary to agriculture; stock necessary to manure; pasture and meadow land necessary to stock.

A suit of pasturing paddocks are convenient about Home: arable-land should be near the Barns and Farm-yard. Meadows, woodlands, and sheep-walks may lie at a distance, with less inconveniency.

Fences are expensive incumbrances on a Farm.

Therefore—Had I a thousand acres of uniform foil, equally kind for grafs or corn, lying on a level, within a ring-fence; to divide and lay-out into a Farm, with convenient erections; I would proceed thus:

Within the irregular figure, I would endeavour to inscribe a square or parallelogram, containing about four-fifths of the whole (were it 1000, or were it but 100 acres). In the center of this I would erect, and round the erections, lay four paddocks*.

* See FARMS, in the DIGEST.

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The margins I would convert into wood and grass-land: The grand area into four arable fields: The Paddocks into pasture and Garden-ground.

The creeks and irregularities of the margins I would fence-off, plow, and sow with the seeds of trees and shrubs; leaving them to be nursed by Nature and strong fences. The grass-land would be sheep-walk and hay-meadow, alternately. The arable, in four divisions, would, in perpetual uniform succession, receive the four stages of the universal round*. The Paddocks, too, would relieve each other; always keeping three for pasturage or verdage, and one for cabbages, turnips, potatoes, and other domestic roots and herbage.

But—were the soil various; some of it affecting corn, some grass;—the surface irregular, &c. &c. I would endeavour to steer in the middle way between Nature and convenience: I would endeavour to approach as near to regularity and method, as the nature of the soil and the aspect would permit.

But—were I to enter on a Farm already inclosed and divided, and erections raised, I would endeavour to throw the arable into large divisions; to keep the hay-grounds and sheep-walks at a distance, and a few pastures about home.

On principles like these, tho' undigested till now, I have proceeded since I commenced Farming. I found two hundred and ninety-one acres of clay, strong loam, sandy loam, sharp gravel, and almost every intermediate soil, scattered over a country of five or six miles in circumference,—divided into fifty-seven fields and fifty-four pieces, strewed over five or six detached common fields;—the whole the property of five distinct landlords †.

* Fallow, or fallow-crop,---spring-corn,---clover,---wheat.

† This may sound strangely in a large-farm country; but near London five Landlords are a very moderate number. The Writer, however, having no passion for pluralities (of farms at least), has lately reduced his number of Landlords to three.

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The crops and quondals, too, (the farms having been occupied by various tenants) were as straggling as the fields: Here a patch of corn, there a piece of grafs; here a rood of wheat, there a rood of barley, lying by the side of half an acre of peafe or summer-fallow. This made the Common-field land particularly teasing, and of course, first suggested the idea of *classing the pieces*—of considering the several scattered slips as one entire field: and of cropping each field with one entire crop.

Thus, instead of sending a team to plow half an acre in one place, and then sending it a mile to finish its day's works in another; I now send two or three into a large field of fifteen or twenty acres, where, without interruption, special attendance or attention, they keep on till it is done; the same as if it was an entire inclosure.

The conveniency of this soon started the thought of *classing the fields*, of throwing a number of small contiguous inclosures into one large DIVISION; considering this as one field.

This plan I have been executing as fast as I could consolidate the crops with propriety. I have already classed them, and another year or two will, I hope, complete my plan.

A. Norwood-Fields. (Clayey Loam.)

A 1. Barn-Field,	-	-	-
A 2. The Cradle,	-	-	-
A 3. Middle-Field,	-	-	-
A 4. Foot-path Field,	-	-	-
A 5. Little-Field,	-	-	-

Acres more or less.	Acres, exclud- ing hedge and ditch.	Acres, includ- ing hedge and ditch.
5.		
3.		
$3\frac{1}{2}$.		
4.		
$1\frac{1}{2}$.		
—	17.	19.
$3\frac{3}{4}$.		
$2\frac{3}{4}$.		
$4\frac{1}{2}$.		
$4\frac{1}{4}$.		
—	15.	$16\frac{1}{2}$.
—	32.	$35\frac{1}{2}$.

B. Lower Barrets. (Clayey Loam.)

B 1. Lower left-hand field,	-	-
B 2. Lower right-hand field,	-	-
B 3. Upper left-hand field,	-	-
B 4. Upper right-hand field,	-	-

Carried over,

C. Pipers.

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	Acres.	Exclud.	Includ.
Brought over,		32.	35 $\frac{1}{2}$.
C. Pipers. <i>(Clayey Loam.)</i>			
C 1. Lower Pipers, - - -	2 $\frac{1}{4}$.		
C 2. Upper Pipers, - - -	3.		
		5.	6.
D. Upper Barrets. <i>(Clayey Loam.)</i>			
D 1. Great Barrets, - - -	7 $\frac{3}{4}$.		
D 2. Little Barrets, - - -	2.		
D 3. Woodfide Mead, - - -	1 $\frac{7}{8}$.		
		12.	13.
E. Lowlands. <i>(Clayey Loam.)</i>			
E 1. Bailey's-field, - - -	2 $\frac{7}{8}$.		
E 2. Two pieces in Broad Mead, -	2 $\frac{5}{8}$.		
E 3. Rays field. - - -	4 $\frac{6}{8}$.		
		10.	11.
F. Blacklands. <i>(Sandy, Moory Loam.)</i>			
F 1. Further-field, - - -	4 $\frac{1}{4}$.		
F 2. Hither-field, - - -	5 $\frac{1}{4}$.		
		9 $\frac{1}{2}$.	10 $\frac{1}{2}$.
G. Eastlands. <i>(Strong Sandy Loam.)</i>			
G 1. The Four Acres, - - -	4 $\frac{1}{4}$.		
G 2. The Six Acres, - - -	5 $\frac{3}{4}$.		
		10.	11.
H. Home-field. <i>(Sandy Loam.)</i>		10.	10 $\frac{1}{2}$.
I. Brook-field. <i>(Strong Sandy Loam.)</i>		12.	12 $\frac{1}{2}$.
K. Lower Meads. <i>(Clayey Loam.)</i>			
K 1. Three pieces in Broad Mead, -	1 $\frac{7}{8}$.		
K 2. Leylands, - - -	5 $\frac{1}{4}$.		
K 3. Rivulet Mead, - - -	11 $\frac{1}{4}$.		
K 4. Small Profit, - - -	6 $\frac{3}{4}$.		
		25.	26 $\frac{1}{2}$.
Carried over,		125 $\frac{1}{2}$.	136 $\frac{1}{2}$.
Y 2			L. Upper

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	Acres.	Exclud.	Includ.
Brought over,			
L. Upper Meads. <i>(Clayey Loam.)</i>		125½.	136½.
L 1. The twenty Acres, - - -	20¼.		
L 2. Black-Horse Field, - - -	4¾.		
		25.	26.
M. Clays and Haws. <i>(Sandy and Gravelly Loam.)</i>			
M 1. Seven pieces in hither Clay, -	5½.		
M 2. Seven pieces in further Clay, -	3½.		
M 3. Apple Haw, - - -	4¾.		
M 4. Pasmore Haw, - - -	3½.		
M 5. Middle Haw, - - -	1½.		
M 6. New Leaze, - - -	4½.		
		22.	23½.
N. Adfcomb-houfe fields. <i>(Gravel and Gravelly Loam.)</i>			
N 1. Houfe field, - - -	5.		
N 2. Lower Castle Hill, - - -	3.		
N 3. Upper Castle Hill, - - -	3.		
N 4. Scrubs, - - -	3.		
N 5. Long Six Acres, - - -	4¾.		
N 6. Conduit Field, - - -	4.		
N 7. The Nook, - - -	1⅞.		
		24.	26.
O. Rippinger. <i>(Gravel and Gravelly Loam.)</i>			
O 1. Eleven pieces in the Common field,	13½.		
O 2. Bench field, - - -	2.		
O 3. Jackson's field, - - -	2¾.		
		18.	19.
P. Upfield. <i>(Gravelly Loam.)</i>			
P 1. Rippinger-lane field, - - -	4.		
P 2. 17 pieces in the Common field, -	12.		
P 3. Maple Stubs, - - -	4.		
		20.	21.
Carried over,		234½.	252.

R. Adfcomb

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		Acres.	Exclud.	Includ.
Brought over,			234 $\frac{1}{2}$.	252.
R. Adscomb Closes.	(<i>Various.</i>)			
R 1. Pen-field,	- - -	2 $\frac{3}{8}$.		
R 2. Adscomb Paddock,	- - -	1.		
R 3. Cart-house field,	- - -	2.		
R 4. Skelton's field,	- - -	0 $\frac{7}{8}$.		
R 5. Lower Brick Close,	- - -	2.		
R 6. Upper Brick Close,	- - -	1 $\frac{3}{4}$.		
			10.	12.
S. Garden fields.	(<i>Sandy Loam.</i>)			
S 1. A patch of	- - -	1 $\frac{1}{2}$.		
S 2. A patch of	- - -	1 $\frac{1}{2}$.		
S 3. A patch of	- - -	1 $\frac{1}{2}$.		
S 4. A patch of	- - -	1 $\frac{1}{8}$.		
S 5. Two patches of	- - -	1 $\frac{1}{2}$.		
			7 $\frac{1}{2}$	8.
T. The Paddocks.	(<i>Various.</i>)			
T 1. The Orchard,	- - -	0 $\frac{1}{4}$.		
T 2. The Angle,	- - -	1 $\frac{1}{4}$.		
T 3. Foot-path field,	- - -	6 $\frac{1}{4}$.		
T 4. Cherry Mead,	- - -	5 $\frac{1}{4}$.		
			13.	14 $\frac{1}{2}$.
Stray-lands.	- - -		4.	4 $\frac{1}{2}$.
			269.	291.

Thus, one hundred and five distinct patches are compacted into eighteen sizeable DIVISIONS; with this advantage, that they may easily be reduced again to *small fields*, when occasion requires: But with these heavy disadvantages, compared with entire fields, there are two-and-twenty, instead of four or five acres taken up by fences. —The influence of the sun and wind is weakened.—The teams are retarded by the fences, at least one acre in four or five, if straight; if

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if crooked, more;—and the fences, in defiance, breed weeds and vermin. But in point of attention, and of time saved in fetching and carrying of implements, they are equal to entire fields; and this last is an expence upon a straggling farm, which no one but the holder of such a farm can form an idea of. The attendance and attention, too, are material: I would sooner manage a *well-classed* Farm of five hundred acres, than an *unclassified* one of two hundred and fifty. The labour of fencing, likewise, is considerably lessened.

To class a Farm judiciously, is a work of some time: two or three years at least. Clover I find the most convenient agent; for on this, wheat may be sown the first, second, or third year; and of course, one field can wait till another, and all of the same class or division be ready. The fallow-crop may be missed, or two be inserted, &c. &c.

The new names which I have given to the fields and divisions will be particularly convenient in the *DIARY**, and will easily be recollected; because I have made North the head of the page, and proceeded regularly from West to East (except the Gardens and Paddocks). “B 1.” is much sooner spoken or written, than “Lower left-hand field:”—“P. 1.” than “Rippinger-lane field.”

Another very great conveniency of classing a Farm is, the *FIELD-ACCOUNTS* † are more easily kept.

Perhaps, another general rule which ought to be observed in classing a Farm, is this: If part of it is wet, and part dry, there should be two sets of arable divisions. Thus, I have laid out one suit of arable at Adscumb, and another at home; that when the latter is too wet to work, the teams may not lie idle: Besides, wet land may be sown earlier in autumn, and later in spring, than dry; and, in the

* The Writer has kept, and still keeps a register of the business of each day. (See *ACCOUNTING* in the *DIGEST*.)

† He has likewise kept a regular account of the labour, &c. of each field or division. (See as above.)

reverse,

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reverse, dry land may be sown later in autumn*; and sooner in spring, than wet: and perhaps, the most delicate part of management lies, in keeping the teams in constant work, and sowing in season.

In this point of view, a varied soil is preferable to one which is uniform: but a varied soil requires a various management, and a variety of implements. For a light dry soil should be plowed by two horses a-breast:—Stiff wet land, by four at length: A small iron plow and flat harrows are most proper for That; a large wooden plow and round harrows for This: for That should be laid flat and moist; This round and dry. Therefore, a multi-soil Farm is managed at a greater expence, and calls for closer attention. But with every inconvenience, I would rather farm on a varied soil, than on one uniformly wet: There is one very valuable advantage;—a Farmer can change his seed without going to market.

Had I, however, the *choice* of a Farm, it should be a DRY LOAM, culturable by WHIP-REINS.

STRAW-YARD STOCK. 11. Straw-yards ought to be kept well littered in wet weather.

The oat-straw and pea halm of Adscomb, was this year too good to litter-with; the cattle eat them as clean as hay, and the late rains reduced the Farm-yard to a puddle. The cattle could not lie-down comfortably;—they fet-up their backs, and looked half-starved, tho' they had plenty of *meat*.

Littered it well with rubbish from the Stack yard.—Tho' their *fodder* is the same, they look fifty per cent. the better for the *litter*.

* This must not be taken in a general sense; for although dry land *may* be sown later in autumn than wet; a burning soil *ought* to be sown early, that the winter crop may get the surface covered before the spring drought sets in.

Perhaps,

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Perhaps, a plenty of litter, with indifferent fodder, is preferable to good fodder with a scarcity of litter. How well the Welch heifers looked last year on very bad oat-straw in Woodside-yard; but they rolled in litter.

Lying in the dirt, perhaps, chills their limbs—retards the circulation—prevents their sleeping comfortably; and, filling their coats with filth and dirt, prevents their *licking* themselves.

THE SCOURING OX. } 16. (See 4th DEC. 1775) The Farrier
SUFFLATION. } first employed could not relieve him: I
employed another. He told me that he was certain he could stop it; but that scouring cattle are subject to relapses, which generally carried them off precipitately; and that the only method of treatment is to get them in flesh as fast as possible, and sell them off.

He ordered him a drench every morning (a compound of powder and dried leaves, given in a quart of fresh human urine): as an addition, I desired that he might have a decoction of oak-bark given him in his water.

At *the fortnight's end* the scouring stopped;—he recovered his appetite;—his hide loosened;—his eyes brightened;—and he recovered his cud:—but he was so much reduced, that he could not rise without assistance; and though he eat well—dunged well—and looked well, he remained thus for a fortnight or three weeks. It was six or eight men's business to get him up; he would not help himself in the least, until three or four days ago, when he began to get up with little help. But notwithstanding he eat half a truss of hay a-day, he did not thrive; and although I wished him dead (he was so low he would have taken more fattening and attendance than he would have been worth, when fat;—besides the risk of a relapse) yet I was unwilling to give him up.

He

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Early this morning he awoke me with lamentable groans.—I rung up the servants :—they came, and told me that he was dying, for that he was “swelled ready to burst.” I bade them stab him behind the ribs : this eased him for a while ; but he soon began to swell and moan as bad as ever. I got up, and, seeing him in great agony, ordered him to be stuck.

I sent for the Farrier, and we have opened him. His heart, liver, entrails, and nutriment in each state, bear every mark of perfect sanity ; except that his entrails, instead of rolling out, on his being opened, were tied fast to the coats of the vertebræ, and were obliged to be separated from them by a knife—a flesh-like substance had formed ;—and except that his maw was remarkably full of aliment, and was pierced by the knife with which he was stabbed.

Perhaps, the adhesion of the viscera accounts for his weakness, and for his disorder. Perhaps, the several members of the abdomen were rendered unable to perform their respective functions properly, without the aid of medicine. The Butcher observed, that this is a common case, when an ox has been strained, or has received a wrench in the back. This too brings on a scouring ; it therefore seems very clear, that a strain, or wrench, was the first cause of his disorder ; and, from various circumstances, I am of opinion, it is of long standing, and brought to the crisis by time and hard-working.

But how is the sufflation, which was obviously the immediate cause of his death, to be accounted for ? His meat was clover-and-rye-grass hay ;—his drink, water, with a small quantity of the decoction of oak-bark, to prevent a relapse. But it was old hay which had been cut very full of sap, and got well into a large stack ; so that it was dry, and rich to a high degree ; and he eat it very greedily *as he lay*.

Z

Perhaps,

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Perhaps, he surcharged his stomach; and, lying on his *near*-side, the repletion closed the œsophagal orifice; which preventing the escape of the air, rarified by *ordinary* fermentation, caused the sufflation.

Perhaps, could he have been got upon his legs, or could his fore-part have been raised, or had he only been turned on to his *off*-side, the disorder would have ceased; the mouth of the stomach being brought uppermost, the air would of course have made towards it, and have found its natural vent.

There was not the least trace of an *extraordinary* fermentation; the aliment had the appearance of perfect salubrity. There was no apparent cause but the ordinary *digestive* fermentation.

The passage to and from the lungs seemed perfectly free; but I observed, that the more he swelled, the shorter he breathed: the lungs, pent up by the ambient compressure, were prevented from expanding; and I believe a few minutes more would have totally stopped his inspiration. On being stuck, he bled very freely.

Perhaps, generally, THE CAUSE OF SUFFLATION is a stoppage of the alimentary passage*:

THE MEANS, ordinary digestion:

THE EFFECT, a suppression of inspiration.

Because—(I understand) the disorder and effect are the same, whether *the stoppage* be effected by green clover,—by a turnip,—or by a dry, twisted hay-band. And *perhaps*, generally, it is not so much the quality of the food eaten, as the manner of eating it, which *causes* sufflation.

Because—in the case recited there was no sign of *extraordinary fermentation*; nor could the intestines be inflated from the lungs; for

* Not always between the tongue, and where it enters the chest; but sometimes between this and the stomach: in the neck it is obvious, and admits of no doubt.

the

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the passage from them to the mouth was obviously free (this I remarked particularly). But, *perhaps*, generally, altho' the quality of the aliment affects not the cause, it actuates the *means*,—gives the degree of disorder. Thus, the rarefaction by the digestion of succulent clover, may be greater than that which is caused by the digestion of dry hay. The quantity, perhaps, may both give the disorder, and heighten the disease; especially in a couching posture.

Because—had the ox been suffered to die of his disorder, *the suppression of inspiration* would have done the part of the man who stuck him—stopped the circulation. But *the stoppage of circulation* would, in either case, have been only a *secondary* stage;—a *means*, not the *immediate cause* of death: for, altho' he could have *breathed* but a few minutes, his *circulation* did not seem to be the least impeded; for he bled freely and profusely.

THE CURE. Perhaps, while the lungs have liberty of expansion, there is no fear of death by sufflation: and, perhaps, while the internal air has free egress thro' the coats of the abdominal cavity, there is no fear of a total suppression*.

Therefore, if a remedy is not at hand, a vent should be made, and kept open, to evade the effect, till the cause can be removed.

Perhaps, to clear the œsophagus, run the ravelled end of a stiff rope down into the stomach.

To cause an exertion of the abdominal muscles, pour pepper and vinegar down the nostrils.

To irritate, and force a passage thro' the intestines, pour a plenty of SALT AND WATER with pepper into the stomach †.

* How it makes its escape out of the viscera, I know not. But that there is a *natural* communication between this and the abdomen, is evident; for the cow which was blowed some time ago, is, and has ever since been in perfect health.

† No human habitation is without these.

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If the beast is on its legs, run it about ;—if a hill is near, run it *up* the acclivity, to give the air an opportunity of finding its natural vent.

If the animal be down, and cannot be got up, lay it on the *off*-side,---raise its fore-quarters as high as possible,—and give a clyster of SALT AND WATER * ; or, perhas, raise its hind-quarters, and insinuate a tube into the fundament, that the air in the intestines may escape thro' the rectum.

THE PREVENTION.—If the food of cattle be turnips, whole ; perhaps, such as they can attempt to swallow without biting, should have a chop thro' the middle, flat-way ; if turnips cut.—they should be *sliced*, not cut into *square* pieces †.

All hay or straw bands should be carefully untwisted before they are given to cattle, or thrown into the yard, or other places where cattle may come.

Perhaps, cabbages should be quartered, or the cores taken out.—Perhaps, it was the core of a cabbage which blowed the cow. (See 29. Oct. 1775.)

Perhaps, if the food of cattle be clover, or other succulent, rough-leaved herbage, muzzle them ;—put on each a partial muzzle, wide enough to suffer them to lick-in their food gradually, and strait enough to prevent their eating it too greedily.

For, perhaps, it is eating too fast for the salival secretion, which causes the stoppage. Perhaps, the aliment is thrust into the gullet before it is sufficiently inviscated, and the œsophagal glands being unequal to the extraordinary task of sufficient lubrication, it lodges in the alimentary passage, unable to reach the stomach. But if, by a PARTIAL MUZZLE, their voracity can be made to keep pace with the secre-

* This, *perhaps*, may not be a *most eligible* clyster, but it is one which may be *most readily* bad.

† The Writer does not offer these cautions as *something new* : they were written to assist his own recollection, and are published for the good of the *inexperienced* in agriculture.

tions

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tions (of the saliva and mucus of the œsophagus), the disorder, perhaps, may be prevented*.

But the most useful discovery by opening the bullock, is that of his entrails being cut by the knife which stabbed him;—for he was stabbed on the *wrong* side. He lay on his *near*-side, and the servant, not knowing the difference, opened the *off*.

I could not, however, blame the man; for had I been present, I should probably have made the same mistake. For though I know very well that one side is right, the other wrong; and although, a few weeks ago, I knew, clearly, the right from the wrong; yet I am of opinion, I should not at the time have made the distinction.

Therefore, for my future recollection, I wrote this rule:

“ Th’ intestines to clear,

“ Give vent on the near;

“ In th’ angle where join

“ The huckle and loin.”

I pointed out the mistake and the consequence to the by-standers; for had he been the best ox in the world, and had recovered of the suffiation, he could not have lived for; not only the maw was pierced with a large knife, but some of the smaller guts were cut; and for their recollection I provincialized the above lines ::

“ The guts to clear,

“ Stab on the near;

“ In the corner which joins

“ The hip-bones and loins;”

* These reflections are laid before the Public with the greatest diffidence: the Author is by no means master of the anatomy of cattle, nor of their animal economy. They are, literally, the reflections which occurred to him, while the facts lay glowing before him; and if they are not useful in themselves, they may, nevertheless, lead to something useful.

and

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and ordered every person about the house to get them by heart. Tied them upon an elder-pipe *, and hung them up easily to be come at, in case of an accident.

Stabbing is a dangerous term ; it gives the idea of running a knife to the haft : and this, perhaps, even on the near-side, may injure the intestines ; for every tube and cell of the viscera is blown to the stretch : their distance, therefore, from the peritoneum of the cavity, is not nearly so great as if this was inflated, while those lay lank in the abdomen. Besides, their being on the stretch renders them more penetrable.

Therefore, perhaps, GIVE VENT BY INCISION, as butchers open the belly of a slaughtered sheep.

Cut him up (he was perfectly sound and wholesome), and begun to boil his bones, with the little remaining flesh, for the store-pigs.

If pot-liquor, and other culinary wash, be good for hogs, surely soup and bouillie cannot hurt them ; especially when cabbages or roots are boiled in it, or pollard scalded with it.

STACKING IN BARN. 16. To hinder the rats from harbouring in trufs-bound straw, and gnawing the bands ; and to save the trouble and expence of stacking it out of doors, stacked it in the barn ; leaving a passage round it for dogs, cats, and rat-killers ; and vacancies between the trusses of the first and second layer, wide enough for a carrier, cat, or ferret, to creep under every part of the pile.

SWINE. 18. Finished boiling the ox. He made five forty-gallon coppers-full of exceeding fine jelly ; for the meat was stewed till it dropped from the bones, which served as firing to the succeeding cop-

* To insert in the orifice that the air may escape freely.

pers :

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pers: the whole expence of fire and labour could not exceed half-a-crown.

STRAW-YARDS. } 18. (See the 11th). Notwithstanding the late
MANURE. } and present severe weather, they look much better than they did in the open weather, with a scarcity of litter.

Therefore, much of the fodder, perhaps one-third, is necessary in an open yard to be used as litter.

In a house, on a dry platform, little litter is wanted.

Therefore, the same quantity of straw will winter more cattle, and afford more *dung*, on a covered platform, than in an open yard.

But cattle in house want much more attendance; and whether excrements alone, or a mixture of excrements and straw, is the best manure, may be a moot point.

OXEN. 26. Yesterday put the oxen to the dung-cart, for the first time. They had not been harnessed for three weeks before; and, at first, they were very awkward; especially at backing to the dung-hill. Full-grown oxen, in general, are much longer-made than horses—too long for common shafts; they have not room to back the cart.

To-day, put a tight, nimble, short-made ox into a light cart, and he behaved very well. I cannot see the shadow of a reason why an ox, with equal practice, should not back a cart as well as a horse of equal weight.

Perhaps, on leisure-days, or leisure-hours, practise them in a light cart; first down-hill, then on a level ground, and lastly up-hill.

Perhaps, learn them, too, to guide with Whip Reins; first single, then double, next with a loose plow, and lastly to make a furrow.

DUNG

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DUNG-HILLS. 27. Foot-path-slip mixen is made very awkwardly;—much too narrow—about eleven feet wide:—The men are in each other's way; they have not room to fill the carts.

Perhaps, a mixen should not be made less than fourteen, nor more than eighteen feet wide. This size gives room for two men behind, and one on each side. If it is narrower, the men at the wheels have not sufficient employment;—if it is wider, they have too much; nor can they reach the cart without moving their feet; and making a step, takes up as much time, as throwing-in a shovel-full of compost.

The sides of a dung-hill should be upright, and not too high, that the wheel-men may stand on the slips to fill.

Perhaps, one rod wide, and a quarter of a rod high, *when settled*, is the best form of a dung-hill.

WORKING-CATTLE. } 30. This is the fifth day they have
OX-COLLARS. } been at dung-cart. The first and second,
I could not persuade the men, that the grass would grow so well from the dung carried on by the oxen, as from that drawn on by horses. To-day, the Carter voluntarily confesses, "He never could have thought that they would have done so well." As to my own part, I am more and more convinced, that whatever horses *do*, oxen *can do* temporarily; but whether These, like Those, can work every day in the year, is a doubt with me.

I am clearly convinced, that nine-pin collars are preferable to the bolstered ones.

That which was made for *Jolly*, and fitted him very well, fits *Dragon* with a little alteration; and *Brown*, an awkward-shouldered ox, never worked so easy in any other.

They have this very material advantage:—Whether the ox draws on a straight line; or turns on a curve, they are equally easy to the
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shoulder. This is not so perceptible at plow, where it is all straight-forward, as at cart, when they draw at the turnings; and where they obviously draw against the outer edge of the bolster.

The simplicity of the nine-pins struck me from the first, and I should not have made any other, had not the Carter preferred the bolsters; and I gave up my own opinion for his.

They take less wood—are easier-made—are stronger, and more tightly: But they cannot easily be altered, and I was not aware of their fitting a hollow shoulder and a full shoulder so well as they do.

I am sorry, tho' not ashamed, that I took the Carter's advice: I have sometimes known a Carter in the right.

CATTLE-RAMMER. 30. (See the 16th.) Bound a four-strand three-inch rope with strong waxed thread, in the manner that sailors serve their shrouds and cables:—left an inch and a half of each end unbound:—untwisted the strands, and made each end into a tuft, and hung it up with the vent-pipe.

In case of sufflation, one of these tufts to be oiled, or otherwise well-greased, and run down the gullet clear into the stomach.

I had cut it four feet and a half long before I measured, and was quite surprised to find, that from the mouth to the hindmost rib of a large ox is full five feet and a half: but in use, the hand must follow it to the root of the tongue, and it may be long enough. However, were I to make another, it should be five feet at least.

DECEMBER, 1776. But tho' the diaphragm reaches the hindmost rib, towards the upper part of the cavity, it crosses the ribs almost at right angle; and at the lower part of the cavity, it is tied to the brisket: the length of a middle-sized bullock's oesophagus, which I measured to-day, was but three feet eleven inches.

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2. FEBRUARY, 1776.

THE WEATHER.	}	2. Till New-year's-day, we had a remarkably fine open winter. Straw-yards in general were not opened till the middle of December.
WHEAT.		
BEANS.	}	The first week in January was very bleak, windy, rainy weather; excessively cold and disagreeable.
OATS.		
BARLEY.		
FROST.		

On Sunday the 7th, there was a storm of rain and snow, and on Monday morning, a deep snow.

From that time till yesterday, (three weeks and four days) we have had very severe weather; a continuance of frost and snow, with very high winds from the South-East; from whence all the snow and cold weather came.

The frost was not intense till Monday the 22d.; the ground under the snow remaining unfrozen. On Monday night it became very severe. On Tuesday (but not before) the ground was hard enough to bear the dung-cart.

The snow falling remarkably dry, with a high wind, it was very much drifted—in some places six or eight feet deep—and the crowns of high ridges left entirely bare.

I observed, that the wheat which was exposed to the weather, soon became black and withered; while that in the inter-furrows, covered with snow, remained wholly green and vigorous.

The frost and wind continuing, the prominences and the areas of large fields were left free from snow; and the mould, finely pulverised by the intenseness of the frost, began to be blown from the roots of the corn*.

* This, an old Labourer tells me, was the cause of much fatality to wheats in the long frost of 1739.

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The last six days and nights of the frost were superlatively intense. — Yesterday morning, the wind crept round to the south, and the air became mild.—To day is as soft as April, and the snow, except the drifted, has vanished without rain.

The EXPERIMENTS, made the 29. September last, on SPRING-SEEDS SOWN IN AUTUMN, stand thus :

The BEANS which were covered, have not received much injury ; but those which were exposed, are as black as coal, and some of them wholly destroyed—the roots quite dead.

The OATS.—The blades are much injured, but the roots seem perfect.

The SUMMER-TARES which were obnoxious to the frost, are greatly hurt ; but do not seem to be entirely destroyed.

But what surprises me much, the BARLEY has stood the inclemency of the weather better than a fellow-patch of *wheat*, experimentally sown the same day. I expected to have found it totally cut off ; but I see no other vegetable whatever looks so vigorously, *Winter-tares* excepted ; and these do not seem to have received the least injury.

The *ketlock*, which came up among the early-sown winter-tares, and which stood above the snow, is cut down to the ground.

Gates which swung clear before the frost, dragged during the frost, but now again swing clear. A foot-path across D. 2. made at random in the snow, is considerably higher than the rest of the field. It looks as if it had been raised by art, at least an inch and a quarter higher than the adjoining turf. The snow being *there* trod-off, the frost was permitted to penetrate deeper than *here*, where the coat of snow prevented its penetration.

Frost no doubt expands : I had a water-bottle rent to shivers, and the water totally consolidated in one night. The separated pieces would not join by near half an inch.

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I apprehend the surface which was freely exposed, was raised near two inches. Surely this must be of service to a stiff soil: for tho' it fall again, it perhaps does not unite so closely as it did before the expansion. *Perhaps*, its texture is sufficiently broken to admit the slender lacteal fibres. *Perhaps*, snow preserves the present crop, and frost prepares for the future.

FEEDING CART-HORSES. 5. The frost being gone, took up the *odd* team.

I made a calculation, whether it would be cheaper to augment their allowance of hay to a quarter of a load, or their corn to eight bushels (besides their chaff) a-team a-week.

	£.	s.	d.
6 bushels of oats, at 20 s.	-	-	0 15 0
$\frac{1}{4}$ load of hay, at 60 s.	-	-	0 15 0
			£. 1 10 0
			£. s. d.
8 bushels of oats, at 20 s.	-	-	1 0 0
$\frac{1}{4}$ trusses of hay, at 60 s.	-	-	0 6 8
			1 6 8
			The difference £. 0 3 4

in favour of corn, at the present prices of corn and hay.

It is a good custom (as in the East of Kent) to feed cart-horses, without hay, on corn and chaff alone. But the Carters attend them almost all night, which is not the custom of this country, and would be, of all others, most difficult to introduce.

On the hills of Surry, the Farmers *rack up* with straw. This eases the Carter; but, perhaps, it is not so good for the horses, as a regular supply of corn and chaff.

Around

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Around here, they give their horses as much hay as they will eat; limiting their corn only. This is an infamous custom. The Carters care not how much hay their horses waste, nor how little attendance they give them; for they calculate, that the less chaff, the more hay they will eat. The horses therefore swallow-down their corn precipitately, that the Carter may have an opportunity of indulgence, and, perhaps, have much of it given to them unmixed with chaff, that he may dispatch it the quicker: of course, a great part of it passes thro' them unmasiticated; leaving but very little animal nourishment.

I have adopted the middle way; I allow them hay enough to *ease* the Carter, but not to make him *idle*; enough for the horses to eat while he is a-sleep, but not sufficient to satisfy them without a great quantity of chaff.

At first, the Carters grumbled at the smallness of the quantity; but I am convinced, that a truss a-horse a-week is quite sufficient; and they seem to have come into the same way of thinking*.

BEANS. CLAYEY LOAM. DRILLING. FALLOWING. FALLOW-CROPS. TARE-HERBAGE.	}	6. (See 9. Dec.) The ground is still exceedingly wet and rotten; but I am learning how to use the flute, and drop the beans, to be ready for fine weather. The splayed coulter do not leave a clean groove: the soil is so very adhesive it will not part freely from them, but curls up into flakes, which the elasticity of the intervals tumbles into the grooves, leaving them rough, though sufficiently deep.
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* The Writer, afterwards, augmented it to a truss and-a-half a-horse a-week.

This

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This makes the task of sowing more difficult; instead of *casting* the beans *by handfuls in a free open flute*, they are obliged to be *dropped one-by-one between the flakes*.

Near the inter-furrows, where the soil is *sufficiently wet*, they leave flutes of three or four inches deep, with smooth glassy surfaces. I hope, by-and-bye, it will be *sufficiently dry* to work without clinging.

Clayey loam.---If I can get them to work in this soil, they will easily work in any other; for a more untoward one lies not on the face of the globe: it is neither *clay* nor *loam*.---It has the sticky, clingy quality of clay, without its firmness.---Between wet and dry 'tis impossible to cut it,---a razor will not separate it,---it clings like bird-lime to every thing that touches it.

I was in hopes that it would have passed more freely from wood than from iron. I cut a piece in the form of a boat, and put it in the place of one of the coulter:---before it had gone ten yards, it was loaded ten inches thick on each side, from head to stern.

I have not the least expectation of improving the Implement, and must put-up with the tediousness of *dropping*; for that bean-process is not worth a grain of sand which is afraid of a shower. Even *dropping* will be less expensive than *planting*; besides the convenience of hoeing them expeditiously with *four boes* fixed in the identical Implement.

Planting of beans is not the custom of this country; twenty shillings an acre would not pay the expence. If, therefore, I cannot contrive to draw the drills by horses walking in the inter-furrow, I must sow them broad-cast, or lose my bean-season, as I did last year.

Drilling.---Drilling is an expensive process, and wants much more attention and attendance than sowing broad-cast. What an excellent broad-cast season we had six weeks ago!

Fallowing.---But fallow-crops or summer-fallows are necessary; and who would not be at some trouble and expence to save a year's rent and taxes? and to gain one crop in four.

But

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But, says the summer-fallowing Farmer, ground must be plowed to free it from root-weeds and animalcules; and if a crop is gained, the soil is exhausted.

Granted.—I would not wish that it should have half-a-plowing less than the soil of those, who summer-fallow once in three or four years; and the crop itself is a source of manure.—Besides, it must be a poor crop indeed, which will not pay for an *addition* equal to double its *exhaustion* *.

Fallow-crops—Perhaps, generally, if stiff land be very foul, it cannot be *cleansed* without SUMMER-FALLOWING (A. 2. and B. 4. have had two summer-fallows, without a crop intervening). But, perhaps, the stiffest may be *kept clean* by FALLOW-CROPS.

But, perhaps, *beans* are the worst of all fallow-crops; the *common* horse-beans;—the *Mazagans* are preferable.

Potatoes are in the ground too long to be eligible.

TURNIPS and CABBAGES leave the soil at liberty the fore part of the summer, but occupy it in dog-days.

And, perhaps, those crops which can be got off early enough for the soil to receive a DOG-DAY'S-FALLOW, are the fittest for fallow-crops; for that soil must be foul indeed, which cannot be cleansed in the two hottest months in the year—July and August †.

In this point of view PEASE are the best—perhaps the only *grain-crop*—*Mazagan-beans*, if got in very early, may do.

But, perhaps, the most eligible fallow-crop is TARE-HERBAGE; especially summer-tares. The wane of March, or beginning of April is early enough to sow, and they may be eaten or verded-off, or made into hay, the latter-end of June, or beginning of July.

* This argument holds good only where *additions* can be *purchased*.

† The principal objection to a dog-day's-fallow is, that it falls amid the throng of hay-time and harvest.

Supposing

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Supposing them to come in succession between wheat and spring-corn; and supposing the wheat to be off the latter-end of August, and the ensuing crop of spring-corn to be got in the latter-end of March; the soil will be *sixteen months* totally unoccupied, during which space of time it may receive *two winter and one dog-day's fallow*.

Besides, if *tare-herbage* be tolerably profitable, it has, perhaps, another advantage over *grain-crops*: *perhaps*, it leaves the soil in heart for the succeeding *corn*.

JULY, 1777. The Writer has already given his opinion, (See the 5. Nov. 1774.) that SUMMER-FALLOWING, *if the soil be foul*, is the most *spirited* of all managements. If, however, a wheat-quondal be *tolerably clean*, a FALLOW-CROP is, perhaps, the most *profitable*; and, perhaps, TARE-HERBAGE and TURNIPS stand the first of fallow-crops.

BEANS. 16. (See the 6th.) Yesterday began to sow them in the flutes, the men covering them with their feet, as they passed along. But this is very tedious; three men did not sow and cover more than an acre.

To-day I have had six men at work; they have sowed near four acres; they did not tread them in; but, walking by the side of the drills, cast them where it was open, and dropt them where it was flaky. This expedites considerably, and, the day being fine, the harrows covered them effectually.

In flutes tolerably open, one man in practice might sow an acre a-day. There are six flutes on every half-rod land; a half-rod land a mile long is just an acre; therefore, a man that sows an acre has six miles to go. Supposing that he *works eight hours*, his task will be *exactly* three-quarters-of-a-mile an-hour.—A man in full practice would

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would do it without making his back ache ; and would, of course, be glad to sow them for 2 s. an acre.

But, besides this, there is the labour of fluting and harrowing. A team could not more than flute, cover, and open the inter-furrows of three acres ;—full half-a-crown an acre. But, perhaps, the soil is thereby benefited almost equal to the expence.

OXEN. 26. To try still farther the versatility of oxen, I keep the horses at plow, and do the *odd-jobs* with those. I find them carry-out dung, bring home hay, carry-in straw, collect fire-wood, or fetch-in turnips and cabbages with the docility of horses.

SUFFLATION. 27. (See 29. OCT. 1775.) This evening the same cow was blown again, by the same aliment, *cabbages*, and was cured by the same remedy, SALT AND WATER.

It seems fully proved, that SALT AND WATER will cure a sufflation ; but I wish to know how it operates.

I raised a fermentation by chalk and vinegar, and tried whether salt would suppress it ; but it rather increased, than diminished it. *Cayenne pepper* checked it considerably ; but I cannot draw any probable conclusion from the experiment,

SUCKLING. 28. A calf which cost a guinea at three-weeks old, (it was worth 25 s.) sold yesterday, at eight weeks and five days old, for three guineas, and therefore paid above 7s. a-week.

Perhaps, seven shillings a-week, at nine weeks old, is a greater profit than nine at twelve or thirteen weeks old.—*Perhaps*, this calf would have sucked as much milk, before it would have been thirteen weeks old—(*four weeks* older)—as it has done since it was three weeks old—

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(which is *six weeks*); and therefore ought, at that age, to have fetched five guineas,—a price which could not have been expected.

Perhaps, generally,—suckling calves after they are ten weeks old, is bad management; a remarkably thriving calf—a bad market, &c. excepted. Perhaps, sell them off as soon as they become *tolerable*. Perhaps, generally—the younger they are sold, the better for the Farmer, and the worse for the Butcher.

To endeavour to ascertain this, to-day I weighed four calves of different ages.

	Stone.	
1 of 9 $\frac{1}{7}$ weeks, weighed	20	(sickly when young)
1 of 7 $\frac{2}{7}$ weeks, weighed	17 $\frac{3}{4}$	
1 of 3 $\frac{1}{7}$ weeks, weighed	11 $\frac{3}{4}$	
1 of 3 weeks, weighed	10 $\frac{1}{4}$	

The 11 $\frac{3}{4}$ is not *to the eye* nearly so fine a calf as the 10 $\frac{1}{4}$: This looks much *larger*; but That is five days *older*.

I mean to weigh them again, a fortnight hence*.

JULY, 1777: The Writer is ashamed to say, that he did not pay proper attention to this Experiment. He continued, however, for some time to weigh the calves before they were delivered to the Butcher; but the account is so contradictory, that he dares not draw any general conclusion.

He is still, however, clearly of opinion, that to suckle calves, in general, after they are ten weeks old, is bad management: for his account in this respect is uniform; those of nine or ten having paid full as much *a-week* as those of twelve or thirteen. And although a calf of six weeks old, may suck nearly as much milk as a calf of twelve weeks old; yet the first month

* They were weighed presently by a pair of steel-yards, and a sack with a stick fixed at each end, to prevent its drawing into wrinkles.

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or five weeks, the quantity is considerably less; and this advantage of their *infancy* is doubly as valuable to nine, as it is to twelve weeks.

M A R C H.

PLOWS. 6. I am convinced that THE SWING-PLOW* IS THE ONLY PLOW OF GENERAL USE; especially for stiff land: it will plow it round, or flat; clean, or balky; wet, or dry; foul, or clean.

Therefore, a perfect Swing-plow is devoutly to be wished-for, and is every thing a stiff-land Farmer is *really* in want of. There may, indeed, be other plows fitter for *particular* purposes; but the SWING-PLOW is the POOR MAN'S PLOW—fit for *any* thing.

The common Swing-plow of this country has many imperfections.

The *beam* hangs too low.

The *coulter* stands too near the body of the plow.

The *bow* is too lank.

The *stern* is too wide at the bottom, and too narrow at the top:

The *keel* † projects behind the feet of the handles.

The *wrest* ‡ is fixed too low.

The *handles* stand too much to the right.

The *coulter* is fixed by *wedges*, and its shank is too *square*.

When plowing—(and particularly when crossing)—a foul, rough fallow, the clods and trumpery, if not *perpetually* put-off, presently reach the *beam*, and of course draw the plow out of the ground.

* A plow without wheel or foot.

† This and the two preceding terms are borrowed from Naval Architecture: the *first* represents the fore-part of the Plow—the *second*, the hind-part of the body of the Plow; the *last*, the piece of wood or iron on or to which the share is fixed. The *first* has not *here* any particular name, the *second* is called the *a—se*, and the *last* the *chip*; which is as insignificant as the other is vulgar.

‡ By the *wrest* is meant the piece of wood, or iron, which is fixed to the *keel*, a little behind the share, and to the foot of the off-side handle, on which piece the mould-board stands, and which is meant to *wrest* open and clear effectually the bottom of the plow-furrow.

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If they accumulate between the *coulter* and the brace, it has the same effect: if the Plowman has not a boy extraordinary, he must stop his team fifty-times a-day, to unburthen his plow of her incumbrances.

The mould, especially of a bird-lime soil, will not slide off a lank-bosomed—a lean-*bowed* plow, but lodges—furs-up three or four inches thick: this greatly increases the resistance, and prevents the plit from turning.

If the *stern* be too wide at bottom, it sets the plit on-edge, and hinders the turning of it; especially if it be narrow at the top: a wide-sterned plow, also, much increases the resistance, and is only fit for the stirring of fallow.

If the *handles* are fixed too much to the right, the Plowman is debarred from keeping a look-out forward: but a *neat* Plowman will have his eye now-and-then before the horses, let the consequence be what it may. He therefore twists his plow out of the upright, inclining her to the left; and this is the source of bad plowing. The plit, instead of being *square*, or long-square, is *rhombic*; and, of course, the grass and weeds, instead of being effectually buried, and a crest raised over them, are exposed on the surface, without a sufficiency of mould to cover the seed. Instead of each plit being discernible by a ridgeline of mould---by a *crest*---it shews itself by a drill of grass and weeds---a *mane*---and the seed lies exposed on the surface, without its being in the power of harrows to bury it. But this is not the whole evil: by twisting her out of the upright, the fin of the share, and the wrest of the plow, instead of being on a level with the point of the share, and the keel of the plow, are elevated, perhaps, two or three inches; and, were the plits to be removed, the surface of the sub-soil, instead of being a smooth even surface, would be found in waves.---A cross section would be serrated like the edge of a saw.

Many

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Many of the roots of grafs and weeds would be found uncut, and much of the vegetative mould unflirred.

In order to obviate this, the plow right sets down the fin, and the arm, that they may go level with the keel, tho' the coulter, the land-board, and the beam-handle, are out of the upright; and thus puts it out of the power of the Plowman, were he ever so desirous, to make good work.

The *coulter-wedges* ruin the plow-beams. I apprehend a beam would last as long again without them; besides their engrossing much of the Plowman's time and patience.

A *square* coulter is weak, and weakens the beam.

JULY, 1777. The Writer, ever since making the above Minute, has been solicitous to improve the SWING-PLOW. He has made several fruitless attempts, which would be tedious to enumerate. He has, however, at length, had better success. He will not arrogate that he has struck-out a *perfect* Swing-plow; but he apprehends, that he has improved considerably the common Swing-plow of this country. See IMPLEMENTS, in the DIGEST.

TARES. } II. Last year, N. 4. was summer-
HAZARD OF FARMING. } tares, on an old clover-ley dunded.
(See 19. SEPTEMBER, 1775.) When in bloom, they were a beautiful crop, worth for verdage 4l. or 5l. an acre. They podded well; but the dry weather, *perhaps*, prevented many of them from filling.—The wet weather set-in just as they were ready to be cut:—the heavy rains beat them flat to the ground, and the weeds soon became predominant:—they were obliged to be reaped during the rainy weather, and repeatedly turned to keep them from rotting on the ground.—The reaping and turning did not cost less than 10s. an acre; besides shedding nine-tenths of the few which matured.

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Last week they were thrashed, and lo! the *three acres* produced *eleven bushels!*

Is not this another positive evidence of the Hazard of Farming? —A crop *dunged-for*, and which, with an ordinary season would have yielded from 41. to 61. an acre, is but barely able to discharge the expence of reaping and thrashing.

BEANS.

GENERAL MANAGEMENT. } 11. Farmer — has lost twelve
or fourteen acres of beans, by the late severe weather.—They were planted in December and January.—Where the snow lay thick, they are now an inch above ground; but where the soil was exposed, they are totally gone.

Is not this a strong evidence, that the months of December and January are improper for sowing of beans in? for tho' such a winter *seldom* happens; yet it *may*, and sometimes *does* happen.

Perhaps, in future,—Keep plowing for beans in winter, whenever the weather will not suffer the teams to carry on dung; and begin to sow, as soon as the soil will harrow with some degree of comfort to man and beast.—Planting beans in a puddle may be very good husbandry: but it is a filthy piece of business. With what alacrity the work goes on now, compared to what it did in the wet weather!

Sowing beans on a soil which will not bear fine harrows kindly, is *forcing* a season—is, literally, committing a rape on the soil.

BEANS.

THE BEAN FLUTE. } 16. Finished sowing Mazagans with open
flutes and a fine season.

I have no reason to be displeas'd with my Bean-flute. Now that the soil is become pulverous, and does not adhere to the coulter, the men cast them as fast as the teams walk when plowing.

The

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The seed is buried from one to three inches deep.—Perhaps, a very good depth for beans*.

PLOWING. } 20. A striking instance of bad plowing
CRESTING-IRONS: } occurs in A. 3.

Three lands, which happened last year to be plowed after the ground had got too dry; and which, this year, happened to be plowed by a bad plow and an indifferent plowman; are impenetrable to the harrows; while the rest of the field, notwithstanding the quick transition from wet to dry, works beyond expectation. That was plowed by a *reclining*; This by an *upright* plow: This with a *cresting-iron*; That without one: That harrows like a turnpike road in a hard frost; This is a very good season.

The utility of a CRESTING-IRON † to stiff land, which turns up in whole plits, and which is in plowing for a crop, cannot easily be communicated by theory, but is glaringly obvious to practice. It buries the sod, and, by *crushing* the plits, leaves the surface pulverous to a great degree.

BUSTLING. } 21. The wet weather broke-in upon the
WORKING-CATTLE. } spring seed-time: To regain the lost time,
WORKING-HORSES. } I have worked the teams *nine* hours a-day.

We have got on vastly well till to-day (very close and warm): But I find, that even *horses* with two bushels of oats a-week each, may be over-worked: one of the teams is fairly knocked up.

* A Drawing of this IMPLEMENT will be given in the DIGEST.

† This is a hollowed plate of iron, fixed to the hind part of the mould-board. It is *here* called a *beel-plate*; but as this may be only provincial, and conveys no idea of its use, the Writer has named it a CRESTING-IRON, or simply, a CREST; for it resembles nearly the *crest* of friable mould it is intended to give. Its form and use will be described in the DIGEST.

The

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21. M A R C H, 1776.

The *oxen*, too, are obliged to give out.—*Duke*, who never flinched before, laid down in the field; but it was in a remarkably close field, and he is a remarkably free worker.

One man and a boy have sickened, and I find myself very agreeably fatigued.

From those facts, I draw these inferences :

Oxen, if worked every day, should not be out of the stable more than *eight* hours; except they have a *bait* in the field, in the middle of the day. Perhaps, a mouthful of hay, and a mouthful of water, while the Plowman eats his *lunch*, would be of great service to them.

Mongrel-horses on corn, are not superior to oxen on hay; but oxen on hay, are not equal to *cart-horses* on two bushels of oats a-week each; for the team of *light, punch cart-horses* is not the worse for its work.

Bufling may be over-acted; for I am obliged to relax when the weather, and time-of-year, ill-admit of relaxation.

DEPOSITING. 24. The wheat on *round five-'bout*-beds looks well every-where.—The *flat ten-'bouts* of H. are in some places hurt very much by the wet: more than three-fourths of the roots are totally perished;—there is not a sufficient number left for a crop; and the surface of the soil, puddled by the rains, is now baking into a glassy crust*.

Perhaps, there is no danger of *baking*, if the beds lie round. *Perhaps*, it is not the rain which *falls*, but that which *lodges* on the surface, *forming a puddle*, which is the cause of baking.

Perhaps, there is a medium to be observed. *Perhaps*, if *too sharp*, there is danger of *root-weltering*;—if *too flat*, of *baking*.

* This fact corroborates the observation under DEC. 5. 1775.

POULTRY.

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24. MARCH, 1776.

POULTRY. 24. The loudest clamour against the larger, especially against the modern Farmer is, that he sends no petty produce—no eggs nor poultry to market.

Last year, I was obnoxious to the cry :—This year, I have half-a-dozen breeding geese—half-a-score breeding ducks—and half-a-hundred breeding hens.

I have converted a court-yard into a breeding-cage. I have planted in it shrubs to attract the flugs, and insects for the ducklings, laid grass-plots for the geese, and raised gravel-walks for the fowls, with a smooth gravelled area for the breeding-coops.

They will, at least, form a lively, innocent picture under the window ; and, perhaps, in these days of luxury, and in this region of ineconomy, the profit may not be less than the pleasure.

WHEAT. } 24. The utility of much harrowing at seed-
SEED-PROCESS. } time, is, to present appearance, glaringly obvious in M. and N.

Two lands in M. 1. were left to be sown over-plit ; the rest of the slip being sown under. But they were forgot, till they became quite stale—a fortnight or three weeks. To raise fresh mould, I harrowed and fluted them with the nine-inch barley-flute ; and in harrowing these, part of the two adjoining lands were harrowed.

The two lands fluted are the best, and apparently the *forwardest* wheat in the piece ;—the two half-lands harrowed, obviously the next.—That which was sown under-plit, and left unharrowed, is over-run with chick-weed, and has not nearly the number of plants of the harrowed part.

One side of N. 1. was accidentally sown too thin— $1\frac{1}{4}$ bushel an acre.—Part of this was covered with the fine harrows only,—part was both roughed and fined. The last has double the number of plants.

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THE

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26. M A R C H, 1776.

THE PEA-PROCESS.

NARROW-CAST FLUTES.

THE FUTURE PEA-PROCESS.

BROAD-CAST FLUTES.

THE DRILL.

26. Finished sowing pease.

Put them in thus: The soil, a

wheat-quondal, trenched with *Duck-*

et's plow, part of it during, and part

after the rain, in wide flat beds,

for the conveniency of drilling *across the lands*. After running the round rough-harrows thro' each inter-furrow, cross-harrowed it with the heavy ox-harrows. The part plowed dry, worked very well; but the continuance of wet weather, and the width and flatness of the lands, had run the other part to beds of mortar; as sad as liver, and tough as glue.—Run it over with a light roll.

Fluted it thus: Fixed eight splayed coulters in the head of the straight horse-rake; the two middle ones twenty, the rest twelve inches asunder. With this, and four horses, went directly a-cross the lands, the Flutter riding on the handle to give weight, until the flutes were deep enough and straight enough; some requiring three, some four times in a place. These eight completed; set-out a-fresh, keeping the outside coulter in the outside drill of the first setting-out; and thus laid-out the field into cross-beds, of seven drills each, the beds being divided by intervals of twenty inches wide, and the drills by those of twelve.

In these flutes sowed the seed *narrow-cast*; covering part with the hand-hoe, part with the harrow, and part with the same coulters which formed the drills, fixed in such situations as to pass *between* the flutes, removing the mould out of the *smaller intervals* on to the seed, and of course transferring the ridgelits to the rows, and the flutes to the intervals. Thro' the *intervals of the beds* run a double-plow, to mould-up the out-side rows.

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I mean to hoe them in the like manner.—I mean to put six hoes in the places of the six coulthers, which last I mean to replace, to earth-them-up with.

This is a very specious process. It pleased me exceedingly, till I made a calculation of the expence of putting-in the seed; it stands thus :

	£.	s.	d.
5½ acres took			
7 teams to plow it with the trench-plow, at 8s.	2	16	0
1 man to water-furrow	0	1	8
2½ teams to flute it	1	0	0
2½ men to lead the hind-moft horse	0	4	2
10 men to sow (in foot drills)	0	16	8
2 teams to harrow and roll before fluting	0	16	0
0¼ team to harrow-in part	0	2	0
0¼ team to mould-up part	0	2	0
0½ man to mould part with the hand-hoe	0	0	10
0¼ team to open the intervals	0	2	0
	£.	6	1 4

22 s. an acre, for labour only !

But most of it is *ordinary* labour; the only *extraordinary* is the fluting and sowing; and to have sown them at random, would have taken half-a-man: therefore, say, 2½ teams and twelve men, at 8s. and 1s. 8d. is £. 2 os. od. or 7s. 6d. an acre. This is a great deal too much; besides, 8s. is no consideration for a team in this month.

However, I will not condemn the process, until I have gone through it. Perhaps, the convenience of hoeing may exceed my expectations. But, at present, I am almost determined never to take off *a team* to sow pease again. If I cannot sow them with *one horse*, I will do it totally by hand, or sow them at random; except I can raise the soil into *broad-cast flutes*.

C c 2

Perhaps,

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Perhaps, in future, — *on wet land*, plow for pease in five-bout-beds, during winter, when the teams cannot work at dung-cart.---Cross-furrow, and let the soil lie in rough plits till seed-time.—Harrow fine, and raise it into *broad-cast flutes*, with straight-fronted splayed coulters, the horses walking in the inter-furrows.—Cover, hoe, and earth-up, with the *same coulters*; going still deeper every earth-up hoeing.

If this can be practised, nothing can be more simple; fluting will be the principal expence; and by drawing in the inter-furrows, the shaft-horse will not want to be led: This will save one man. By being laid-up in half-rod-ridges, and left in rough plit, it will be prevented from running together by the wet; and will always be ready to work, as soon as dry weather sets-in.

But *on dry land*, which may be trodden without injury, plow two five-bout lands into one wide bed, and *drill across* with the drill I made last year; with this alteration: instead of *three*, drill *two* or *four* rows together. The horse will thus tread an interval, not a row.

But four rows will be too much for one horse, and an Implement drawing four rows will be too heavy for one man; therefore two, perhaps, is the most eligible number.

Last year, one man, one boy, and one horse drilled five acres a-day—two-thirds of five is about three-and-a-quarter;—but for a fallow crop, perhaps, eighteen is a more eligible distance than fifteen inches; and one man, one boy, and one horse drilling two rows at a time, at eighteen inches asunder, will drill four acres a-day, at least.—A man 1s. 8 d.—a boy, 10 d.—a horse, 1s. 3 d.—Together, 3 s. 9 d.—Not 1s. an acre!

I see the merit of this drill much clearer now, than I did last year.

The evenness with which it scatters the seeds, compared with sowing them by hand; the exact straightness with which it lays them

in,

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in, and the depth it deposits them; give it a very great preference to the process of first drawing the drills, and afterwards sowing by hand. Besides, the clods, which the elasticity of the intervals and their own weight tumble into the drills, serve to cover the seed *already deposited*, instead of filling them up, and preventing the seed *yet to be sown* from reaching the bottom.

JULY, 1777. But why was a process, whose merits had been fully proved, given up for one whose success was wholly uncertain? The Writer was pleased with the Bean-flute, and was willing to try to generalize it. He was led away, too, by the plausibility of hoeing with six or eight hoes, fixed in the identical Implement, which drew the flutes. His men were already disciplined by putting-in the beans; and the extraordinary expense of Implement was nothing. He *might* have hit-off something still more eligible and without EXPERIMENT he is, in Agriculture, professedly a SKEPTIC. By the above-recited experience he is *convinced*, that *drilling* is preferable to sowing *narrow-cast*: without it, he should still have *doubted*.

GENERAL MANAGEMENT. 26. (See the preceding Minute.) I intended to have sown another field of four acres with pease; but the season is far-spent,—and pease fit for seed very dear.—There are a few lands in the middle of the field much too foul to crop—I have tares and barley which are unsaleable—and I want the teams to plow for oats. Therefore, sowed at random the cleaner part with $1\frac{1}{2}$ bushel of tares, and one bushel of barley an acre, and left the foul lands to lie fallow. I mean to give these two or three plowings while the herbage is growing; and after this is made into hay, to give the whole a dog-

4

days

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days fallow for barley and clover in the spring; or perhaps in autumn.

This is a sketch of my general plan. I mean, at all events, to get the land clean, and in good tilth, for spring-corn and clover.

If very foul, summer-fallow it.

If in heart, and only a little foul, a crop of pulse, and a dog-days fallow.

If clean, and in heart, a crop of pulse; and a crop of *turnips*, if *light*; or *rape*, if *stiff*.

But whether the soil be foul or clean, if it be much exhausted, give it a thorough *deep* summer-fallow. It must be poor, indeed, if this will not give a tolerable crop of spring-corn, and a sufficiency of clover-plants*.

A P R I L.

SOWING BROADCAST. } 4. I apprehend that much seed is lost
BROADCAST FLUTES. } by sowing it over very rough plits.

In dry weather, when whole ground breaks up in clods, especially if plowed in wide plits, much of the seed reaches the sub-soil before it finds a resting-place. For although it may not fall from the seed-man's hand into the unfortunate abyss, the harrow, by shaking the clod on which it fell, hurries it into utter darkness: the chasm is closed, and the seed, left almost destitute of air and heat, is unable, perhaps, to struggle thro' seven or eight inches of pulverous mould, much less capable of piercing thro' a large clod of that thickness.

Experimentally, harrowed every second land of E. 2. *before sowing*; and left the intervening lands in rough plits.

* Stiff land, nevertheless, ought to have a sprinkling of dung on *one* deep plowing.

In

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In this point of view, BROADCAST-FLUTES are amiable. Perhaps one-third, perhaps one-half of the seed might be saved by them.

JULY, 1777. The above experiment decided *against* the theory on which it was made. It is not, however, *generally* decisive: the superiority of those lands which were sown over the rough plot, was wholly owing to the *uncommon* drought of the Spring of 1776.

WORKING-HORSES. } 4. Two cart-horses have been kept ex-
WORKING-CATTLE. } perimentally on *bay*, alone, during four or
five weeks. They have been tied up in the same shed with the oxen,
fed with the same hay, and treated in the very same manner. They
have, like them, worked every day; and though they kept losing their
flesh and spirits, they have stood their work pretty well till to-day, when
one of them was so completely tired, he could scarcely get home.

CART-HORSE KEEP. }
DAMAGED BARLEY. } 10. The week before last, began to feed
CARTERS. } the cart-horses with *discoloured barley*.
SELF-ATTENTION. } It bears no price at market; it would
BINDING HAY. } not fetch more than good oats;—I therefore
of eight bushels of oats a-team a-week, I have allowed but six
bushels of barley; and I think the horses have improved upon it.—
It is therefore a neat saving of 25 per cent.

Carters—are the greatest thieves in the world. While they had their hay given to them bound, they kept up to a truss a-horse a-week; but, lately, we have *shook-up* some of it for the seed, and their regular allowance has not been *attended* to.—I find that eight horses have destroyed in three weeks seventy truss of hay.

Seventy

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	£. s. d.
Seventy trufs of hay, at 3l. 10s. (4l. a-load, is the market price of prime hay)	6 16 0
Six quarters of oats, at 20s. - - - - -	6 0 0
	£. 12 16 0

for three weeks : or 2l. 2s. 6d. a-team a-week ; besides chaff.

This extravagance of Carters must fall, more or less, to the share of every Farmer, who does not *attend* to the MINUTIÆ OF FARMING* ; and, indeed, to every Farmer who does not *allowancebis bor ses*, and *bind bis bay*.

I have this year bound every blade, whether for sale or for consumption. But why? Why throw away twenty-pence a-load on that which is consumed at home ?

Because—I kept an account, at hay-time, of the field-loads which were put into each stack, and I wish to know their *yield* ; that, *in future*, I may be able to form a judgment, at hay-time, of how many *sale*-loads each field may produce, and of how many each stack may contain. This, I recollect, was my first motive for binding.

Because—by this precaution, scarcely a bent is wasted—no litter made of it in the stack-yard, farm-yard, &c. but every mouthful is delivered to the respective feeders. Perhaps, this alone will repay the expence.

Because—I can allowance each species of stock : I can allow each cart-horse, a trufs a-week : the ox-team, half-a-load a-week ; the milch-cows, one, two, or three trusses a-day, if they are wanted, &c. &c. And I find that by thus *stinting the quantity*, the men become more *careful* ; they look upon it as *something*, and know, that if they lavish to-day, they will want to-morrow.—Thus the servant

* In this point of view, CATTLE have a preference to *bor ses* ; they can but eat their fill of hay, and that they ought to do.

imper-

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imperceptibly learns frugality, while his cattle have their food regularly. Taking a *lock* from his *allowance*, is very different from fetching an *armful* from an *unlimited* quantity of loose hay; for, if he drop a handful by the way, he will not say, "Never mind it, there is more in the hay-loft;" but he will return and pick it up, with "Poor things, you've little enough of it! there is no need of waste, God knows."—Nor will he give them too much by half at once, and throw what they have left, and blown upon, under them for litter; but he will give them a little at a-time, and see that they eat it clean. There is a sympathy between the human and the brute creation, arising from acquaintance, which is more easily observed than communicated.—There are Carters who would sooner starve themselves than their horses; and among stock-feeders, in general, it is obvious to common observation.

Because—I have the satisfaction of knowing how every blade is expended;—how much each sort of hay-eating stock costs during the winter; and of course, my hay and stock accounts (with respect to hay) are reduced to certainty. These are conveniencies and utilities, which I am persuaded will confirm me in the practice of binding hay for Farm-yard consumption.

About one-third of the Binder's time is taken up in making bands. Perhaps, use *bempen*-ropes instead of *hay*-bands. Perhaps, with those, he would bind it for thirteen or fourteen-pence a-load, and they would not be so dangerous as twisted bands.

ROLLERS. } II. The PLAIN ROLLER does not seem to have that
 ROLLING. } attention paid to it which is due to its merit. It is seldom used on a *fallow*, except to burst *large* clods, and seldom used *after sowing*, except to *smooth* the surface for the sith.

Had it not been used in E. this year, after sowing, *between the harrowings*, the harrows would not have brought the soil to any

D d

tolerable

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tolerable degree of tilth ; whereas by alternately rolling and harrowing, it is as fine as a garden.

Perhaps, rolling when damp is not prejudicial, provided the soil be *afterwards* harrowed. I took care that the surface was *perfectly dry*, before the *last* rolling ; but I took care to lose no time this dry weather, between the sowing and the *first* rolling, that as little of the moisture as possible might escape.—Rolling not only bursts *some* of the clods, but *fixes* others, and prevents them from rolling under the harrow.

Applied to *fallows*, the PLAIN ROLLER is the grand arcanum of Agriculture, which makes light land stiff, and stiff land light* : one *effectual crush* by a *plain roller*, is worth a dozen *partial indentures* by a *spiky* one ; but where the clods *bear* a *heavy* plain one, the SPIKY ROLLER is worth its weight in gold.

POTATOES.

FALLOW-CROPS.

COMPOST-FARMS.

II. Half this week has been spent on preparing a patch for potatoes ; when the teams ought to have been getting-in barley.

This makes potatoes an ineligible crop on a corn-farm, and totally unfit to introduce into the round of fallow-crops, spring-corn, clover, wheat ; for every thing which interferes with spring-corn-and-clover seed-time,—every thing which requires *team-labour* in March and April, is a disagreeable intruder.

In this light, TURNIPS and CABBAGES appear to great advantage : they are got-in in the most vacant part of the year : they neither interfere with seed-time nor harvest.

Perhaps, *rape* and *buck-wheat* come next ; *beans* and *pease* intrude on the spring seed-time ; *winter-tares* on wheat seed-time ; and *summer-tares* most intolerably on the spring-corn and clover.

But what fallow-crop is to be adopted by the wet land Farmer, who cannot with any propriety keep a flock of sheep ?

* The SURFACE is still more efficacious.

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If he cannot *fold*, he must *dung*; and, to such a Farmer, the DUNG-CART becomes a principal branch of labour.---The summer's vacation is short enough to collect the ingredients, and the winter's frosts few enough to carry them on.

Therefore, the COMPOST-FARMER ought to have strength enough to put in half his fallow-crop in autumn, and half in spring, without losing his wheat, or his spring-corn seed-time.

PLANTING POTATOES. 12. Yesterday began planting.

I was dubious about how to put them in; whether to plant them in trenches, and cover the plants with dung, by hand; or to plow-in the dung, and dibble-in the plants; or to plow-in the dung, and harrow, roll, and draw flutes; or to plow-in the dung, and plant them in every other plow-furrow, as the ground is plowed. The last requiring the least labour, I chose it.

The soil had two plowings, was harrowed, rolled, the trumpery raked out, and afterward *surfaced* as level as a table. On this smooth surface spread a thick coat of very long dung, and buried it in flat, rod-wide beds, scattering the potatoes in every second plow-furrow, about eight inches apart in the rows.

Being busy elsewhere in the morning, I did not self-attend to the planting of the potatoes. Two or three beds were finished before I observed that the coulter gathered up the dung; sometimes choking the plow, and frequently leaving large huffocks bulging out above the clods. Set a boy to *put-off*; and bid him, when plowing for the potatoes, to draw the dung collected by the coulter towards him, on to unplowed land; but, when *covering* them, to push it into the furrow: thus the plants got the *best half* of the dung.

But this did not please me; it only made me anxious to give the plants the *whole* of the dung: and a few minutes attention

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led me to an expedient, which at once gave them the whole of it, and left the unstirred surface perfectly free for the plow.

With a common hay-rake, I found that I could, with great ease, push two plit-widths of dung on to the potatoes, as fast as two men could plant them; who planted them as fast as one team could plow for, and cover the plants.

Thus, every handful of the dung was buried, and buried immediately on the potatoes. The plants were prevented from being misplaced, crushed, or picked-up by the claws of the oxen; and the dung effectually covered by the oxen's walking upon it.

This method answers every purpose of the more tedious way of first drawing trenches—next, carrying the dung on in baskets—and then having the trenches to fill-in.

Had not the soil been *surfaced* (*rolling* will answer nearly the same purpose), the operation would not have been so easy.—The dung, it is true, might be *dragged* into the furrow off a *rough* surface; but many clods would be pulled in with it, and the man must work on the plowed ground. *Pushing* it in, off a *smooth* surface, is merely an amusement.

I am perfectly pleased with this potatoe-process: the expence of labour is very little more than that of a broad-cast crop: three men can plant and cover as much as a team can plow.

ROUND HARROWS. 12. If I have any merit in invention, here it lies. That Farmer must be void of sensibility, who could not have shed tears of satisfaction to see the *fine rounds* cover the barley to-day in N. 6*. Let the lands be laid-up ever so awkwardly, a 'bout in a place makes them as round as barrels, and scarcely leaves a grain of seed uncovered.

* Pray, Reader, excuse those paternal transports.

OXEN.

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13. APRIL, 1776.

OXEN. WHIP-REINS. SEMICULTURE.	}	13. Yesterday began to land-up N. 6. for barley, with <i>four oxen single</i> , and a <i>team-plow</i> . They did not make so neat work as I wished-for. Put <i>two</i> of them to a <i>Whip-rein plow, double</i> ; but continued to drive them with the whale-bone whip. They carried off their work more chearfully, and much neater.
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Last night exercised them in the Yard with Whip-reins; and to-day they have landed-up a full acre into five-bout beds, *without a driver*.

I had no idea of their mouths' being so tender as they are; I expected, that it would have been necessary to guide them by their *rings* (this indeed was an idea I conceived before I ever thought of a ring to tame them); but the *bit* is quite sufficient. I am confident, without partiality, that we have not two horses so handy with Whip-reins as the two oxen which worked to-day: and what is remarkable, they *answer* the Whip-rein better than the whale-bone whip.

To employ the boy (the driver), set him to hand-rake-in the clover-feed, fown immediately after the barley had been covered by a 'bout with the fine round harrows. There were a few straggling root-weeds lay loose on the surface; so that while the clover-feed is effectually covered, without being *buried*, the soil is discombered.

HARROWING-IN WHEAT. 16. (See 24. MARCH). But what is very remarkable, the *worm* has taken the part *lightly* harrowed, but spared that which had one time with the *rough* harrows. This is, at present (tho' not totally free from the worm), a promising crop: That so bad, that I mean to raise the soil into broad-cast flutes, and sow it with barley.

How this difference could be effected by the harrow, I cannot conceive; but what makes it probable that the harrow had some influence,

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fluence, the distinction is obvious to an inch. The horses drawing in the inter-furrow, one side of a land was roughed and fined, the other side run slightly over with the fine harrows only. That is a crop; This not half-a-one.

Perhaps, the *rough* harrows destroyed some of the worms, either matured or in embryo; or, perhaps, by letting down the seed, the roots lie beneath the sphere of their depredation.

I do not see what useful lesson I can draw from *this* Observation; because I am *already* resolved to spare no pains of harrowing, whether for autumn or for spring-crops.

THE WEATHER. } 16. (See 2. FEBRUARY.) The
THE SPRING SEED-PROCESS. } latter end of February and the beginning of March was incessantly rainy;---the teams could not look out.---From the 6th of March until yesterday afternoon, we have scarcely had a shower! One of the largest Farmers in the parish has not, or had not, a few days ago, sown a handful of spring-corn! His pease lay a fortnight in the field in sack, and were obliged to be carried home at last. The stiff-land Farmers, in general, have not yet sown an oat.

They plowed before and during the wet weather; and, the change being rapid, the *surface* became perfect glass, while, *underneath*, the soil was mere puddle: Before a horse could step upon the land, its immediate surface was as hard as horn.

Very luckily, we kept stirring the fallows in the wet weather, and did not begin to plow for oats until the day before it broke. We have ever since kept sowing on the fresh plit; generally harrowing in the afternoon what was plowed in the morning; and, except about one acre, we have got in the beans, pease, oats, tares, and part of the barley exceedingly well.

Perhaps,

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16. APRIL, 1776.

Perhaps, had the ground, which was plowed wet, been laid-up in five-bout lands, and thoroughly cross-furrowed *, it might, by catching the critical minute, have been got fine.

Perhaps, the Farmers had a motive for not sowing. Perhaps, they waited for the water's draining-off, that they might cross-harrow; and afterwards waited for more rain, that the corn might not come up in two crops; not being aware that there was moisture sufficient *below* the surface to throw-out the crop, especially if it had been *retained* there by fine-harrowing, and a timely rolling.

SURFACE-DRAINS. 18. (See 1. JANUARY.) It is necessary that the plits thrown-out should now be got rid-of, that the surface may not be cumbered, nor the sward retarded. To plow them back again, would incur an annual trouble, and an annual expence.--To cart them off would ill-suit this month.---Chopping them to pieces and piling them in heaps to rot, is a very tedious job; and spreading the pieces, before they are digested, is but a slovenly one.

The furrows were made when the ground was very wet; the sward of the plit, of course, united closely with the sod upon which it was turned; and the severity of the winter rendered the mould exceedingly pulverous.

With a *sharp* hoe, I pull-back the mould on to the adjoining grass; shaving it off close to the roots of the inverted sward---within an inch, or an inch and-a-half of the level of the field. To renew the sward, I sprinkle a few hay-seeds along the brink of the drain, and with a garden-rake rake them in; at the same time spreading the mould, to prevent its injuring the adjoining grass, to which it by this means becomes a dressing.

* A want of cross-furrowing was, I believe, one cause of their losing their seed-time: I saw the water stand over the ridges, at the *bottoms* of several fields, while their *tops* were as hard as a pavement.

The

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18. A P R I L, 1776.

The expence is trifling: one man, to-day, had *boed* upwards of one hundred rods before three o'clock. The *sowing* and *raking* do not take up half the time. The whole operation does not cost a farthing a-rod; yet the above-mentioned one hundred rods lay a very flat six-acre field tolerably dry.

A team which plows an acre into half-rod five-bout-lands, makes a furrow of 3200 rods, in length; which at 8s. a-team, is 33 rods for a penny, or three-pence for 100 rods:—therefore, the whole expence of drawing, shaving, feeds, sowing and raking, will not amount to six-pence an acre.

BEANS. } 21. Who would muddle thro' a bean-sea-
THE SEED-PROCESS. } son in wet weather? Those planted the 16.
March---one month ago---are already as *forward* (to present appear-
ance) as those put in the 15. Feb.---two months ago.---These are thin
and puny: Those as thick as they can stand, and beautifully vigo-
rous. Those were *forced* into beds of bird-lime, which the succeed-
ing drought has baked to glue: These *lawfully* bedded in a kind,
pulverous soil, and have ever since enjoyed fine weather; and, which
still more confirms the impropriety of ravishing a season, the lands
left untouched in rough plit till fine weather came, though sown
the latest, are now (to appearance) the forwardest.

In future,---let the soil lie in rough plit, until the beginning of
March; or until there be a fair probability of putting the seed in
seasonably.

HAND-RAKING. } 21. The drought setting-in so rapidly, we had
SEMICULTURE. } not time to sow the hay-feeds, when the oats were
sown in A.---about a-month ago. I have ever since been waiting for
rain, and was glad to embrace the shower of last Tuesday.

To

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21. APRIL, 1776.

To get some *fresh* mould for the seeds to *drop upon*, I harrowed it with the fine harrows, once in a place, *before* sowing. The harrows pulled-up, and shifted many of the clods, rolling them on to the young oat-plants.

To disburthen the oats, get-rid-of the clods; and to cover the hay-seeds effectually, opened the inter-furrows, and hand-raked the clods into trenches made by the double-plow; at the same time levelling the surface, and covering the seeds. But finding this rather tedious, although a good job, I raked every second land, only; leaving one rough, and one smooth; except a rougher part, which was wholly raked.

About six acres were raked (the whole being $11\frac{1}{2}$ acres); and they cost eight men, or about 2 s. 3 d: an acre.

The crop of oats, and succeeding grass; will shew whether the labour be well or ill-bestowed. The hay-seeds of the unraked lands will be covered only by the roll; to have re-harrowed would have endangered the oats.

JULY, 1777. The crop of oats received no apparent benefit by the raking; but its use to the grasses is obvious: the plants are more numerous, and the surface more even. This year, the Writer hand-raked-in every ounce of grass-seeds, whether they were sown for *annual* or for *perennial* leys.

ROLLING BEANS. } 23. Perhaps, rolling the soil before the
 ROLLING PEASE. } beans come-up is dangerous to the crop. If it
 be left unrolled, the clods become troublesome to the hoe, and,
 by rolling on to the tender plants, are hurtful.

I was afraid that the roller would have injured the heads of the plants; and therefore only run it twice across the field, experimentally.—After remaining a day or two, I could not perceive the least

E c

harm

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23. A P R I L, 1776.

Harm from the operation; but it was obviously a good preparative to hoeing: I therefore rolled the whole field. They had just opened into broad leaf, which lay flat on the ground, and could not possibly receive any injury from the roller.

To try the degree of torture which infant beans can bear, I marked out three or four yards of one of the drills, indiscriminately. I first rubbed the plants between the fingers, till the leaves were perfectly bruised, and as black as ink;---I then trampled them under foot, rubbing them hard with the sole of my shoe.

This was last Tuesday,---just a-week ago. At present, I cannot perceive that they have received the least *real* injury. The *leaves*, it is true, look ragged, as if eaten by the slug, or fly; but the *stems* are as high and as healthy as those of the neighbouring plants.

Therefore, beans, when their broad leaves lie flat on the ground, may be harrowed and rolled with safety.

To prepare the *pease*, too, for hoeing, I rolled them as they opened into broad leaf, and cannot perceive any evil attendant.

RYE. 26. Some rye sown among tares, the 22d. August, is now (26. April) coming into ear. A few acres of such rye would, in this critical month, be of infinite service to cows and working-cattle, besides being an acceptable relief to the hay and grafs;---and I should suppose, that if it stand for *feed*, it will be *ripe* in June.

Perhaps, in future, substitute rye in the room of spring-corn. *Perhaps*, sow such fallows, or fallow-crop quondals, as are clean by the middle of August, with rye and clover.

Perhaps, if the rye be *verdaged* the latter end of April, the clover will be forward enough for *two* crops.---If cut *ripe* the latter end of June, *perhaps*, there will be time enough for *one*. The *fodder*, in the first case, will be very valuable, as will the *straw*, in the other.

Perhaps,

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26. A P R I L, 1776.

Perhaps, feed the cart-horses, hogs, &c. with the *grain*; or sell it for feed, or to the tanners.

But this is supposing the soil in extraordinary heart. If it is not, however, the clover will, at worst, give some *pasturage* the first year, and be stronger to stand the winter, and readier to start the next spring, than that raised among spring-corn:

PEASE. 27. (See 26. MARCH.) Those *moulded-up*, whether with the hand-hoe, or the coulter, are, at present, obviously a more promising crop, than those covered *flat* with the harrows. The plants are double in number, and look more healthy; much of the seed harrowed-in, was not buried deep enough to escape the influence of the drought, but lies parched near the surface.

Had showery weather succeeded the planting, this difference, perhaps, would not have happened: however, *in future*, ridge them up, and equally guard against an over-wet or an over-dry season.

PEA-PROCESS.

THE DOUBLE HAND-HOE. } 30. (See 26. MARCH.) It would be ridiculous to waste horses, and be at the expence of six new hoes, while the DOUBLE-HOE does the business of flat-hoeing so completely. A double eight-inch drag-hoe takes two *row-intervals*; and, at four times, hits exactly the whole bed of seven rows, and half of the two *bed-intervals*. By taking two intervals at once,---which it does to a great nicety,---a man, in practice, may hoe upwards of an acre a-day.

This is one of those petty, simple, cheap Implements, which the more they are used, the more obvious their merit appears.---The whole cost of wood and iron-work is but three or four shillings, and with a trifling expence of laying the blades, it will last a man's lifetime.

But it is fitter for a *light* pea-soil, than a *stiff* bean-soil.

E c 2.

BEAN-

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2. M A Y, 1776.

BEAN-PROCESS. } 2. (See 6. FEB.) But this is false theory,
 THE SHAFT-HOES. } which cannot be practised; it is scarcely possible to lay the lands *equally* round; and the *smallest* inequality prevents one or other of the *four hoes* from acting.

I first made the shares in the form of what is vulgarly called a *beart*, with coulter six inches long; but even *two* of them, one on each side of the inter-furrow, were too many to guide: if they are not *set* to an equal depth, to a hair's breadth, one of them will work down to the sub-soil, while the other will not penetrate the surface; and even when *set* with the greatest nicety, it is difficult, in this form, to prevent their cutting-up the beans. Besides, it is very laborious to keep them at a mean depth;---they are *in* or *out*, in the twinkling of an eye. Therefore cut-off their points, and, instead of *screwing* the shares to the bottom of the coulter, *keyed* them together, letting the points of the coulters hang two or three inches below the shares, to prevent their *sheering* from side-to-side; with *banger-fronts*, to counteract the downward tendency of the shares, and to prevent the trumpery from hanging to the points of the coulter, beneath the shares.

The Smith did not *happen* to *set* them *true*; and having not patience to wait for an alteration,---the beans being in want of hoeing,--- I threw them aside, and hoed them with a common horse-hoe, the horse drawing between the rows.

But common horse-hoeing requires wide intervals; wide intervals lessen the crop: therefore, a *range* of hoes drawn by a horse walking in the *inter-furrow*, would have many advantages over a *single* one drawn by the horse walking in the *intervals*; and I have not yet given-up the SHAFT-HOES.

JULY, 1777. The Writer did not this year sow any beans in rows, and therefore has not had an opportunity of farther
trial;

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2. M A Y, 1776.

trial; he means, nevertheless, to speak of shaft-hoes in the
DIGEST.

SPRING-FEED. }
RYE-GRASS. } 5. Stock hangs very heavy on a Farmer's hands,
LUCERNE. } in the month of April and the beginning of May ;
RYE. } especially in such a long, dry, cold, backward
TARES. } spring as this is. Farm-yard-stock starves on
straw, and there is no grafs to keep them alive;
and to feed even cows on *bay* at three pound ten shillings a-load, is
fowing money broad-cast.

Rye-grafs for this purpose is very valuable. The borders of
M. 6. would form at present a very good swath of verdage: but *rye-*
grafs is a filthy weed, unfit to be introduced into arable land.

Lucerne seems to be the *first* and best of all spring-verdages.
Mr. — began to cut his the beginning of April. Its benefit to his
horses was striking; it carried off every appearance of foulness, by
profuse staling: from being as rough as bears, they became as sleek
as moles.

What a treasure a few acres would be to the milch-cows! What a
saving of hay, and how refreshing to the oxen and cart-horses, in
spring feed-time! There is some difficulty in raising it, compared
with the raising of clover or *rye-grafs*; but, perhaps, as an occu-
pier of *creeks and corners*, *Lucerne* is an object worth attending to.

Rye, perhaps, comes next, as a spring-verdage. Mr. — had a
field two feet high a fortnight ago.

Tares are quite out of the question. The part of G. 1. sown the
middle of August, will not be fit to cut a fortnight hence.

PLANTING;

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7. M A Y, 1776.

PLANTING POTATOES. } 7. (See 12. APRIL.) Finished plant-
CUTTING THE PLANTS. } ing; fully satisfied with the adopted
SERVANTS. } process: I mean with respect to the
mode of dunging; but whether the plants ought to be placed *under*
or *upon* the dung, I am not yet determined.

I began to plant them *under*, thinking that the dung would naturally *sink*; not recollecting that the deeper they are planted, the longer they will be in coming-up, nor that roots naturally strike *downward*. I hope I have made experiments sufficient for a decision.

The man who cut the plants did not make the most of them; he left many with five, six, or seven *eyes* in them; when, perhaps, one, two, or three are equally as good.

To decide this point: With a common ivory apple-scoop, about half-an-inch diameter, I drew out the *eyes* of the large potatoes, in the manner which Cheesemongers *try* their cheeses; drawing out a *plug* of the pulp, of a cylindrical form, about three-quarters of an inch long, with an eye in the centre of its end.

After extracting ten or a-dozen of these plants out of a root of a *quarter of a pound* in weight, the diminution is barely apparent; at least *three ounces* remain. If taken from a *large* potatoe, the loss of weight is still proportionably less; and the *remaining pulp* is of equal value to the hogs, as the same weight of *entire potatoes*.

If one eye, with two drachms of pulp, be as prolific as seven eyes with two ounces, what a saving! We have buried from ten to twelve hundred-weight an acre: as many as would have planted four or five acres, besides leaving eight or ten hundred-weight of hog-food.

Be this as it may, to cut *large* potatoes into plants, is most infamous management; and yet an *Essex-ised Irishman*, who has not an adequate idea but that of a potatoe, and whose whole life of fifty or sixty years has been spent in their culture, went to market, and
bought

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7. M A Y, 1776.

bought *prime ware*, of a pound weight each, and cut them into plants, with five or six eyes in them. I *depended* on *bis* skill, and did not *self*-attend either the buying or the cutting.

It is downright dilatoriness, even in trifles, to put confidence in servants.

THE WEATHER. 9. (See 16. APRIL.) But that shower by no means softened the large clods, and we have scarcely had a drop of rain since, until last Sunday. On Sunday evening, we had a heavy shower;---on Tuesday night, a good deal more; and last night a very fine rain.

Those stiff-land Farmers who plowed in the rain, are this instant, the 9th of May, sowing their *oats*. And even after last night's steeping rain, they are glad to borrow a spiky roller to break the large clods.

I should be guilty of ingratitude, if I did not thank the Elements very heartily for their attention to me this spring. They toasted my barley-fallows down to a calx; and the moment I had done sowing, sent lovely showers to vivify the seed, which, without them, would have lain lifeless to eternity.

SPIKY ROLLER. 9. Its merit is conspicuous in N. 4. From a mass of huge clods, it reduced it to a tolerable season:---to such a tilth, as all the ~~harrows~~ harrows in the universe could not have accomplished.

Before the first spiky rolling, it was almost impossible to ride over it. With much difficulty, however, it was,

Spiky-rolled,

Sown,

Cross-harrowed,

Ox-harrowed,

Surfaced,

Spiky-rolled,

Plowed for the seed,

Plain-rolled,

I

Ox-

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9, M A Y, 1776,

Ox-harrowed,
Spiky-rolled,
Plain-rolled,

Sown with hay-seeds,
Swept with the horse-broom,
Plain-rolled.

It has not wanted for labour, but is a very good job. The lands lie as round and as smooth as if they had been polished in a lathe. It was landed-up in winter exceedingly foul: it has now the appearance of mould baked in an oven; without a green speck, or the smallest trace of vegetable life to be seen.

This spring, I set the spikes in a new cylinder. The old one was cleft on every side, from end to end: not from the age, nor the rottenness of the roller; but from the make of the spikes, and the manner of putting them in. The end of every spike which went into the wood was a *wedge*, and they were placed in the identical manner in which a wood-cleaver sets his wedges to rend a block---*in rows*.

As an improvement, I *shouldered* the spikes, thus: From the frustums of square pyramids, I reduced them to those of octogonal ones; leaving a small triangular *shoulder* at each angle of the square stump (the acting end of the spike); and set them in *zig-zag*.

BEANS. 10. Finished the first hoeing.---The expence stands thus:

10½ acres cost for	£. s. d.
Plowing, or horse-hoeing the furrow-intervals	0 12 0
Horse-hoeing the four equal intervals	0 15 4
Hand-hoeing the ridge-intervals	0 10 0
	£. 1 17 4

or 3 s. 6d½. an acre.

But one team was employed in plowing a 'bout in each inter-furrow of those planted in a puddle; they were baked so hard, that nothing but a team-plow could penetrate them.

Had they been all put-in in the middle of March, the cost would have been under 3 s.

WORKING-

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II. M A Y, 1776.

WORKING-CATTLE. II. The short-legged Staffordshire *bulls* are totally unfit for harness: They cannot walk with oxen: They tire and grow fulky.

Two which I worked until I was *convinced* that I was *wrong*, were cut to-day.

I do not apprehend that bulls, in general, are unfit for labour.— Perhaps, a clean-limbed, long-legged bull is equal, if not preferable to an ox: They are, no doubt, more powerful in fight; why not in work?

AUTUMN-SOWN BARLEY,

AUTUMN-SOWN BEANS.

AUTUMN-SOWN OATS.

AUTUMN-SOWN SUMMER-TARES.

ON THE SPECIES OF TARES.

14. (See 2. FEB.) The *barley* is two feet high; and the tips of the beards just peeping. The *beans* which were exposed, are totally gone. Those which were covered, began to blossom about ten days ago, and are strong and healthy.

The *oats* look well, but do not shoot up like the *barley*: they are not more than six or eight inches high; but the blade is broad and vigorous.

The *summer-tares* are no more! A straggler remains here-and-there, but I apprehend they are *winter-tares*; for I cannot distinguish between them and the *winter-tares* of the adjoining lands.

A more decisive experiment could not have happened, and fully proves the *winter* and the *summer* tare to be *distinct species*. How ridiculous a field of ten or twelve acres would look, occupied by chickweed and bare clods! Yet some of the Farmers will tell you, "As how there is thought to be no difference." But what can be expected from men who never made an OBSERVATION, much less an EXPERIMENT, in their lives*?

* The Writer does not mean the *whole*, but the *majority* of Farmers. There are *some few* who think.

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14. M A Y, 1776.

A guide to distinguish the seed with certainty, is worth taking some pains for. From *recollection*, the winter and summer tares, which I sowed last year for feed, were obviously different: Those, a darkish mottle; These, a purple tinged with brown: Those, a polished surface; These, a rough, indented one. But whether these distinctions were natural or accidental, I know not: The winter were got well, the other ill.

A few of each sort, left unsown, were unfortunately mixed together; but, according to my idea of winter and summer tares, I readily separated them: I presently picked out one parcel which looked like hemp-seed, and another like trefoil in the husk.

I mean to sow them, and test my judgment; for the difference is very obvious to common observation, *when they first come-up*: The summer runs upright, like a pea; the winter couches down, creeping close to the ground.

JULY, 1777. The Writer made a rigid experiment with these tares; but nothing decisive resulted: and he *apprehends*, that there is no other dependance to rest upon, than the *word* of the grower.

GRANARIES.	}	19. Granaries should be under the eye. We have not lost less than four or five quarters of grain of different sorts out of <i>Adscumb</i> granary, in less than two years.
GENERAL MANAGEMENT.		
CARTERS.		
SELF-ATTENTION.		

Perhaps, generally,---it is bad management in a Farmer to keep by him corn or pulse of any sort *in grain*. Perhaps, let him keep it *in straw*; or, if straw be wanted, sell it at the market-price; not keep it up for the *chance* of a rising market. For he incurs a *certain loss of measure*; and a *certain risk*, if it can possibly be come at by *Carters*.

To

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19. M A Y, 1776.

To quarrel with them about it is idle; for, in this respect, they are thieves to a man, and glory in their thievery; and the only way to keep them honest is, to treat them in character. One lock is scarcely a sufficient security: To leave scattered parcels here-and-there is throwing before them temptations too powerful to be withstood.

Notwithstanding I keep a regular account of every bushel of every species of grain *made-up*, and of every bushel *fairly vended*; and altho' I take a great deal of pains to prevent pilfering, and pretend to make a very serious affair of it whenever it is found-out; yet I never can make the two accounts tally. What, then, must be the fate of those who do not keep a minute account, neither of the *yield* nor of the *vent*, and whose servants are *aware* of this neglect? who know, that if they are not caught in the fact, they are clear even from *suspicion*?

CART-HORSE-CHAFF. 21. From the 10th of April to the 12th of May, nine cart-horses eat thirty quarters of chaff—thirty *double* quarters, in thirty-two days—about three double quarters (of sixteen bushels equal to stricken measure) a-team a-week. I made a calculation the 18th of December last; but that was not so carefully made as this*.

To ascertain the *value* of chaff, I weighed a single quarter of some cut from barley-hay: it weighed within the merest trifle 56lb. just a truss of hay, which I value at 1s. 6d. Therefore, a double quarter of this chaff costs 3s. and the cutting 1s.—Together, 4s.

I then took a truss of clover-hay, worth at present 3l. 10s. a load, and a truss of wheat-straw worth 2l. a load, and cut them together†: they made exactly twelve single bushels; or three quarters of a double

* This, however, being cut from barley-hay, (See 28. SEP. 1775.) it might be more cloying; and, perhaps, went farther than *real* chaff.

† A common mixture for *cut* chaff.

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quarter. A single quarter of this weighed rather *more* than a trufs of hay*.

		<i>£.</i>	<i>s.</i>	<i>d.</i>
The trufs of hay, - - - -	0	1	11	
The trufs of straw, - - - -	0	1	1	
	£. 0	3	0	

This, therefore, costs just 4s. besides cutting, 1s.—Together, 5s.

STONE-PICKING. 21. In future, place empty carts in different parts of the field to be picked, for the pickers to empty their baskets into. Three men, two boys, and six horses have been two days in collecting and carrying-off the scattered heaps of about thirty acres: almost 1s. an acre;—as much as for picking.

They carried-off about fifteen loads, for which the sloughs and gateways are very thankful; but the roads might have been equally mended, with only the trouble of emptying the carts every night.

BALKING. } 21. We are now crossing the foul part of P. 3.

FALLOWING. } balked the 21st. of February,—in wet weather, when nothing else could be done.

It is a pleasure to see it break-up in clods like bushels: They lie so rough and hollow, that the sun shines upon half, and the wind blows on three-fourths of the sub-soil.

I am fully satisfied, that **BALKING** is the best way of breaking up a summer-fallow. No other method, perhaps, can give it so perfectly that rocky roughness so essential to a fallow.

Perhaps, the best method of making a summer-fallow is, to make it alternately *rough* and *smooth*,---*cloddy* and *pulverous*:—Rough, to

* Tho' the hay and the straw were both to appearance perfectly dry, they lost just 8lb. in cutting! Thinking that there must be some mistake, I re-tried it: The result was exactly the same.

let

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let in the sun and air, and to parch the *root-weeds*: Pulverous, to mix and mellow the soil, and to give the *seed-weeds* an opportunity of vegetating.

Perhaps, balk in the winter-vacation; and cross as soon as the spring-crops are in: Let it lie rough, till the weeds are withered, and the soil sweetened: harrow and roll repeatedly, until it be perfectly fine; or as fine as it can be made: roll or surface it very hard; and thus let lie till it has had rain sufficient to make the seeds vegetate. Re-balk, re-cross, and re-pulverize, until the root-weeds are destroyed, and the seed-weeds have spent themselves.

WEEDING.

FIVE-BOUT BEDS.

WEEDS.

21. *In future*,—The first week in May, begin to give an eye to the wheat. M. 1. is full of May-weed, and the wheat has got so high, it is hurtful to draw it out, notwithstanding five-'bout lands are very conveniently weeded. The Weeders, by setting one foot in, and the other out of the furrow, can just reach hands on the ridge, and have no occasion to walk among the corn.

It is not looking over the hedge, nor riding across the ends of the lands, but walking up or down almost every interfurrow, which will discover whether the field is weedy or not. One patch of M. 3. is as foul as a dung-hill; while other parts are as clean as a garden.

But what is the use of this extra-attention, if every part be run over by the Weeders? None---except to find out which requires to be weeded first. And this is by no means an unnecessary piece of attention. For if the weeds are more powerful than the corn, no time should be lost in extirpating them. But if the corn has got the advantage of the weeds, perhaps, it matters not how long they stand, so that they do not seed; nor how late the corn be weeded, so that it be not injured by the operation. For the later it is performed, the less danger there is of fresh weeds spring-
ing-up

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ing-up to harm the crop, or foul the land: and the older the weeds are, the more conspicuous they become; and the higher the corn, the more power it has to smother the rising generation.

J U N E.

IN-DOOR SERVANTS. } 6. On the maturest calculation, I make
 PRICE OF PROVISIONS. } the yearly expence of a *man* in the house,
 35 l. and of a *boy*, 23 l. *

		£.	s.	d.
The yearly expence of a day-labouring man (if he works every day) is but	}	27	10	0
And that of a boy, but	}	13	0	0
The difference therefore between keeping a man in the house, and hiring one by the day, is, beside rainy days,	}	7	10	0
And the difference between a boy in the house and one by the day is	}	10	0	0

More than 3-4ths of a day-boy's wages!

The impropriety therefore of keeping *plow-boys* in the house, is clearly proved; and tho' it may be convenient to have the *Carters* about home; I think that conveniency is not worth 7 l. 10 s. a year: I will therefore put a woman into the cottage † to take-in lodgers; and I am determin'd not to have, *in future*, more farming-servants in the house than a *Bustler* and a *Yard-man*.

It is absolutely necessary to have somebody about a Farm-yard, in cases of emergency; and I think these will be quite sufficient: for the Carters in the cottage will be nearly as *bandy*, as if they were in the house ‡.

* Supposing the man's wages to be 10 l. and the boy's 3 l. a year.

† A cottage within two hundred paces of the Farm-yard.

‡ This MINUTE, like many other, is merely local; but is not the HINT given, *universal*?

Perhaps,

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6. J U N E, 1776.

Perhaps the Farmer who keeps no accounts imagines he saves money by boarding his servants in the house: but I am confident, that if he keeps them in that luxurious style which farming-servants in this country *expect* to be kept in, he is mistaken*.

Were I to reason POLITICALLY, it would be thus: Farming-servants form a large part of the community.—Perhaps, *one* in the house,---*one* fed by his master, *costs the community* as much as *two* who provide for themselves: for discharge a grumbler,---one who pretends to be *dissatisfied*, tho' in fact *satiated*, and he will return to his bread-and-cheese with, perhaps, equal *health* and equal *happiness*. He sits down to his master's table with a resolution to eat voraciously of the best,---to do himself justice; but, at his own, eats sparingly of the meanest, to save his money. His motive, in both cases, is the same:---*Self-interest!*

Therefore,---feeding farming-servants in the house lessens the quantity, and of course enhances the price of provisions.

HOING BEANS. II. (See 10. MAY.) I meant to have given them another horse-hoing; but the beans got too high, and the ground too hard. I therefore set them to hand-hoe, at 5 s. an acre: The intervals to be *boed*, the rows *weeded*.

LABOURERS. 15. Until this week, I have made a point of employing the neighbouring Cottagers, *who belong to the Parish*:—*Because* I am not fond of new faces:---*Because* there is a satisfaction

* A Farmer, indeed, who sits at the head of his kitchen-table, may no doubt feed his men considerably cheaper, than a gentleman who eats at a separate board; and who cannot, without many inconveniencies, have farming-servants in the house.

in

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in being neighbourly; and *because* it is but common policy in a parishioner, a *Farmer* especially, to encourage the industry of his parish.

For the first ten or twelve months, I have generally found them very attentive and laborious; but after this time, they get tired of constant employment and good usage. I have tried them all round; but have scarcely found one, whom eighteen months constant work has not made idle, insolent, or thievish.

At present, I am resolved to give a preference to good workmanship and low wages only. This is the only method I can hit-upon to convince the parishioners, that industry and honesty are the only roads to constant employment. Before Christmas, I hope to have again the pleasure of giving wages to some of my poor *laborious* neighbours.

BURNING SOILS.	}	19. The clover on the hot gravels at Adscumb, is all burnt up; the dry weather setting-in before the ground was covered, the moisture was presently exhausted, and the growth of the clover of course retarded.
CLOVER.		
RYE-GRASS.		
WHEAT ON GRAVEL.		
BARLEY.		

The neighbouring Pieces in the same Common-field, which had rye-grass and trefoil sown with the clover, are very fine crops: The ground was covered early, and the moisture retained.

*Perhaps, in future,--*upon gravel, and every other *burning soil*, sow rye-grass, or any other grass which comes early in spring, among clover, and spare no expence of seed; for the thicker the plants are, the sooner the surface will be hid. And,

Perhaps, generally, the prime object on a burning soil, is to get it covered early in the spring.

Laft

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19. J U N E, 1776.

Last year I sowed some WHEAT, the *beginning of September*, and the ground was covered before winter: there is scarcely such a piece of wheat in the country. A neighbour sowed a *clover-ley, fallowed and dunged, the latter end of October*: if this hot weather continues, it will scarcely be worth reaping.

BARLEY sown the *latter end of April* is now burning. I am of opinion, had it been sown the *latter end of February*, or beginning of March, it would have been a good crop. And if the experiment on autumn-sown barley speaks truth, there is no fear of injury from *frost*: and another instance of the safety and eligibility of sowing barley early, That sown among the tares in the Twenty Acres, the *16. March*, is now in ear, three feet high.

HAYING CLOVER. 20. (See the last Minute). In some places the clover is so straggling, the sithes cannot gather it into swath, but drops it where it grew. If it were to lie thus until perfectly *crisp*, one-half of it would run thro' the teeth of the rake, and be left on the ground.

Therefore, immediately after the sithes, while *tough*, I rake it into rows, about the size of a swath; thus to lie until ready to be made into cocklits.

This is obviously a good job; for when clover is *green*, it cannot be hurt by raking; but when *made*, it cannot be touched without injury to the leaves and blossoms.

WEEDS. 20. Weeds are now in their most succulent state; and in this state, especially after they have lain a few hours to wither, I find that hungry cattle will eat greedily of almost every species. There is scarcely a hedge or a nook but what is now valuable; and it

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certainly

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20. J U N E, 1776.

certainly must be good management to embrace the transient opportunity; for in a few weeks they will become *real nuisances*.

The margin of almost every meadow is a fringe of weeds, which if made into hay, not only spoil the stack, but fill the fields in summer, and the Farm-yard in winter, with weed-seeds. But by verding with them while succulent, the cows which go on the Common are benefited, and the fields, the stack, and the Farm-yard left uncumbered; besides a fresh swath of *fine* grass (if the weeds be cut early enough) ready to be mown with the rest of the field.

JULY, 1777. "This has already been said more than once."—

It is very true—and probably will be again repeated:—

USEFUL KNOWLEDGE SHOULD BE SEEN IN EVERY POINT OF VIEW.

J U L Y.

TARE-VERDAGE. } 10. Ten cart-horses have eaten twenty-six rods
CART-HORSES. } of very good winter tares (nearly as good as some
I am selling for 8l. an acre) in two nights:---five shillings a-day,-- five-
and-thirty shillings a-week for *tares* alone, besides *corn* and *chaff*.

A stallion intended to be cut in a few days, has eat nothing but tares for the week past.---He has worked hard every day, and I think he improves both in condition and vigour: therefore,

In future, give cart-horses very few tares; or very little corn with their tares.

EARLY-SOWING. } 10. There is a disadvantage attends early
SPARROWS. } sowing. The wheat sown in August, and the
barley in September, are eaten up by small-birds of every denomi-
nation. These being the only crops in the country fit to be eaten, all
the birds in the country are collected together to eat them. Had
they been sown with the other crops of the neighbourhood, they
would have had neighbours' fare.

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10. J U L Y, 1776.

But who would not sow wheat early to get straw six feet high, when straw sells for 15 d. a-trufs? And who would not prefer an ear five inches long, to one not more than two inches?

The most mischievous of birds are *sparrows*.—Were all the Farmers of a neighbourhood to agree in their destruction, by offering rewards for their heads, their number might be lessened. Were the practice general, surely the whole race might be extirpated.

Is not the destruction of the destroyers of human food an object of the Legislature?

I should suppose that 6 d. a-dozen the first year, a shilling the next, and half-a-crown for the third year, would nearly reach extirpation*.

How soon twelve sparrows destroy twelve-penny-worth of wheat! Were the *Farmers* unanimous, it would certainly be worth their while to give twice twelve-pence a-dozen, to have them destroyed.

JULY, 1777. The Writer, full of these ideas, wished to have raised a subscription in the neighbourhood around him; but he was soon convinced of the difficulties he had to encounter, and of the inefficacy of a *partial* massacre; especially round London, where these “pretty creatures” are not only nurtured in *vulgar* boxes, but where even the *royal palace* is carbuncled with *sparrow-bottles*.

TURNIPS. } 12. Hand-raked-in the turnip-seed sown on
SEMICULTURE. } S. 3. the expence about 2s. an acre.—Ridding
the surface of a quantity of dead couch, is worth more than the
money to the first hoeing.

* The Island of Bermuda was so much pestered with *Red-Birds* (originally brought there as curiosities from the Continent of America) that an Act of Assembly was thought necessary to decrease their number;—and it had the desired effect.

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12. J U L Y, 1776.

Were I to sow fifty acres of turnips a-year, I am led to believe from this essay, that I should hand-rake them in, tho' the surface were perfectly clear of weeds, or other obstruction of the hoe.

The finest harrows do not give that evenly pulverous surface, nor bury the seed at that desirable depth, which a hand-rake does.

A fine surface, free from obstructions, might be raked for a shilling an acre. If the surface be foul, it is raked of course; if partially foul, it is very little more trouble to give it a general, than a partial raking.

HOUSEING STACKS. 15. I have waited a fortnight for a fine day, to get-in a barley-stack. It was a large stack, and as one of the very heavy showers which have fallen so plentifully of late, had taken it in its full width, the damage must have been considerable.

It was absolutely necessary that this stack should be in the barn; yet it never occurred to me, until last night, that it might be taken-in, *any* day, without *much* risk.

Instead of exposing the *whole* at once, I took it down *in parts*. I just unthatched about one-third, and cut this down to the frame.—Just as this was got into the barn, a shower fell; the men went to breakfast, and all was safe.—It cleared up, and another *part* was unthatched.—Another shower came before this part was in; but it was purposely to leeward of the part still standing, and was easily defended by the thatch already taken off.—It turned out a fine afternoon, and the whole was got-in in three *cuts*, without a farthing's-worth of damage. The expence of cutting was about eighteen-pence: not a penny a-load.

RE-LOADING HAY. } 18. (Thursday). On Tuesday evening,
MINUTING. } the hay of K. 2. which had been cut almost
a fortnight, was in *tolerable* order; and the sap being nearly exhausted,
I was

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I was unwilling to expose it any longer in this critical state : I therefore put it upon the waggons, to keep it out of harm's way ; but did not unload it.

Yesterday *unloaded* one load on to the stack, *very gently*, and left it untrodden. On to the emptied waggon *re-loaded* another, which stood in the field. The wind was high, and the sun hot.—Two men re-loaded it as deliberately as possible ; breaking every lump, and loading it lightly with a fork : they were three or four hours in doing it. It was unloaded, to-day, in good order. Re-loaded another to-day, which will be unloaded to-morrow.

By thus exposing it to the sun and wind, and by leaving it on the stack for four-and-twenty hours, *untrodden*, it is got from *tolerable* into *very good* order.

Because hay which has been long cut, and whose juices are exhausted, is loaded on the *waggons*, to prevent its being totally spoiled ; it surely does not follow that it should be hurried into *stack*, wet or dry. Perhaps, hay not *half-made* might, by repeated reloadings *during fair blasts*, be *well-got* ; even in such very bad hay-weather as we have lately had.

Suppose one load takes two men three hours and-a-half ; two men would re-load three-loads a-day : about $13d\frac{1}{4}$. a-load. Ten times $13d\frac{1}{4}$. is not equivalent to the difference between good hay and bad.

Re-making in large *cock*, may help hay which is under-made ; but a cock cannot be drawn into a barn, or under a shed, as a cart or a waggon.

Minuting.—When I began to make the preceding Minute, I meant merely to register facts, that I might not, *in future*, put hay into stack before it be *thoroughly* made ; and I am of opinion, that had not the former part of the Minute been made, the latter, nor the calculation, would have occurred.

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Is not this an evidence in favour of making Minutes? Before an *intelligible* Minute can be made, ideas must be digested—the intellects exerted. This adduces to the mind the whole chain of recollected facts and *words* incident to the subject; many of which would otherwise have lain inert in the memory.—From these, new ideas spontaneously generate; CALCULATIONS and schemes of FUTURE CONDUCT rush upon the mind; and from mere *Minuting*, the mental faculties are imperceptibly led to SYSTEMISING.

I have seldom begun a Minute which did not verify this observation, and which did not prove longer than at first intended.

In future—before I leave-off making a Minute, look stedfastly on the mind, and enquire anxiously if any other idea demands an audience.—If any should, it would be wantonness, even on trivial subjects, to dismiss it unheard: it may be valuable in itself, or it may lead to something valuable.

But be the last paragraph valuable or trivial, I am firmly of opinion, that it would never have occurred, had not I made the preceding part of the Minute.

If MINUTING be found serviceable to such an humble subject as hay-making, surely it would be beneficial to the more abstruse branches of science! And although its evil attendant may be the injury of the MEMORY, in *little* matters; how many GREAT IDEAS have slid away, which a MINUTE might have rescued from oblivion; nay, how many GREAT THOUGHTS—USEFUL TRUTHS, might, by MINUTING; have *entered* the list of HUMAN KNOWLEDGE, which now are known but to OMNISCIENCE!

Perhaps, generally—habituating ourselves to register our ideas, learns us to think closely and systematically; and, perhaps, such a register would be the surest and most eligible test of genius. If any thing strike—no matter what—Minute it.—Practise this for a few years, and probably the *bent* and *capacity* of the Practicer might be discovered.

Had

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Had mankind, from Infinity, left to each succeeding generation their fairest ideas, and had these ideas been regularly systemised and repeatedly retrenched;---had we a *comprehensible* system of the GREAT IDEAS OF MAN---of every man---from INFINITY,---or from *creation*;---did the present generation know what each and every preceding generation have known, and thro' such a system might have known, how much nearer the CREATED would now have approached the CREATOR!

It was with some degree of reluctance that I began to make this Minute; for *until I began to write*, nothing occurred but the simple fact, and that seemed scarcely worth notice. But although I have not luckily developed a *Southern Continent*, nor a *Northern Passage*, I am not displeas'd with my evening's amusement*.

FOUL CROPS. }
DEEP PLOWING. } 21. The oats of O. 2. are so exceedingly full
MELIORATION. } of seed-weeds, it would be ridiculous to attempt to hoe, or to weed them, and unpardonable to let them stand for a crop.

I had determin'd to plow-in the oats and weeds together, and sow turnips on the one plowing; but on a narrower inspection, I found that a sufficiency of clover has hit to stand for a crop; I therefore mow the oats and weeds for verdage for the common cows; by which means the weeds, being chiefly annuals, are destroyed, and the clover has an opportunity of exerting itself.

But what could give this astonishing abundance of seed-weeds? I apprehend, fine filth and *deep plowing*.

This little field is a deep, pulverous loam.—It was winter-fallowed for spring-corn and clover.—The last plowing but one, was from ten

* These desultory reflections are not inserted as *necessary* appendages to *pecuniary* Agriculture.

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to twelve inches deep, and much fresh earth was brought up.—This fresh earth was landed-up, and the oats and clover sown upon it.

The weed-seeds had, for generations, been trodden into the substratum, where they had lain till this deep plowing exposed them to the vegetative elements—The fresh mould was unfavourable to the oats, but favourable to the weeds;—Those being thin and puny; These innumerable abundant.

What is to be learnt from this? Is deep plowing bad management, generally? No;—but, perhaps, deep plowing *for a crop, without dung*, is very bad management. And, perhaps, this accounts for the disrepute in which deep plowing is held by most of the common Farmers.

Perhaps, deep plowing *for a crop, even with dung*, is bad management; for it is probable, that a great number of seed-weeds will follow, and the crop, if not totally spoiled, will be greatly injured; and, perhaps, the best way of increasing the quantity of corn-mould is this:

Plow shallow,—no deeper than the plow has usually gone,—until the root-weeds are destroyed, and the seed-weeds have spent themselves; and then *by one deep plowing* fetch up a sufficient supply of fresh mould. On this fresh, *rough* surface lay a sprinkling of *dung*;—*barrow* it well in, and let *part* of the seed-weeds vegetate;—gather it up *shallow*, into five-'bout lands;—harrow and rake it as fine as a garden: at seed-time, reverse the lands, and plow-in the *remaining* weeds, *moderately deep*, for a crop.

This I am practising on L. 1. and P. 3.—Attend to the effect.

JULY, 1777. The effect far exceeded the Writer's expectations. Indeed, it exceeded them too far; for the crops were so rank, in both instances, that the heavy rains of this summer have beaten the wheat flat to the ground. There are from three to four load of *straw* an acre.

AUTUMN-

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21. J U L Y, 1776.

AUTUMN-SOWN BARLEY. 21. Reaped it on Friday, the 19th: but it was too ripe; it had stood three or four days too long. The crop was very *even*, and as *good* as could be expected from the quality and state of the soil.

That which was *exposed* to the frost was obviously the *best*; but I am at a loss how to account for this circumstance. *Perhaps*, the roots of some large elms which grow in the adjoining hedge, impoverished the soil; but this is mere conjecture; the contiguous tares are not the worse for them.

I do not see why barley should not be sown in autumn, and reaped in the vacation between hay-time and wheat-harvest.

CABBAGES. 21. Finished planting yesterday.

The ground was so firmly (perhaps necessarily) consolidated by rolling, that it was laborious to make the holes with a *band*-dibble; I therefore converted a potatoe-dibble into a cabbage *foot*-dibble, which answered beyond expectation.

To regulate the distance *in* the rows, untwisted a garden-line at every two feet, and inserted a *feather* of two or three inches long. A line of 200 feet long was prepared in about ten minutes; and though it has been out wet-and-dry, not a feather is displaced. To regulate the distance *between* the rows, fixed a line, with three feathers, across each end of the five-'bout bed to be planted; bringing the middle feather exactly into the middle of the bed.

An acre and 5-8ths took about 13,000 plants.

AUTUMN-SOWN OATS. 31. Cut them to-day: but I began likewise to cut wheat: therefore, autumn-sown *oats* are not so eligible as autumn-sown *barley*, (See the 21st.) which would be got out of the way before wheat-harvest.

H h

Some

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24. J U L Y, 1776.

Some oats sown the 11. March, will be ripe in a few days; but These are on a gravel, Those on a loam. I should suppose that oats sown in *September*, would come earlier than oats sown in *March*, on the same soil, by a *week* or *ten days*,—*but not more*.

They are a very good crop, and very well *bawed* (*eared*—furnished with grain). The straw is long and reedy; a few to be thrashed out for *thatch* would be very convenient.

A U G U S T.

TARE-HAY. 1. I do not see any material improvement of the process I hit upon this year, of making tare-hay.

After the Mowers,—instead of leaving the *wads* indiscriminately on the ridge, or in the furrow; and instead of leaving them rolled-up in hard lumps, I shook them up *light*, and set them *in rows* on the *funny* side of the ridges. If *one row* could not contain them, set them *a-zig-zag*, which gives them more sun and air than any situation; endeavouring as much as possible to make each wad resemble a *bee-bive*. By thus standing *light* and *open*, upon the ridges, I apprehend they made in much less time than they would have done in *hard bundles* in the *furrows*. I did not wait to let them wither, but followed the Mowers immediately.

After a shower—as soon as the ground, and the out-sides of the wads were dry, turned them over on to fresh ground; and with *one shake* lightened them up as before; they were dry again presently. The first two acres had a whole day's rain upon them, but I apprehend they are very little the worse for it.

Those mown since the rains, have had nothing done to them, but the first shaking up, and one turning, when the first upper-sides were made: they did not cost 6d. an acre for making.

The popular idea of tare-hay-making seems to be this: If the weather *happens* to be fine, the fodder is incomparable; but *one shower*

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I. AUGUST, 1776.

shower of rain sends it immediately to the dung-hill. I am convinced from this year's experience, that if tares are cut at a proper age (while the under-pods are filling, and the halm still green at the bottom) it is not a shower that will *burt* them, nor a whole day's rain that will *spoil* them. And I am of opinion, that, with proper management, nothing but a fortnight or three weeks rain can fit them for the dung-hill; and, perhaps, the *chance* is ten to one that such weather does not happen *in July*: And, *in future*, I will calculate on that it is ten to one but I get my tare-hay *tolerably*.

THE WEATHER. } 1. This hay-time, the weather has been vari-
 HAYING. } ous. The early *clover* hay-time was fine; but the
 latter end of June, the *Midsummer-rains* set-in, and greatly injured
 the clover which was backwardly cut.

The last week in June and the three first weeks of July (*meadow-hay-time*) were very ticklish: A great deal of meadow-hay was badly got.—The last week or ten days of July have been remarkably fine, and the backward-cut of meadow-hay has been remarkably well got-in.

The spring was very backward. I wished, and shall ever wish, to begin to cut clover the first week in June; but there was none to cut till past the middle of the month, when I began mowing clover. It had some rain, but was got tolerably.

I began the mix-grafs' leys the first week in July, and cut one field of five acres. The crop was very light, and the little hay it produced almost spoiled by the weather.

I had *lett* the winter-tares, and was thinking of beginning to cut the meadows; but very fortunately stopped the fithe to wait for fairer appearances.—Why?

H h 2

Because

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I. AUGUST, 1776.

Because the *sun* set foul or showery every evening; because the *atmosphere* was loaded with huge vertical clouds; and because the *barometer* was wavering, and seemed rather inclinable to wet than dry.

When the large clouds seemed exhausted by the *quantity* of rain which had fallen, and the azure concave delicately variegated by slender horizontal clouds; when the sun went down clear, and the barometer stood firm at fine weather—I re-began to cut, and a finer hay-time never happened. We have carried fifty or sixty loads of different sorts of hay, this week, in the finest order possible: and, what is still more pleasing this year of scarcity, there was nearly twice as much upon the ground, as there was before the rains. Besides, by standing till ripe, and being cut in hot weather, the expence of making has been trifling.

HAYING. 4. Perhaps, meadow-hay is generally cut too early, and the first crop of clover too late: I mean, *grafs* which is intended to stand for a second crop, should be cut early, that the second crop may not be caught in the autumnal rains; and that which is cut but once, should stand until it be fully matured, that it may not shrink in making,—that the hay may be heartier,—and that it may be made with less labour and less risk.

In future, I will endeavour to cut clover the first and second weeks in June; and meadow-hay, the second and third in July.

Perhaps, although *grafs* seem to shrink on the ground *before* cutting, the *quantity* of *hay* is not the less when it comes to be carried into stack; nor the *weight* less when it is cut out.

PICKLING WHEAT.	}	4. C. I. was all pickled in salted lime-water, except one corner sown dry.
SMUT.		
TILLAGE.		

To-day I have been attending to the result; but cannot perceive any difference: indeed there is scarcely an ear

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4. AUGUST, 1776.

ear of smut in the whole field. Am I to conclude from this, generally, that pickling of wheat is unserviceable? By no means.—It had not in this experiment an opportunity of proving its utility; because, there being no smut, no *comparison* could be made. It is, therefore, a blank experiment.

But what circumstance kept this crop so free from smut? Perhaps, a summer-fallow without dung. Is not this an evidence that *dung*, or *bad tillage*, or both, create smut? Perhaps, an *insect* is the cause. Perhaps, dung nurtures this insect, and bad tillage suffers it to prosper in the soil. A barley-stubble *dunged* and sown with wheat (by Farmer —) on *one* plowing, has produced almost as many smutty as found ears!

PEA-BEANS. 7. This year, I sowed part of a field of *sandy loam* with *pease* alone, and part with *Marlbro'-greys* and *Mazagans* mixed. The *pease* came up best, and looked best through the spring. But the *blendings* are now much the best crop. The clean *pease* are drawn into the ground by the weeds; those among the beans scarcely touch it, seem to be much better podded, and are cut more easily.

The *mixture* was two bushels of *pease* to one of beans; the *quantity*, about four bushels of this mixture an-acre.

The common *horse-beans* would not do so well; they would come too backward, and would not be so readily parted from the *pease* as *Mazagans*.

JULY, 1777. This year, the Writer repeated the fore-mentioned experiment on a *gravelly loam*. The result differed from that of last year; there was no apparent advantage in the *crop*; but the *pease*, if either, left the cleanest *quondal*.

TARE-

I

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8. AUGUST, 1776.

TARE-BARLEY. 8. The middle of March, mixed an equal quantity of tares and barley, and sowed about two bushels and-a-half of the mixture an acre, on different soils.

Just when it was ready to cut *for hay*, we were busy cutting the meadows, and mix-grass-leys; and the *barley* being remarkably fine, *on every soil*, I determined to let it stand for a crop: the *tare-herbage* to go among the barley-straw, for fodder.

The day before yesterday, we began to cut. The largeness of the heads, and the plumpness of the grains of barley, is striking; and the tare-herbage in that identical state in which one would wish to cut it.

If it be well-got, there will be from two to three quarters of exceeding fine barley, and a load and-a-half of very good *straw-hay*, an-acre.

MAZAGAN BEANS. 8. Began drawing those drilled the middle of February. Those drilled the middle of March, are four or five days later; but not more. (See 21. APRIL.)

They are, upon the whole, a very, very shabby crop; especially those planted in the wet weather.

They all looked tolerably, before the drought set-in. Perhaps, this *set* them; and the rains coming too late, they could not recover themselves.

Or, perhaps, *the soil* was in general too *stiff* for them (*Mazagans*); for it was very obvious, that the *lighter* the soil, the better the crop. Or, perhaps, it was in general too *poor* for them; for this is the second crop off an old ley; and the light soil forms the upper part of the field, which may have been enriched by the cattle's lying upon it.

Or, perhaps, *the seed* was injudiciously chosen, or rather improvidently pitched upon. Had I reflected a moment, it would certainly have

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have occurred, that beans reared on *rich* land, could not be eligible seed for an indifferent soil.

Be it from what circumstance it may, those on the stiff, indifferent land—a clayey loam—a bird-lime soil, are not a foot high—a very beggarly crop. Those on the richer, light land—a sandy loam—a hazle-mould, are four or five feet high;—as fine a crop as can cover the ground.

Perhaps, Mazagans affect light, rather than stiff land; except stiff land be very rich indeed. A few planted last year experimentally, in April, on B. 4. a *stiff clay*, were given to the hogs; scarcely worth carrying out of the field. Two years ago, H. 1. a light moory soil, *without dung*, was a very fine crop.

I am totally tired of horse-beans as a fallow crop (they occupy the ground too long); and I am almost sick of Mazagans: I mean as a *fallow-crop*, in the round of fallow-crop, spring-crop, clover, and wheat; for a *tolerable crop* cannot be expected *without dung*. And I am, by this year's experience, fully convinced, that among a *small crop* of beans, there will be a large crop of weeds: for altho' not a weed was left the last hoeing, in June; it is now in the *badly-cropped* part, difficult to distinguish between where the beans are drawn, and where they are not—while the part *well-covered* is passably clean.

It is clear, from Mr. A's. practice, that Mazagans, on a cloverley, well-dunged, are a very good crop. But I am convinced, that they are unfit for the plan of management I have adopted. I therefore resolve to have done with Mazagans, and all other *beans, alone*.

GENERAL MANAGEMENT. 8. *Perhaps, in future*, let Farm-yard consumption be the object of the fallow-crop.

Perhaps,

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Perhaps, by *pea-beans* raise halm and beans enough for the cart-horses, and pease enough for the hogs.—By *tare-barley* raise straw-hay enough for the oxen and cows in full milk, barley for the cart-horses, and tares and thin barley enough for feed.

If by *these* (*pea-beans* and *tare-barley*), the *straw* and *tail* of the *spring-crops*, and the *second cut of clover*, I can support the working and Farm-yard stock; the *wheat*, the *wheat-straw*, the *clover* and *meadow-bay*, and the *corn* of the *spring-crops*, will of course go to market.

I am doubtful whether this can be done without a great deal of dung and extraordinary tillage; but it strikes me, at present, as an object worth contending for, and I am resolved to attempt it.

BEANS.

PEA-BEANS.

FALLOW-CROPS.

RANDOM-CULTURE.

ROW-CULTURE.

II. Let me calculate the expence of this shabby crop of drilled Mazagans.

The extra-expence of drilling, comparative with a random crop, was not less than seven or eight shillings an acre:

	£.	s.	d.
Call it (see 26. MARCH.)	0	7	6
The first hoeing, (See 10. MAY.)	0	3	6
The second hoeing, (See 11. JUNE.)	0	5	0
Drawing and binding	0	9	0
Rope-yarn	0	1	0
Mowing the weeds to clear the ground of the badly-cropped part	0	2	0
Raking and carting them off	0	1	0
	£.	1	9 0

an-acre; besides plowing, harrowing, seed, and carrying; rent, tythe, taxes, and exhausting of soil!

What

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What would be the expence of an acre of random *pea-beans*?

	£.	s.	d.				
Sowing, - - - - -	0	0	6				
Weeding, - - - - -	0	2	6				
Mowing, - - - - -	0	3	6				
	£.0	6	6				

The other contingencies would be nearly the same as on beans. The difference, therefore, between a crop of drilled beans and a crop of random blendings is about 1l. 2s. 6d. an acre; and this difference is chiefly in *manual labour*—a *dead expence*. Besides, the halm of *pea-beans* is good *food* for cart-horses; that of *beans*, very indifferent food, and still worse *litter*: the *shade*, too, of a crop of those is much stronger.

But this disparity of *dead labour* holds good, generally, between random and row crops. Can the soil receive an adequate benefit? Would not two plowings, harrowings and rollings, be of much greater service, besides the accumulate advantage of *team-labour*?

No one will pretend that *hoeing*—even *horse-hoeing*—will cleanse land from *couch*. No;—but it will cleanse it from *seed-weeds*. Yes, —if the crop *happens* to be good. But after eight shillings and sixpennyworth of hoeing, a ranker crop of *seed-weeds* could hardly cover the ground, than that which sprung up after the last hoeing in June among the beans in question; the beans were hid among them: I mean where the crop was *thin* and *short*: where the beans were *rank*, scarcely a weed is to be seen.

Cannot from this be drawn, that if land be *foul of seed-weeds*, and in *sufficient heart* to throw out a crop, drilling is eligible? But, if *poor* or *foul of root-weeds*, the reverse? On *this* question I am clear; but on *that* dubious. It is true, part of L. 1. after beans, will be very clean, and break up very friable; but it has cost 1l. 2s. 6d. an acre extraordinary. All G. 1. after winter tares, will break up

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equally as friable, tho' it is not equally free from seed-weeds; some puny hog-weed having escaped suffocation: but twenty shillings-worth of *team-labour* will eradicate the hog-weed, extirpate the latent root-weeds, expose the soil, destroy the grubs and insects, and put the soil in a fitter state to receive a subsequent crop, than all the *hoeings* which even a *Tull* could have given it.

I am not determined, but begin to opinion, that for a fallow-crop which can be got off the ground the latter end of July, or beginning of August, the *random* is preferable to the *row* culture.

I have done with *beans*, and am almost tired of *drilling*.

WHEAT.

TILLAGE.

HERBACEOUS MELIORATION.

13. Of fifty-three acres of wheat, this year, two are *very bad*, forty-eight *middling* and *good*, and three are *very good*: both the extremes are such crops as I have seldom seen. What was the management?

The very bad—not a quarter an acre—is after beans, after oats, on an *old ley*. The beans were drilled; but the soil was too couchy to be kept clean by hoeing.—The wheat was sown over *one* plowing, *without manure*: I depended on the *freshness* of the mould.

What can be drawn from this, except that from bad tillage come bad crops? *Perhaps*, had this ground been summer-fallowed, or, instead of *horse-beans*, it had had a crop of *tare-berbage*, and a dog-days fallow, the crop of wheat would have been much better: for generally, throughout the crop, *the produce is nearly in proportion to the number of plowings*.

The very good is after a *deep* summer-fallow, with an immense crop of turnips and ketlock plowed-in by the last plowing; on the fresh split of which, the seed was sown, and harrowed-in as fine as a garden.

Does

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Does not this prove the utility of good TILLAGE, and HERBACEOUS MELIORATION? It is uncertain when this field was *dunged*; not within three or four years, at least:—The last crop was barley. The fallow, it is true, was exceedingly fine; but I am of opinion, that the *herbage* trenched-in, assisted very much in giving the abundant crop.

TARE-HAY. } 15. After being at the expence of carrying-
 MAZAGAN-BEANS. } off the beans, on to an adjoining meadow,
 we were able to get the plow into the *bean-quondal* to-day.

A *tare-bay* quondal has been balked and crossed, and now lies as fine a fallow,—as rough and as promising, as can be wished-for.

What an advantage here appears on the side of TARE-HERBAGE, as a FALLOW-CROP! Had not the *beans* been *carried-off*, the plow would have been stopped ten days or a fortnight longer.

The removal, therefore, is obviously good: I calculate the expence at about half-a-crown an-acre;—but the crop was small.

SOWING WHEAT. } 16. I made several experiments last wheat
 TILLAGE. } feed-time on over-plit and under-plit; but
 SUB-PLOWING } nothing decisive appears. The experiment in
 MELIORATION. } M. I. (See 24. MARCH) stands now as it did
 MELIORATIONS. } then:—That sown without harrowing, the
 worst; That sown under-plit, and afterwards harrowed, the next;
 That harrowed, *fluted*, harrowed, the cleanest and thickest crop.

Tillage.—But I do not attribute this superiority so much to the *fluting*, as to the TILLAGE it thereby received. The soil (a gravelly loam) was *subbed* after pease, cleansed, well-dunged, and the wheat sown over or under *one* turn-plowing. I am firmly of opinion, had

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it been *turned* thrice instead of once *after* dunging, there would have been two quarters of wheat more an acre.

Sub-plowing.—(See 20. OCT.) On that which cost 2 l. 9 s. an acre in TILLAGE, there cannot be less than *four* quarters an acre; on This, which cost but 12 s. 10 d. an acre in TILLAGE, there are not *two* quarters. But this does not lessen the merit of sub-plowing *to disengage the surface-weeds*. In this point of view I am clear that SUB-PLOWING is excellent; but it will not serve as a substitute for three or four TURNINGS.

Melioration.—But perhaps this disparity of crop does not rest *wholly* on tillage; but *jointly* on this, and *the mode of dunging*. The dung which gave the *good* crop, was laid on for pease, and was of course *thoroughly incorporated with the soil* by the dog-days-fallow:— That which gives the *bad* crop (exceedingly fine *spit* dung) was *buried in raw lumps* with the seed.

This is another proof of the fixidity of vegetable food (See 13. JULY, 1775). For tho' the former was exposed and re-exposed to the intense heat of last summer's sun, it gives a crop of four quarters of wheat an acre.—It also proves, that manure must be incorporated with the inert particles of the soil, these two forming one chyle, before it be in the *fittest* state for the nourishment of the vegetable; for that which was plowed in with the seed, in large lumps, was *better* dung, in *greater* quantity, and had not been exhausted by a preceding crop.

Tillage.—B. 3. a stiff clay, was last autumn sowed with wheat:— It had been fallowed two years, and was brought to an exceeding-fine tilth.—Part was *dunged*; part, *sooted*; and part, *undressed*.

The *dunged* looked best in winter; the *sooted* never shewed itself; and the only difference which now appears is, that a *part* of the *undressed* is much the *best* crop; and I recollect, that this identical corner was the *best* fallow. This is another instance in favour of TILLAGE.

Meliorations.—

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Meliorations.---But let not these instances in favour of *tillage* and *herbaceous melioration* fix in me one idea to the prejudice of DUNG, or other ADVENTITIOUS MELIORATION.

Tillage may give *one*, perhaps *two* or more crops, in proportion to the *latent food*; and an *herbaceous dressing* may give *two*, perhaps *three* or more in proportion to the *quantity* (and perhaps to the quality) of the *herbage* plowed-in; but the soil in both cases will be *exhausted* in proportion to the *quantity and quality of the produce* carried off; and, if not *replenished* with ADVENTITIOUS ALIMENT, it must, sooner or later, be reduced to a state of penury.

If the soil be *exhausted* by repeatedly carrying off the produce; nothing but repeated INHAUSTIONS, nothing but DUNG, or other EXTRANEOUS FOOD, repeatedly incorporated with the soil, can preserve it in *perpetual vigour*,—can *keep* it in a state of *perpetual opulence*, fit to supply the wants of the supplicant vegetable.

This needs not a PERHAPS: the EXPERIENCE OF AGES,—the EXPERIENCE OF EVERY DAY confirms it.

Therefore, *perhaps*, to *force*, to *exhaust*, to *impoverish* a soil, get it into exceedingly fine tilth,—sow it with the vegetable it most affects:—the herbage in full sap, trench it in;—crop it, and repeatedly till, until its treasures are exhausted. *Perhaps*, the richest land might be thus drained of its riches.

And, *perhaps*, to *favour*, to *inhaust*, to *enrich* a soil, be sparing of TILLAGE, and profuse of MANURE.

But, *perhaps*, to preserve land in *perpetual vigour*, to keep it in a state of *perpetual opulence*, to enable it to *throw out*, and *mature* an abundant produce, *annually*, be not sparing of MANURE NOR TILLAGE.

And, *perhaps*, nothing but a scarcity of MANURE can apologize for *provoking* the soil by *herbaceous melioration*.

JULY, 1777. The Writer is not here *asserting*, but publishing his private *opinion*.

FENCES.

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FENCES. 17. High fences are nuisances of arable land.

This is a fact particularly obvious this year. The corn of narrow *close* fields, and every-where under high trees, is, by the many heavy rains, very much lodged; and in some places grown thro' by weeds. In large *open* fields, or where the hedges are *low*, very little damage is done.

But, at present, I feel their inconveniency still more sensibly. We carried the *middle* of H. 1. the day before yesterday, in good order; but about a load under a *bigb quick-hedge* was quite damp, and was obliged to be left in the field. Yesterday, some of the sheaves were *opened* to give them air;—a heavy *squall* came on, before they could be re-set-up, and they are now *growing* into mats, as they lie on the ground. Had it not been for the *bigb hedge*, it would *all* have been safe in the barn.

I would not wish to see the fence of an arable field above four feet high. Perhaps, a good ditch, with a *trimmed* quick-hedge about that height, is preferable to any other fence.

The oats of A. under a *bigb*, thick hedge, are mere dung; under one which was cut down last year to about four feet high, they are very little the worse for the weather.

HOEING INTER-FURROWS. }

WHEAT. }

DEPOSITING. }

17. (See 16. MAY, 1775.) I never conceived better theory than this. For tho', last year, it was rather detrimental than serviceable (the mould not being thrown back to the roots of the corn, the plants, as they grew heavy, fell into the intervals) it is fully confirmed in almost every instance, this year, in M. 1.

The wheat was sown on high, backed-up, five-bout lands; the inter-furrows were of course deep, and the plow reaching the inert

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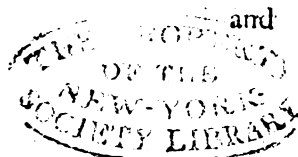
sub soil, there was a space of two feet wide between each bed, without a blade of wheat in it.

First, it would have been of great service to the succeeding crops, to have run a horse hoe thro' each interval, to cut up the *weeds*: it was intended, but neglected. 2d. There was, of course, no backward *puny ears* in the inter-furrows. 3d. Throughout winter, spring, and summer, it always looked *vigorous*. 4th. It was very full of *may-weed*; but, by setting one foot in the interval, and the other among the corn, it was drawn out without injury to the wheat, and thrown into the intervals. 5th. Such beautiful straw I never saw: not a *speck* upon it. 6th. The crops not half so rank as this, are, almost everywhere, more or less lodged.—This has scarcely a crooked straw in it:—A more beautiful crop never grew. 7th. An old reaper,—a man upwards of threescore, declares that he never reaped wheat so *heavy* in the sheaf: he lays it at a bushel a shock, of ten sheaves. This is scarcely possible; tho' the grain is *plump* and *large*, beyond any I have seen.

All these advantages, however, are not *wholly* owing to an interval of two feet being accidentally between each ridge; though, perhaps, these intervals *aided* in every instance. This is the Piece mentioned in a Minute of yesterday, and the management of this Piece is worth copying in future.

Depositing.—*Perhaps*, the height and narrowness of the *ridges* are other reasons of its not lodging. The rod-wide *flat* beds of Barn-Field were many of them lodged; but it always happened in the middle of the lands—never against the inter-furrows—which were in the identical predicament of those mentioned above.

The high, round lands of M. 3. it is true, are lodged; but they are lodged chiefly in the inter-furrows, *which are full of a slender, puny crop*; and M. 3. is a very good evidence in favour of hoeing inter-furrows. For, *perhaps*, had its inter-furrows been horse-hoed,



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and then opened with a double-plow, the wheat would have stood there, as well as in M. 1.

HARVESTING WHEAT. 18. It is very dangerous to open wheat that has been wetted in shock.---The sheaves which were left standing (See Yesterday) are still safe; those which were opened, and caught in the squall, are very much grown.—But this is a great deal owing to the wheat's being left *too thick* upon the ground; for last night, I experimentally spread a part of it *thin*—so thin, that the straws scarcely touched each other:—This morning it is in good order.

Therefore, if wheat be opened, and there be the smallest danger of its vegetating, it should be spread very thin.

But why was the wheat opened? Because it was *growing* in the *band-places*, as it stood in shock. But is there no way of drying the band-places, without the risk of *opening*? A much safer, and one fully as effectual, never occurred to me till last night. After having spread a few sheaves thin, as abovementioned, I *set-up* half-a-dozen sheaves in the manner in which barley and oats are harvested in the North of England: Instead of tying the band *hard*, at a foot from the *buts*, I tied it *loosely* about the same distance from the *tips*; and, spreading the butts, set them up *singly*, in resemblance of sugar-loaves, or rather of fish-pots; leaving the insides totally hollow: This morning, they were nearly as dry as those spread thin.—I shifted the bands back again to the common banding-places, and opened the ears: They were perfectly dry presently.

If wheat which is *wholly wet*, can be thus dried *without risk*, (for, in case of rain, it is much safer in *singlets*, than even in *shock*) certainly, that *partially wet* in the band-places, might be dried with the same safety, but less trouble. And at present I am determined never to open another sheaf of wheat; for there is no guarding against a *squall*.

I have

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I have this year observed in general, that the *small, loosely-tied* sheaves were dry, while the *large, tightly-tied* ones, of the same shock, were growing; that the ears of the *bands* were the first which grew; and that those shocks which stood *free and open*, fared better than those of which the sheaves stood *buddled together in a close lump*, through which no air nor sun could penetrate.

In future,—See that the sheaves are not tied *too tight**; that they be not made *too large*; that they be set-up in such a manner, as but just to touch each other at the butts and ears, leaving the space of a foot and-a-half between each sheaf at the band-place; and that the ears of the bands be turned inward.

Perhaps, reaping by the shock would be the fairest and safest way of reaping wheat; or by the acre and shock jointly.

BUSTLING. 21. I never made a better day's work than I have done to-day. How? Thro' the means of omnipotent *bribery*.

Last night, after a hard day's work, I gave the men as much ale as they would drink: This morning, after they had unloaded the waggons, gave them two gallons to their breakfasts; which I desired them to eat while the horses were feeding.—The teams were presently out;—the men went singing into the field; and, working like coal-heavers, never looked behind them, until we had made a stack of wheat of about twenty loads: It was run up in about five hours!

I now repeated the dose; and in the afternoon we gathered up as many odds-and-ends, as, without the ale, would have amounted to a day's work.

This evening I have been *canvassing* for a great day's work to-morrow.

* But the opposite extreme must be guarded against; for if they be tied *too loosely*, there is danger of their slipping wholly out of their bands; besides their being difficult to load, and still worse to stack.

K k.

But

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But all this ale must cost something: The Maltman's bill will come in at Christmas. Very true.—Let me see—three gallons last night,—two this morning, and two at noon, are seven gallons, at 5½ d. say 6 d. a-gallon, is 3 s. 6 d. or nothing at all when divided among ten men and two boys: It is but 6 d. more than *one* man's wages. *Five* men would not have done more than the seven gallons of ale; nor would the satisfaction of seeing men work chearfully have been enjoyed.

HARVESTING BARLEY. HARVESTING OATS. HARVESTING PULSE.	}	22. The tare-barley was cut before it was quite ripe:—The grain was remarkably fine, <i>before</i> cutting; but it is <i>now</i> a shrivelled, unsightly sample.—It has not <i>kept its body</i> like wheat, or oats, cut green; besides, it had been cut down a fortnight, before the sap was sufficiently out of it to be carried.
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The barley of Conduit-field was *quite ripe* when cut: It is a beautiful sample; and was ready to carry the day after cutting.

The difficulty in harvesting barley lies in *preserving its colour*, and *preventing its growing*.—There is no fear of its *shedding*; and it must be very ripe and dry indeed, if the ears break off. Is it not, therefore, evident, that to cut barley before it be quite ripe, is bad management? If it be free from weed, and is a standing crop, surely it must be good management to let it stand until it can be cut *one* day, and carried the next. The *risk of the weather*—and this is the only risk,—would be almost evaded.

Oats.—But, perhaps, the management ought to be quite the reverse in harvesting oats: The difficulty, here, lies in *preventing their shedding*; there is but little danger of their losing their *colour* by the weather; and still less of their *growing*: Those of Norwood are very little the worse for the late rains.—But altho' they were cut when the knots in general were green, there are not less than two bushels an

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acre *sbed* in the field. I apprehend, to cut oats as soon as the haws are changed, is good management *.

Pulse.—The halm of pulse is so well affected by cart-horses, and indeed by every species of stock, that it forms a principal object of its culture. No doubt, the greener it is cut, the better the fodder; but if cut too green, the worse the grain: therefore, the fittest time of cutting is, when the fodder and grain are of the greatest value jointly. Nothing but experience can ascertain this. Perhaps, it is when the *under-pods* are *changed*, and the *tips of the halm* still green.

As I mean, in future, to sow pea-beans for the sake of the halm for cart-horse-fodder; I will, at all events, cut them under-ripe: The quantity of grain may not be so great, nor the sample so even; but it will do very well for Farm-yard-consumption; and the halm will be equal to middling hay.

SEED-WHEAT. 24. Last autumn, I again sowed a patch experimentally with the blighted spring wheat of 1774. (See 21. AUGUST, 1775.) It did not only vegetate, but the crop is equal to the richness of the soil, and the grain a very good sample.

This is both curious and useful; it shews the eligibility of sowing wheat *in autumn*, and proves the absurdity of the *good old way* of choosing the largest, finest, plumpest wheat for feed.

I apprehend, that one bushel and-a-half of the shrivelled trash in question contains as many grains,—would give as many plants,—would seed an acre of ground equally as well, as *three* bushels of large, full-grained wheat. But this is only *one* advantage; its *value* was trifling; it was not worth a shilling a-bushel.

I have still a little left;—for I know no use it is fit for,—and I mean to give it another trial at *three* years old.

JULY, 1777. It was sown in September, but never came up. The Writer blamed the strength of the pickle in which it was

* The *early* species of oats are here meant, not the *backward* Scotch oat.

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steeped: This, however, was but conjecture. The fact is, that it was brined, limed, and sown in the same manner as the rest of the seed sown in the same field; but not one blade appeared.

AUTUMN-SOWN BEANS. 24. They were cut about ten days ago. We were cutting Mazagans sown in February at the same time: therefore, the *Tick* bean sown in *September*, comes as early as the *Mazagan* sown in *February*. The few which escaped, were well podded; and had they *happened* to have been all covered by the snow, would have been a very good crop.

But who would sow beans in autumn, and lie at the mercy of the weather? Or sow them in spring, knee-deep in a puddle? If ever I sow beans again, it shall be in the first fine weather of spring, let it come in February, March, or April.

HARVESTING SPRING-CORN. 24. By a continuance of wet weather, every-thing was down, before any-thing was in; hands, of course, became scarce and invaluable. I was glad to get the major part out of the weather's way, as fast as possible: Therefore, instead of *cocking and raking*, I *cocked and carried*, without losing time by raking.

There were several attendant advantages: I got *more* corn together in the *same* time, with the *same* force, than I should have done, if the ground had been *raked*, first after the cockers, and then after the waggons. By raking it *once* with five-foot drag-rakes, it was raked at a much less expence, than it would have been by raking it *twice* with the common hand-rake.—By raking it after a shower, or in the morning-dew, it raked cleaner, and less grain was shed.—By raking *in*, or *immediately after*, rain, the men were employed when otherwise they would have been idle.

Why

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Why not practise this generally? I see but two reasons why I should not: The feet of the horses and wheels of the carriages waste a part, by pressing it into the ground; and the trouble of going *twice* over the field to pick up the crop is incurred.

Perhaps, in future,—if work be more plentiful than workmen, or the corn be in danger of shedding, cock and carry; if the reverse, rake before and after carrying.

STACKING. 28. Some over-flowings of clover, I ordered to be made into a square cock for the cart-horses.—There was more than the Stacker was aware of:—he made his *bottom* small, and was obliged to carry up his *stem* very high, to get it all on.—It looked awkwardly tall, and top-heavy, while it was *in making*; but after the *roof* was on, and thatch, and the stem was *settled*, it became one of the most elegant little stacks I have seen.

A tare-hay-stack and a meadow-hay-stack which stood in the same stack-yard, and which were made in the common way, of beginning to draw-in as soon as the stem is of a *moderate height before settling*, looked frightful in the company of this. They are all roof and eaves, which over-shoot so much, and hang so low, they almost hide the stem; and the roofs are so flat, there is barely a descent for rain-water: Compared with the little, upright, tall-stemmed, steep-roofed stack, they look more like pulpit-cushions than hay-stacks.

I took the hint, and have since built two wheat-stacks, a tare-barley-stack, an oat-stack, and a bean-stack, after this chance-produced model; and to my taste they are all elegant.

But their merit lies not wholly in appearances; they take less thatch and thatching, and are more secure from the weather, than a big-bellied, flat-roofed stack.

Stack-

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28. AUGUST, 1776.

Stack-making did not appear an object of attention until this year; nor, indeed, is it, compared with cleansing of land, and getting a Farm into order. To get clean and good crops is the first object, the economy of a stack-yard is but secondary: and, indeed, till those are had, the pleasing art of stack-making can be but little practised.

As I have this year studied the *Science*, I cannot say practised the *Art* of stack-making, I will minute what I have *discovered*, and lay a foundation for my next year's *researches*.

Let me see—which are the handsomest? The two wheat, and the tare-barley.

The wheat-stack on the frame at Adscumb, of eighteen feet square, contains just twenty loads: it has something less than fourteen in its stem, and something more than six in the roof.—Except a protuberance at one end,—but this falls on the execution, not the design,—it is very complete.

The wheat-stack on the ground at home, stands on a bottom of fifteen feet by nineteen and-a-half, and contains eighteen loads: there is about twelve in the stem, and six in the roof.—This is a very elegant stack; except some small defects in execution.

The tare-barley is a little stack on the ground, of about twelve loads: it stands on fifteen by eighteen; its eaves are nine, and its ridge eighteen feet from the ground; but I do not recollect how many loads there are in the stem, nor how many in the roof.—This, in design and execution, excels them all.

Which is the least handsome? The *bean*-stack. Why? Because the stem and the roof are *out of proportion*, and the bottom is too large. It stands on fifteen by sixteen and-a-half;—has more than seven loads in the stem, and less than three in the roof: this is, of course, too low, flat, and scanty.

The *oats* were long, and had been ravelled by the weather; they were very bad to stack.—The Stack-maker could not keep the stem upright;

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upright;—the stack has, of course, too much *belly*,—its appearance is *heavy*;—it wants the *lightness* of the wheat, and the *neatness* of the tare-barley.

Have I been able to draw any *general rules* worth remembering? I think I have.

A *square*, not a circle, nor a parallelogram, is the best form of a stack-frame, or bottom. Perhaps, a stack built on this figure, is more pleasing to the eye, takes less thatch, and stands firmer, taken jointly, than on any other.

The stem should be carried up as plumb as possible (except the last course, which should project five or six inches, to form the eaves); for the weight of the roof will press out the upper-part of the stem sufficiently. If it be over-hung *in making*, its own weight, and the weight of the roof, will squeeze it too flat,—will spoil its appearance, and waste both thatch and thatching.

The stem should contain about two-thirds, and the roof about one-third of the whole stack.—If it be built on a *frame*, the stem should contain less, and the roof more; if on a *bottom*, the reverse.

The corners of the stem should not be built too sharp;—should be carried up snug:—the sides will look fuller, and the swell, given by the pressure, will be more perceptible.

The *ends* of the *roof* should have a gentle projecture, answerable to the stem; and the *sides* should be carried up rather convex, than *flat*, or concave. Perhaps, a roof gently convex shoots off the rains preferably to any other.

I am quite delighted with the proportion of the tare-barley stack; its height is exactly equal to its length, and to its width at the eaves, and exactly double the perpendicular height of the eaves. Therefore, the superficies of the end of the roof is eighty-one square feet, and that of the end of the stem 148.5.

If

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If the sides were upright, it would have been exactly double the end of the roof, and this, of course, one-third of the whole; but the superior pressure on the item *more* than makes up for the deficiency of dimension; and this is the reason, why the roof does not take one-third of the whole quantity, when the stack is built from the ground.

As the width of the platforms of the stack-yard is but eighteen feet, and the roads round them but just wide enough for a large load, a stack wider than eighteen feet is inconvenient. *In future*, therefore, I will endeavour to make them as nearly as possible to the above dimensions, and make their lengths proportionate to the number of loads; ten loads will stand on a square; twenty, on fifteen by thirty.

I do not wish to make a stack larger than twenty or twenty-one loads; especially a corn-stack. The risk of making and getting-in is much less on a small than on a large stack. A large stack does not settle so true as a small one, and of course will not stand the weather so well. A large stack, it is true, takes in proportion less thatch and thatching; and this seems to be its only preference.

I find that one of the platforms is more than eighteen—is twenty feet wide; therefore, place the larger on This, the smaller on That. What will be the proportion on This? Five-sixths of twenty is 16.666, &c. say $16\frac{1}{2}$ feet; therefore, the bottom will be $16\frac{1}{2}$; the width and height 20.

The twelve loads of tare-barley contain 4131 cubical feet, or 344.3 cubical feet a-load.

The superficies of the end of the smaller dimensions, is 229.5; that of the end of the larger scale, 282.5.

Therefore, every foot and-a-half in length of That, and every foot and-a-quarter of This, will hold a load of corn or of hay which does not heat much; and consequently, a bottom for any number of loads may be readily set out with mathematical certainty.

This

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This year, we made a clover-stack bottom much too big, and were obliged to cut a large piece off one end, after the stack was half-made, to get it to any kind of proportion.—This took up some time, hurt the hay, and the stack is shameful to be seen.

CABBAGES. 31. (See 21. JULY.) Part were planted with intervals of two feet wide, part with those of two feet and-a-half.

Two-foot intervals are too narrow;—there is not room for the double-plow to pass between the cabbages without injury, when they are in the state fit to be moulded-up. The two feet and-a-half intervals are exactly the proper widths.

If the furrow-intervals of these are sufficiently wide to keep them dry in winter, thirty-inch intervals are much preferable to those of twenty-four.

JULY, 1777. The furrow-intervals *are* sufficiently wide to keep them dry in winter. And the Writer apprehends, that three rows of cabbages on a half-rod bed, with thirty-inch intervals between the rows, leaving thirty-nine inches for the furrow-intervals, is the *best* way of planting Farm-yard cabbages on wet land.

S E P T E M B E R.

BUSTLING.

MONTH-MEN.

WOMEN.

REAPERS.

CARTERS.

2. The harvest-month* ended last Saturday the 31st.

I had this year, seven month-men and two boys; and two men in the house: in all, nine men, and two boys, by the month or year.—

But I was two or three men short.—Ten men, two boys, and three

* It is an established custom here, for every man, in harvest, to work by the *acre*, or by the *month*; not by the *day*. If a labourer be employed constantly thro' the year, he expects, during harvest, to be constantly employed on mowing, reaping, &c. by the *acre*, or to have his *harvest-month*; that is, to have an advance of wages, certain, wet or dry, during one month; which month commences when it best suits his Employer. (See 28. AUG. 1775.)

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teams, are a sett for carrying, if the distance be less than half-a-mile ; if more, four teams, and of course eleven men are necessary.

Month-men are very convenient ; they are always at command, in cases of emergency ; and nothing but a continuance of rain while the barns are empty, can make them burdensome.—And, *in future*, I will endeavour to have not less than twelve men by the month, or year.—The ox-team, this year, was sometimes obliged to lie-by for want of a Plowman ; and a Plow-team in August is invaluable.

This year, I found the conveniency of employing *active* young fellows.—One *invalid* or *stuggard* would have spoiled the whole sett : and this holds good generally. Mix two or three old women, or two or three boys, with a company of men, and a metamorphose is instantly produced ; for the *men* will become *old women* or *boys* : complacency and self-love bid one wait for the other.

Women.—If ever I employ women, *in future*, in hay-time or harvest, it must be from a *scarcity* of men ; and it must be from real *necessity*, if I employ more than *two*.—Two women, after the *first* or *second day*, will do as much work as half-a-dozen, *alone* : By this time their stores of scandal are reciprocally communicated, and the *third* or *fourth day* they begin to work for amusement.—Add a third, and they would ring incessant changes from six to six—from Monday to Saturday.

Generally—If it be necessary or convenient to employ a number of both men and women, it is but common good management to keep them *separate* ; with this exception, which may be laid down as a maxim,—“ One man among women, and one woman among men.”—A crusty, conceited old fellow will check the gossiping of the women ; and I have seen a handsome young wench, raking-after, animate more than a gallon of ale. Two are dangerous ; they breed contention, and rather retard than accelerate.

In

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In future—endeavour to engage, *before harvest*, ten or twelve *able* young fellows for month-men; and two or three sets of *careful* old or middle-aged *neighbouring men* for reapers. Those will want nothing but good usage and ale to make them *willing*, in cases of emergency; and These, generally, will do their work better, with less looking-after, than *strangers, youngsters, women, or boys*.

Carters.---But the most valuable animal of harvest, is a good Carter.---It is necessary to common management, that he should be able, willing, and careful. Every pitch of hay and corn, generally speaking, passes twice thro' his hands; he loads and unloads, which are the two most laborious tasks of harvest; he drives the team backward-and-forward; if he loiters by the way, the field-men or stackers must stand idle; if he spill or overturn his load, or if he break his waggon, or set his horses, the arrangement of the day is broken; and, perhaps, the damage done by the loss of time, rendered irreparable by the next day's rain. A good Carter will not suffer his waggon to be over-loaded.---We have this year already carried two or three hundred loads of hay and corn, without the shadow of a disagreeable accident.---I gave strict orders, that nothing above a *middling load* should be laid-on; and to this I attribute the success.

The *field-men*, too---(the pitchers and assistant-loader) should be young and active, and match well with the Carters.---A less even set will do for the stack or mow.

BARLEY.

CLOVER.

GENERAL MANAGEMENT.

8. (See 22. AUG.) But this cannot be practised generally. It cannot be practised except when the *barley* is free not only from *weeds*, but from *clover*, or other succulent herbage.

Last week I cut a field which was purposely let-stand to cut and carry immediately.---I knew it to be clear of *weeds*, but was not

L. 1. 2.

aware.

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aware of the *clover*, which in patches had got half as high as the barley.—Before the succulence of the clover was sufficiently exhausted, to prevent its heating very much in mow, the barley was caught in the rain; and, being *quite ripe*, the *colour* will be but very indifferent.

It is true, yesterday we cut, and carried, off two acres of Garden-Field, four good loads, in tolerable order; but there was not a *weed* in the whole patch; and being intended for cabbages next year, there was no *clover*.

Here a disadvantage of sowing clover with barley appears, and threatens my whole plan of management. How clever it was, yesterday, to cut Garden-Field, and hurry it into stack immediately! How disagreeable to turn and re-turn the thatch at Adscomb; looking every minute as furly and black at the weather, as the clouds themselves!

But are there no disadvantages attendant on cutting barley very ripe? Yes—two enormous ones (This is comfortable! I was afraid that I had found a flaw in the all-perfect round of fallow-crop, spring-corn, clover, wheat); the *colour* and the *quality* of the *grain* are greatly injured, and the quality of the *straw* totally spoiled, though undamped by a drop of rain after cutting. This is verified in Garden-Field; the straw is rotten, and the grain all bran. There is one skin peeling-off while a second is forming under it.

Another evidence that barley may stand too long, occurs in I. r. A few ears which by accident were left uncut, are obviously a worse colour than those which lie in swath; tho' these have lain four or five days, and have had some rain.

In future,—I will endeavour to get the barley into the ground in September or March, or as early as the cleansing of the ground will permit. If it be got-in early (before April), I will defer sowing the clover until after the barley be up. Or perhaps, *generally*, sow half with

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with the barley, and hand-rake it in;—half after the barley be up, and roll it in. Whether it be foul or clean, I will cut it as soon as convenient, after the ears in general begin to curl. But I will rather cut it too late than too early. I will endeavour to cut it in that state which will preserve its *colour* and *plumpness*, with as little *field-room* as possible. It seems evident, that barley should have some field-room: It cannot be let-stand long enough to cut and carry immediately, without injuring both the grain and the fodder.

Therefore—clover is no impediment to barley, but must add much to the goodness of the fodder.

HUNTING. 9. Last week, Mr. —'s hounds came across the standing-corn.—I desired that they might be kept off the Farm, until the corn be off the ground.

This morning Mr. —'s huntsman and whipper-in were absolutely *trailing* in and around a field of beans and buck-wheat, with a field of barley in swath adjoining.—I ordered them off; but they presently returned, and I was under the necessity of sending them away in a much greater hurry the second time than the first.

But how is this, Mr. *Farmer*? You, who profess liberality of sentiment—You, who pretend to be so fond of hunting too—You to behave in this churlish, unsportsmanly manner!

I beg your pardon, Mr. *Monitor*.—I confess, I was a little warm; but, on cooler reflection, I do not repent of my conduct; because I did nothing unbecoming a *Sportsman*.

And now, while there is still a glow upon the embers, let me endeavour to analyse this FIRST OF MANLY AMUSEMENTS, and to collect and arrange my ideas so as to form principles of future conduct.

Is Hunting *natural*? Certainly.—A state of Nature is the Hunter's state. Were not this obvious, my own feelings, even in this emasculating labyrinth of *Art*, would be sufficient vouchers of it.

But

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But is hunting *on horseback* natural? As certainly.---It is natural for hounds to pursue their game;---it is natural for horses, domesticated as they are, to pursue the hounds;---and is it not obviously natural for man, who is of slower pace, to mount the animal he sees able to wanton amidst the pack, and which is evidently adapted to accelerate his pursuit?

But is equestrian hunting, in a state of PRIVATE PROPERTY, *right*?

On this point, different men will decide differently.---If any *one* man is a judge of the question, it is the sporting Farmer; for he is the actor and the actée.

I will profess myself a sporting Farmer: Because if any man will convince me that he has more rigid ideas of PROPERTY than myself, I will discard my own sentiments and adopt his (I speak not as a *Niggard*, but as an ENGLISHMAN); and because if any man enjoys the chase more than myself, I hope never to be of his acquaintance; for I should envy him.

Therefore, I take the sword and balance, and pronounce it *right* to hunt on horseback in a state of private property---because it is *political**.

Men who live at ease require amusement.---Without recreation, ease and indolence are synonymous.---If their amusements are soft, they become effeminate; if athletic, manly. --If there is an amusement which at once makes the body robust, and the mind magnanimous, it is HUNTING.---If there is an amusement which, more than any other, makes men emulous and brave, it is HUNTING. An army of SPORTSMEN would be an army of --- I had quite forgotten the profession just made; for I had said to my pen, an army of HEROES!

But is it right that a Sportsman should trample wantonly on private property? The question is vague.---A SPORTSMAN will not; he *cannot*:

* The Wastes of England, tho' too many, are too few for general hunting.

---He

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---He is no longer a *Sportsman* if he injures, voluntarily, more than is necessary to the fair pursuit of the game.

There is an etiquette of the field as of the drawing-room. If a man intrude on This, he is *no Gentleman*; on That, *no Sportsman*. But the rules of SPORTSMANLINESS are not so generally understood as those of GOOD-BREEDING.

The bounds between Sportsmanly and Unsportsmanly may be difficult to trace precisely; but there are objects on each side the line, which are obviously discriminable.

It is unsportsmanly to hunt out of season.---It is wanton mischief to hunt before the crops are off the ground, or after the fences of an inclosed country are made-up, and live stock in the fields. The chace cannot be pursued by *horsesmen* thro' an inclosed country, after the *middle of March*, nor before the *middle of October**, without aggravation.

A Sportsman endeavours to favour a wet land country; but it is not unsportsmanly to *pursue* game *fairly* thro' any country.

It is unsportsmanly to ride over a valuable vegetable, which may be avoided by a few yards riding; or to destroy a fence when a gate is near: --But a brisk chace will sometimes apologize for these and many other unavoidable petty mischiefs.

It is sometimes sportsmanly to suffer the *huntsman* to pursue the hounds, where it would be unsportsmanly in any other *horsesman* to follow.

A SPORTSMAN invariably rides over another's property with greater caution than over his own; and the only fear he takes with him a-hunting is, that of injuring the industrious Farmer, whom he considers as the sustaining pillar of human subsistence;---and is conscious, that by wantonly destroying the produce of the soil, he is committing a crime against mankind.

* Before this time, the after-grass, which is a part of the Farmer's crop, is still valuable; and the fields are still full of live-stock: and if not *unsportsmanly*, it is, at least, *unneighbourly* to hunt before this time.

Generally,

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Generally.---it is as unsportsmanly to do avoidable mischief to private property, as to cross the huntsman, ride before the hounds, or head the game.

Well, and what rules of future comportment result from these reflections ? Two very concise ones.

As a Sportsman, I will endeavour to do as I wish to be done by.

As a Farmer, I will not suffer any man to trample unsportsmanly upon me with impunity.

SECOND CROP OF CLOVER. 14. I began cutting as the daggly weather set-in: some of it had all the late rains.---Being busy with the barley, the clover was neglected, and I gave it up as lost.---The weather, however, broke just as it was all down ;--and the barley being got-in, we paid more attention to the clover.---It was all, whether black, yellow, or green, *wadded*. --As the wads became dry on the outsides, they were turned on to fresh ground, and the lumps carefully broken. As they grew still drier, they were grouped ;-- and after being *thoroughly aired* by the *afternoon's* sun, they were heaped and carried.

The first-mown was but so-so; it rose, however, in goodness, according to the time of mowing; and that which was last-mown, is not the worse for the weather. --I mixed the over-done with the under-done; and it takes a very fine heat.

In future,--I will endeavour to wad the second cut of clover immediately after the mowers, as I did the tare-hay: for where the swaths lay thick, the clover saved itself; but where the swath was thin, it was beaten into the ground, and as black as a hat. Whether the crop be thick or thin, *WADDING* puts it equally out of harm's-way.

Buck-

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BUCK-WHEAT. } 19. The 18. May, (after the first
 GENERAL MANAGEMENT. } hoeing) sowed the head-lands of the
 HOUSING. } drilled pease with buck-wheat.

It was cut to-day, though much under-ripe; for this patch of buck-wheat, and a patch of beans in the same field, are a boy's business to look-after.—Backward straggling crops are the curse of September;—and I never will let buck-wheat, sown in May, stand for seed again.—But for these, my *care of crops* had ended a week ago: if this showery weather continue, they may hang upon my attention for a fortnight or three weeks to come.

Nor will I, *in future*, sow *small patches* of any-thing (except by way of experiment). Side-Barn is this year thrown away on a patch of pease, a patch of blendings, a patch of seed-tares, a patch of purple beans, and a patch of buck-wheat.—Each driblet requires a separate mow, and the barn is not above two-thirds full: I mean, it has not more than two-thirds of the number of loads it would have contained, had each end been filled with *one* sort of grain, *trod-
 den down by a horse*. *This* alone makes a considerable difference. One horse on a mow is better than almost any number of men.

In future—endeavour not to have less than ten or twelve acres of any particular crop.—These will fill up the bay of a barn, or make a little stack, and will be an object of attention.—Small patches are either neglected, or engross more attention than they are worth.

SOOT. } 20. Part of the wheat of B. 3. had a top-
 CLOVER. } dressing, harrowed-in with seed, in autumn,
 WHEAT. } (See 16. AUG.) and the whole was sown in
 SPRING-CORN. } spring, with clover.

Wherever it was meliorated, the clover has hit; but the part not dressed has totally missed.

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The part *sooted* joined to the part *undressed*; and the difference, in the plant of *clover*, is glaringly obvious; therefore, *soot is favourable to clover*.---But the *wheat* was not a whit the better for it, though upwards of *fifty* bushels an acre were harrowed-in with the seed. *Therefore, soot is not favourable to wheat, on stiff land.*

Perhaps, in future---endeavour to top-dress the spring-corn crops, to assist them, as well as to secure the *clover*: barley especially feeds shallow, and must be greatly assisted by a top-dressing.

OCTOBER.

SOWING. } 2. The other evening shewed for rain.---The teams
SCIENCE. } had been plowing for wheat, and I meant to harrow-
in the seed the next day.

I reasoned thus: If it rain to-night, we shall not be able to sow to-morrow morning, at least not with propriety; the seed will *stick*: and should even the day prove fine, it will be noon before we shall get to work;---and even then, it will be sown over a surface vastly inferior to the present *fresh plit*. Therefore, to evade the risk, I will sow it to-night; for although it is too late to harrow it in, it will, notwithstanding, be ready for the rain.

It is true, it did not *happen* to rain: if it had, the seed would nevertheless have been deposited in the fructuous cells, with which a *fresh* surface abounds, and which are finally closed by the first shower of rain.

I cannot see any necessity for the custom of sending the seed, the seedsmen, and the harrowing-team into the field together; nor for that of deferring to sow till the whole field be plowed. There is, indeed, a glaring impropriety in it:---the team has to wait in the Yard, to take up the seed, which ten-to-one is not quite ready.---The seed is then

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to be distributed in the field; and after this, the Carter must stand looking at the Seedsman until he has finished his *first cast*.

L. 2. has been sown at the Seedsman's leisure: when opportunity offered, he carried the seed into the field upon a leisure-horse, and sowed up to the plows.---Yesterday morning, the team went *straight from the stable to the field*, and harrowed it in, without stop or delay; and, if experience do not point out an evil attendant, I will ever practise this mode of sowing*.

Although I pride myself on being a Farmer from SELF-EXPERIENCE, this convinces me that I am not, yet, *wholly such*.---It requires a length of time, and strict attention, to analyse each process; and, without the help of ANALYSIS, it is difficult to get rid of customs ever so absurd, imperceptibly imbibed. I saw *George Black*, I saw *Thomas White*; I saw every Farmer in the neighbourhood, go the same way to work; and, until last Wednesday, I did not think that there was any other way of getting the seed into the ground, than by sending it into the field by the harrowing-team. I *imagined*, though I knew not why, that to let the seed lie on the ground, though but for a few hours, was endangering the crop.

This, though petty, is nevertheless, to me, a discovery, at least convenient. Sowing was a *business* of consequence, which created a bustle, and to which every other business bowed; it is now only an *amusement* for the leisure-hours of the Bustler.

PLOWS. } 3. The fallow of L. 1. was gathered into
PLOWMANSHIP. } five-bout-beds, the last stirring, to get it out of
the water's-way.---We are now reversing these beds for wheat.
There were two teams at work to-day.---One of the Plowmen laid his

* Where pigeons, rooks, &c. abound, it may be dangerous; but the Writer has not yet experienced any inconvenience.

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lands sufficiently round, and left his inter-furrows sufficiently deep to keep the wheat dry during winter: the other left his as flat as a table, without any furrow to carry off the water.

I was certain that the fault lay in the plow, not in the plowman; for, of the two, the latter was the best.---On examining the plows, I found that one of their sterns was considerably *wider* than the other; the *wide* stern made the *good*, the *narrow* stern the *bad* work: I made their sterns of *equal width*, and they made work of *equal goodness*.

In future---gather-up a fallow with a *narrow* stern, and *reverse* the land for the crop with a *wide* one.

SOWING FIVE-BOUT-BEDS. 5. I have this autumn changed my Seedsman.---I suspected his abilities, and have therefore paid more attention to broad-cast sowing, this autumn, than I had ever bestowed on it before.

He began, as had ever been the case, to sow *two* lands at one cast. This is expeditious, but obviously wasteful;---the inter-furrows sowed a-cross receiving, of course, a considerable portion of the seed.

I desired him to sow the lands *single*.---He got *upon* one of them, and attempted it: but he took too much in his hand at once, and scattered it too wide, filling the inter-furrows on *both* sides with seed; and consequently rather increased than lessened the waste.

I bid him walk in the *left-hand inter-furrow*, with his face toward the land to be sown, and to make his cast *diagonally*,---not across the land. This gave him a greater scope, and after a few minutes-practice he made very good work: before night he walked at the rate of three or four miles an hour, and, though a young Seedsman, made as good work as I would wish for. I apprehend that a man walking in the *smooth*, open inter-furrow, would sow *three* acres in less time, with
more

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more ease, than one walking among the *rough* clods and loose mould would sow *two* acres; and yet I never saw nor heard of its being practised.

JULY, 1777. The Writer practised this method of sowing throughout the wheat seed-time, and his ground was never cropped so well with so little feed, nor came up so evenly as it did last year. The extra expence of sowing is about two-pence an acre;—and the saving of feed, as nearly as the Writer can calculate, is about two shillings an acre.

The Seedsman walks *up* one side of the bed, and *down* the other side; always keeping his face, and the hand with which he sows, towards the bed he is sowing. An old Seedsman, who has been used to throw large handfuls, with all his might, in *wide* casts, straight across his walk, will find it awkward at first to make the *snug* diagonal cast which is necessary in sowing five-bout-beds singly.

The Seedsman keeps his eye on the edge of the opposite inter-furrow, and delivers his seed, principally, on the side of the bed next to it: as he returns, the sides are of course reversed, and the beds become evenly feeded.

SERVANTS. 10. Reduced my in-door Farming-servants to two: a Bustler and a Yard-boy.

(See 21. Oct. 1775.) Since then till now, I have had a young fellow, a Farmer's son, in the house; but I have been again out of luck: Poor *Richard* has no *Devil* in him; and a Bustler without spirit is not worth a straw.

From Methodism he flew to love, and from love to the Quack Doctor.—Fools are ever a prey to the designing. No sooner did I rescue him from the fangs of one, than another seized him; and with

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with difficulty I have returned him to his father, not more indolent nor foolish than I received him.

I have to-day taken a man into the house, who has worked for me by the day for two years past. He is a smatterer in every-thing; fit for any-thing, and knows every-body: He is a *bit* of a plowman,—a *bit* of a Seedfman,—and a *piece* of a Gardener. He is Farmer enough to receive instructions, and not too much of a Gardener to be taught; and *John* does not want for the *diabolical*.—If he will stay at home and be honest, I have made a good choice.

JULY, 1777. The Writer is either very difficult to please, or very much out of luck; or else a good *Bustler* is a Being rarely to be met with; or, perhaps, these three circumstances may with propriety be joined together. Be this as it may, he has not yet been able to meet with one to his mind.

John for a while was every thing desirable.—But ambition is treacherous: it was not enough to be *Bustler*, but he must aspire at being *Bailiff*. He of course became indolent, with now-and-then a strong symptom of insolence.—But worse—like other *Prime Ministers*, he must have a *Party* of his own.—Let a man be ever so good a *workman*, if he was not one of *John's men*, he presently *begged leave to resign*: and the only means the Writer had left of becoming again his own Master, was at once to discharge *John* and his whole *clan*.

FENCES. 13. *Dead hedges* are a heavy tax on an enclosed Farm: and *live fences*, except *quicks*, are *barbarously* treated in this country. Even *quicks* are generally hacked down to the ground, and a *dead hedge* raised behind the stumps, till the young shoots get strong enough for a fence.

There are few *old* hedges without a sufficiency of *live* stuff in them, if it were properly treated, to make a fence. But instead of *plashing* and

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and *trimming* this into the form of a hedge, it is all levelled with the ground; and, that the young shoots may not rise up in judgment of the folly, they are ingeniously smothered by a rough dead hedge, placed immediately upon the stubs. Should a hardy few escape total suffocation, they have no other way of enjoying the sun and air, than by shooting out horizontally across the ditch, or into the field; filling both the one and the other with weeds and other trumpery.

I have, this year, attempted an improvement of this antediluvian treatment of fences. If the hedge wants making, and there be live stuff enough for a fence, I plash it in the Yorkshire manner. If the live stuff be too thin, I *fill-in* with dead boughs. Such as do not require to be immediately re-made, I treat in this manner: With a sharp pea-hook, or a common reaping-hook, (not a fickle) I begin on the *ditch-side*, and strike-off every-thing, whether oak, hazel, black-thorn, or quick, stem or spray, dead or alive, which overhang the ditch; clearing at the same time the bank and ditch from grass and weeds.

If the *bank-side* be free from trees, bushes, or other incumbrances, I treat it in the same manner; leaving the hedge, whether crooked or straight, about a foot, or a foot and-a-half thick, and clearing away the grass, weeds, and briars, as on the other side.

The immediate neatness which this gives, is pleasing, and its utility is obvious: there is no waste ground,—no harbour for weeds;—and where live shrubs abound, the fresh shoots next spring, will, I should suppose, make it difficult for even a bird to get thro' them. If the *bank-side* is encumbered, I grub, or mean to grub, and plow close to the hedge. For the present, I plow close to the incumbrances, and trim *back* every-thing which overhangs the last furrow. This alone gives a gardenly appearance, which is worth all the trouble.—But even this is not without its use: the nursery of
weeds

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weeds is in a great measure destroyed, and a convenient path is formed round the field.

The Farmer who accommodates Hunting, will always be favoured by a Sportsman. I have frequently seen a horseman reluctantly riding over wheat, because he could not keep the outside furrow, without having his brains dashed out by a bough, or being torn off his horse by thorns and briars.

But the most pleasing reflection is, that all this utility, convenience, and sightliness, is purchased at a trifling expence. Yesterday I set a young lad,—but he is expert,—to trim the ditch-side of a rough black-thorn hedge, which had not been touched for twice seven years.—The ditch was totally *blinded* with thorns, briars, grass, and weeds.—The length was about sixty rods.—He began about eight, and finished about five o'clock.—His wages did not amount to more than 15 d.—or a farthing a-rod. And to-day he trimmed-back the over-hangings of the outside furrow of a field of wheat, of four acres, in four or five hours. It is true, the labour here required was not much: but I can *now* walk or ride round with pleasure, and view the coming crop without injuring it; which, without this six-pennyworth of labour, I could not have done, but at the risk of tearing or bedabbling my cloaths by the over-hanging spray and briars.

SWINE. 15. I found an exceedingly fine breed upon the Farm.—But they were *flaggery*; we lost several. I was told, that it was owing to the breed's being worn-out;—I therefore set about *crossing* it. I saw a fine farrow of the large black-spotted *sun-backs*, as I pass'd a Farm-yard,—and desired that a sow and a boar might be saved for me.—Under an idea of *bardening* the breed, I bought a shaggy black boar; not the *China* sort, but an animal more like a *bear* than a hog.—

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hog.---To these, I accidentally added a thorough-bred Chinese sow.

I have now had near a twelvemonth's trial; and am fully convinced, that the large, long-haired, dark-spotted, domestic, *English* breed (I know not of what *County*: They are neither *Hampshire* nor *Berkshire*) which I found on the premises, is much the most eligible breed:---Because it is the *hardiest* and the most *tractable*.

The young *Bruins* are as wild as Hares: they skulk and burrow like Rabbits in a warren: it is dangerous to pursue them.---One of them laid its skull open, in attempting to run under a gate; and another tore a pound of flesh off its back, by running furiously among some Implements.---As they grow up, they become all belly and hip-bones.

The different sorts have been uniformly fed at the same troughs.---While the *ENGLISH* looked sleek and fleshy, the *half-bred* were bare, dirty, and unfightly; and as to the poor Chinese sow, (but she had been used to daintier keep) it is with difficulty she is kept alive.

The *Oriental*s may be very *gentlemanly* pigs: they may, *if properly pampered*, be very fit for roasters or small porkers; but they cut a shabby figure in a *Farm-yard*.

I had saved a half-bred sow and boar; but the sow was sold last week, and the boar was butchered to-day.---As the young ones become fit, they are doomed to the spit; for I will not convert the Farm-yard into a menagerie of *ugly, wild* beasts.

I have great expectations from the *TUN-BACKS*: they are, of the two, *tamer* than the other *mottles*; and *tameness*---*domesticity*, is a cardinal virtue in a hog. If old *Bruin* broke pen, it was a fox-chace to take him. He was chased into a large field of wheat, just before harvest, where he lay for a fortnight, and did more damage than three times his value. For this and other high crimes, I have proscribed him and his whole race.

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POTATOES.

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27. OCTOBER, 1776.

POTATOES. } 27. (See 12. APRIL, and 7. MAY.) The
 DISCUMBERING. } crop on the whole falls short of my expectation :
 Off two hundred and fifty rods, we have but two hundred and forty-
 six bushels and-a-half ;—not a bushel a-rod ;—not one hundred and
 sixty bushels an acre.—But I apprehend the dryness of the weather
 hurt them : several of the plants had never vegetated, but were dug
 up entire.

The result of the experiment on planting *under* or *upon* the dung,
 is in favour of *under* :—But this may not hold good *generally*. I ap-
 prehend this preference was owing to the drought ; and we may not
 have such another *remarkably dry spring* for thrice seven years to
 come.

The result of the experiment on *plants*, is in favour of the *large*
 ones.—The halm as well as the roots from the *plugs* were obviously
 inferior.—But here, too, the drought might influence.—The *large*
plants had intrinsic strength and moisture sufficient to support them,
 until the young fibres got foot-hold ; the *plugs* died in the struggle :
 and neither of the experiments are *decisive*.

Finished *digging* them up to-day. The soil was full of couch, and
 I wanted to get it ready for wheat.—Scarcely any number of *plow-*
ings, at *this time of the year*, would have cleansed it so well as one
digging and picking. It was begun by days' men ; but as it was likely
 to be a tedious job, I lett the *potatoes* at five-pence a-bushel, the
picking inclusive.

Therefore, taking up the potatoes, and cleansing the soil fit for
 a wheat-season, cost 5d. a rod, or 3l. 6s. 8d. an acre. It is
 true, the job is a good one, but the expence is intolerable.

The Diggers left the couch, halm, &c. in rows on the surface ;
 from whence it was carted into the dung-yard, as a bottom for the
 winter's dung.

JULY, 1777: How vague the idea of cleansing land from *couch*
 without a SUMMER'S, or a *favourable DOG-DAY'S FALLOW* ! This
 patch is still a bed of couch !

OXEN.

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7. NOVEMBER, 1776.

OXEN. 7. Last May, I sent five oxen down to the salt-marshes. ---The spring was dry, and the grafs running-short, they were done great injustice to:---Instead of bettering their condition, they fell away. I therefore took away the three which I meant to continue to work; but, on a promise of better usage, left two which I intended to fatten; one of them being too clumsy, the other too lazy to work.

But altho' they gathered not *flesh*, they laid-in a store of *health* which has lasted them ever since; for the three brought away, have constantly worked hard, and look remarkably well. One of them, which is rising ten years old, is forward in flesh; and I do not see any reason why I should not every year give them three weeks or a month's marshing, during the summer-vacation.

The two left, have done vastly well: they were sold this week for thirty guineas; but the markets are dull: Had they been brisk, they would have fetched from 33 l. to 34 l. I apprehend that this is the best market I could have made of them; and in future I will pursue the management,

RAISING MANURE. 9. From twenty-two field jags and-a-half of oats, put into Woodside-barn, we have carried out of the yard exactly twenty-two jags and-a-half of dung; exactly a *jag* of dung to a *jag* of straw: Not a *sale-load* of dung, but only about two-thirds of a load.

I had conceived, that a field-load of straw would produce nearer two jags of dung than one.---But I am thoroughly convinced of the contrary; for with regard to the quantities carried in and out, there could not be a more precise observation.

It is true, that the oats stood until they were too ripe before they were cut, and were very badly got; and the straw of course was very indifferent fodder: for one load eaten, there were two trod under-

N n 2

foot

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foot for litter. But I do not see how this should lessen the quantity of digested matter. Passing thro' the cattle may improve the *quality*, but it can never increase the *quantity*. And *perhaps*, generally,---a *sale-load* of good dung is a *very* great yield for a *large* field-load of *good* straw.

FATTING OF HOGS. } 15. Last year (See 20. Oct. 1775.)
 THE SPECIES OF HOGS. } eight porkers paid 7s. 3d. a-piece. This year, I have fattened fifteen, and sold the last to-day.

	£.	s.	d.
11 of the largest I laid at 15 s. each, - - -	8	5	0
4 smaller, at 12 s. 6 d. - - -	2	10	0
They have eaten about fifty bushels of potatoes, at 1s. -	2	10	0
One bushel of barley-meal, - - -	0	3	0
	£. 13	8	0
They weighed 84ft. 1lb. and were sold at 3 s. 2 d. } a stone, - - - - - }	13	6	5
The loss by fattening, - - - - -	£. 0	1	7

A *loss* of just five farthings a-piece; reckoning the dung to pay for fire, attendance, &c. which I apprehend it does not. Last year I only laid their dung at 5s. and the attendance, &c. at 19s. and this makes a difference of nearly 2s. a-hog; so that instead of 7s. 3d. they last year *paid* 9s. a-pig for fattening; and this year *lost* 1¼d. How is this to be reconciled? They were, both years, fattened on potatoes, with a small quantity of barley-meal; and were sold at the very same rate; and last year store-hogs were dear, this year cheap.--- And there is not any reason why they last year paid 9s. and this year lost 1¼d. except, that Those fattened last year were of the *English*; These, this year, of the *Oriental* breed.

Last year on a par they weighed near eleven stone; this year, not much more than six stone: and yet if I recollect a right, their *appearances*

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pearances to the eye, were not much different. But even this is easily reconciled; for the *mongrels* were all fat and gut,---the other had a proportion of flesh and bone.

WORKING-OXEN. 16. To-day I dined very heartily on the beef of an ox which pressed the yoke or collar upwards of six years, and which was slaughtered far advanced in his tenth year.

He was a very large, coarse-made bullock, and consequently his flesh was to the eye *coarse*; that is, *large-grained*: but without prejudice, I never eat such high, fine, full-flavoured beef in my life. It cannot be called *tender*, but it is *mellow* to a degree, and totally free from *toughness*.

Whether its flavour and mellowness are owing to his age and labour, jointly or separately, or to his being fatted on a salt-marsh, I will not attempt to determine; but I can safely say, that I never eat better beef than that from a ten years old ox, worked six years, and within six months of his being slaughtered, and which was fatted on a salt-marsh. His *fellow* shall work till he be twenty, if he continue to hold his flesh and his work so well as he has done this summer.

WHEAT.

MELIORATIONS.

TIME OF SOWING.

QUANTITY OF SEED.

EXPERIMENTING.

17. Last autumn, I made several experiments in K. 4. on top-dressing for wheat harrowed-in with the seed. But, shame on me! I neglected at harvest to make an accurate observation on the result.—It is true, I took *cursor*y views during the summer, but never counted the lands,—never *traced the lines* till to-day.—And altho' the strength and rankness of the *stubble* be some guide, the experiments are by no means so decisive as they would have been by a rigid observation *at harvest*.

The

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Meliorations.—The soil, a poor clay, once plowed after beans; and the crop upon the whole very bad. However, it is still obvious, that eighty bushels of *foot* an-acre are rather better than nothing! Fifty bushels of dry *wood-ashes* are likewise beneficial; but eighty bushels of flaked *lime*, whether hot or cold, nor twenty loads of rough *gravel*, are of very little if any benefit to the present crop.

The time of sowing was from the 10th to the 20th of November; and this seems to have had as much influence as the manure; for a part sown the *tenth*, without *dressing*, seems nearly equal to its contiguous part dressed with *eighty bushels of foot* an acre, and sown the *sixteenth*: and the crop from one side of the field to the other, bears an affinity to the time of sowing:—It must be remembered, however, that it was begun in *dry*, and ended in *wet* weather.

The quantity of seed, too, was very observable.—Part was sown with *two and-a-half* bushels, part with *five* bushels an-acre. *This*, during *winter* and *spring*, promised for a crop; while *That* had not nearly plants enough, had even the soil been in heart. But at *harvest* (this I particularly observed), the superiority was by no means so obvious: for tho' the number of *straws* were at least treble, the number of *grains* did not bear the like proportion; for the ears of the thin-sown were at least twice the length of those of the thick-sown. However, at harvest, the thick-sown had the preference; and I am of opinion, that had there been from three bushels to three bushels and-a-half an-acre sown throughout the field, instead of two and-a-half, the crop would have been considerably better: and if ever again I sow wheat in November, it shall be with at least three bushels an acre; except the weather be very fine indeed: if cold and wet, from three to four.

I dare not draw any general conclusions from these experiments; except that *foot* harrowed-in with the seed is of some, but very little service to *wheat on clay*: That fifty bushels of dry *wood-ashes* at 4 d.

is

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is nearly equal to eighty bushels of *foot* at 7 d. : That eighty bushels an-acre of flaked *lime* harrowed-in with the seed is of no obvious service to *wheat on clay* : and that it is unpardonable management to sow wheat on clay in the middle of November.

Nor have I a firm reliance even on these.—And again I say, fye for shame, to neglect so many *accurate* experiments ; for I never took more pains to make, nor less to observe the result of any, than those of K. 4. And yet those of K. 4. are not the only experiments I have neglected. Indeed I have always found a greater amusement in laying the foundation, than in carrying on, or finishing an experiment.—This is a reflection which infers a degree of indolence that hurts me very much.

Let me endeavour to discover the source of this neglect. My attention has been engaged by the more *immediately* necessary Minutiæ of Farming ; and by erections, discumbering, &c. &c. This, I apprehend, is the principal source ; but it is not the only one : I have never had any *method* of making experiments. I have usually made a memorandum of them in the rough field-accounts : sometimes those memorandums have been accurate and full ; sometimes part has been left to the memory.—In this case, the space of time between seed-time and harvest was sure to obliterate it ; and even those minuted fully, were so scattered in the field-accounts, that many of them escaped notice, until it was too late.—Besides, a book is too unportable to be carried about in common ; and, on a scattered Farm, it would take up a great deal of time to give *special* attendance to every stage of every experiment.

Another cause of neglect was, I made *too many*, and made them *too confused* : It was quite a piece of *business* to attend to their results.

In order to obviate these inconveniences ;—to divert the neglect ;—and to render, as much as possible, EXPERIMENTING amusive ; I have resolved henceforward to esteem it an OBJECT OF IMPORTANCE ;—and to make no experiment but where there is a great *probability* of its being *decisive*.—And, to make the observance of the results rather entertaining

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entertaining than tedious, I have adopted this method of experimenting.

Instead of making a Memorandum in the *check*, or the *field-accounts*, I have opened a special

REGISTER OF EXPERIMENTS.

The Process.	The Intention.	The Result.
<p>—26. SEP. 1776.—</p> <p>Two lands next to the road; from the winding part of the road upwards, dry; the rest of the field <i>pickled</i>.</p>	<p>—No. VI.—</p> <p>In P. 1.</p> <p>SOWING WHEAT.</p> <p>Is <i>pickling</i> the seed beneficial?</p> <p><i>No</i>; not on this experiment.</p>	<p>—16. AUG. 1777.—</p> <p>It is remarkable, that these two lands were <i>forwarder</i> and a <i>better</i> crop, than the rest of the field; and totally free from <i>smut</i>.</p>
<p>—2. Nov. 1776.—</p> <p>Ten lands in the middle of the ley-part were plowed the 18th of <i>Sept.</i> the out-fides, the 23d. of <i>October</i>. The whole fluted, and sown promiscuously the 2d. of <i>November</i>.</p>	<p>—No. XVI.—</p> <p>In P. 3.</p> <p>FLUTING FOR WHEAT.</p> <p>Is it better to flute the <i>fresh</i> or the <i>stale</i> plit?</p> <p>The <i>stale</i> plit.</p>	<p>—24. AUG. 1777.—</p> <p>The ten lands in the middle, are very perceptibly the strongest and best crop; and the cleanest quondal.</p>
<p>—31. JULY, 1777.—</p> <p><i>Shook</i> the whole field into <i>cocklits</i>, while quite <i>wet</i>; except three <i>swaths</i>.</p>	<p>—No. LIX.—</p> <p>In T. 4.</p> <p>HAYING.</p> <p>Should Mead-grafs which is nearly made and turning yellow, be shook into <i>cocklits wet</i>? Or should it remain in <i>swath</i>?</p> <p><i>Shook into cock.</i></p>	<p>—4. AUG. 1777.—</p> <p>The <i>cocklits</i> are incomparably the best; the <i>swaths</i> are quite black.</p>

Besides

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Besides this *bookal* register, I have ascertained the locality of the experiments by *stumps*; so that I have one register at home, and another in the field.—If an obvious difference presents itself, a stump is *at hand* to tell me the cause: whereas, without it, I should have to go home to my books, and back to the field, to reckon the lands, before I could be satisfied; and ten-to-one forgetfulness, or some more immediately necessary *business* would render the observation totally void:

The trouble attending these stumps is trifling: any offal-stick the thickness of a stake, and eighteen inches long, answers the purpose.—I sharpen one end, and flatten each side of the other.—The flat sides I chalk, to prevent the ink from running, and on this abbreviate the experiment; and, in arable fields, stick them by the side of the cross-furrow, which I make wide enough to walk in*.

EXPERIMENTING is a very *serious* Operation; and, without due CIRCUMSPECTION, a very *dangerous* Transaction: nor is it *one*, nor *two*, but a *series* of *similar* results that amount to CERTAINTY.

The WEATHER, MANURE, TILLAGE, SEED, &c. &c. &c. are *joint* agents of FACTITIOUS VEGETATION †; and on them *jointly* depends the goodness or badness of crops; and consequently to draw a *just* inference, their *joint* influence must be attended to.—Nor is their agency *annual*, nor *certain*; it may continue one, two, three, or more years: therefore, a cautious RETROSPECT is necessary, before an experiment be made; and when once made, the same spot ought to be avoided until its influence be intirely worn-out.

D E C E M B E R.

PLOWING LEYS. } 12. A good Plowman is worth any wages.
 HARROWING. } Neighbour — employed a young lad to plow his clover-leys in Up-Field.—He tore them up with an *inclining*

* *Paint* would be preferable to *ink*, which is easily washed out by the rains; or, perhaps, *parchment-labels* would be still better.

† That process of Nature, assisted by *Art*, which raises *elementary* to *vegetable* substances.

O O

plow,

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plow, in rhomboidical fitches of fourteen or fifteen inches wide, leaving the surface rough, with a mane of grafs on the edge of each plit; and with unequal interstices, which in some places gaped five or six inches wide.

Old Caper plowed an adjoining piece, in neat, snug plits of about nine inches square, with a high crest, and with scarcely an interstice wide enough for a grain of wheat to fall thro'.

The quantities of seed sown were nearly equal. *This* has an abundance of plants, which stand in regular drills, as if sown over flutes, and the surface is as clear as if the soil had been summer-fallowed; while *That* is straggling and irregular, with large patches of a foot or eighteen inches diameter, without a blade of wheat upon them, and the surface is uncouth and grassy.

The cause of this disparity is obvious: The large chafms swallowed a great part of the seed; and the prominent fitches which formed these chafms, shedding-off that which happened to fall upon them, were of course left destitute; the sub-soil occupying what ought to have lodged on the plits: and part of what did fall to their share, was left uncovered for want of *crum*; and for want of this, the grafs stands staring above ground.

The mode of *barrowing*, too, might have some influence: his *first tine* was given by *rough* harrows, which tore up the plits, and shook still more of the seed down to the sub-surface. Our *first tine* was with *fine* harrows, which broke the *crum*, without tearing-up the *sod*; and which *covered* the seed without *burying* it.—It was *afterwards* harrowed with the rough harrow without injury, because the plits were broken.—It was then finished with the fine ones; and this is the mode of harrowing I will ever practise on clover-leys.

JANUARY.

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6. JANUARY, 1777.

RAISING MANURE. } 6. (Monday.) There are five full-grown
CATTLE ON STRAW. } oxen, and two bulls, (one rising three, the
other two years old) in Norwood-Yard. Last Monday morning, be-
gan to weigh their fodder, (oat-straw) and continued it until this
morning; just a week.

They have eaten seventy-three fifty-pound trusses; or, two loads
and one truss; that is, ten truss and-a-half, or 520lb. a-week,
each.

But the weather is severe, and the straw is not extraordinary; it is
coarse, and had some wet: they do not eat above two-thirds of it.

The medial price of such straw is about 18 s. a-load of 36 trusses;
or 6 d. each fifty-pound truss. Supposing that such a sale-load of
straw (not a *field-jag*, see 9. Nov.) makes a load and-a-half of dung,
worth at home 9 s. (or exactly 3 d. a truss) there is a remainder of
9 s. (or 3 d. a truss) for the *keep of the cattle*. Ten truss and-a-half
at 3 d. is 2 s. 7½. the neat cost of each cattle, a-week.

From 13. to 18 d. a-week is the joisting price: full-grown oxen
are not worth more than 18 d.

Therefore, if a load of straw of thirty-six fifty-pound trusses,
affords not more than a load and-a-half of dung, it is too dear at 18 s.
a-load; and it can never answer to buy straw at that price, for the
purpose of raising manure. At 13 s. or 14 s. it perhaps might
answer.

JULY, 1777. The Writer is clearly of opinion from repeated
observations (not from actual experiment), that thirty-six fifty-
pound trusses will not afford a load and-a-half of dung.

CART-HORSES: } 19. Old cart-horses are not worth their
WORKING OF OXEN. } keep; especially in winter, while they are
at *dry meat*: five out of eight, now in work, are as weak and as
poor as dog-horses. It is true, their keep has not been extraordinary,
because

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because their work has not been hard; but the three *young* horses are in good spirits, and in very good working condition.

I am convinced, that when once a cart-horse begins to *fail*; whenever he is unable to give due mastication to his dry food; it is better management to knock him on the head, than to waste on him corn and hay, as a cart-horse.

What shall I do? Shall I sell a team of these, and buy-in a team of young *horses*? What! give eighty, or a hundred, or a hundred-and-twenty guineas for four horses, which in six or seven years-time would be in the identical predicament of the present jades I am plagued with. That would be madness equal to keeping these I have! I will much sooner give forty guineas for four capital six-years old OXEN, which, after they have worked five or six years, and have been kept at two-thirds the expence of horses, will fetch as *much*, or *more*, than their first cost.—Indeed, it is a management so obviously eligible, and so glaringly preferable to the former, that I will not hesitate a moment on which to choose.

And, in a POLITICAL light, this management is still more eligible. OXEN, after they have fed the hungry, will themselves become the FIRST OF HUMAN FOOD. HORSES, after they have eat the food of the fatherless, become a nuisance to the animal world; or, buried in a corner, lie a total loss to Agriculture and to the Community.

		£.	s.	d.
FATTING OF SWINE. } 28. The 6. November put up		7	10	0
SPECIES OF SWINE. } five shoots, worth 30s. each				
A boar-stag	- - - - -	1	5	0
	They would not have fetched at market	8	15	0
52½ bushels of potatoes	1s. - - -	2	12	6
62 bushels of brown barley	20s. - - -	7	15	0
	Carried over	19	2	6
			9	bushels

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		£.	s.	d.
Brought over		19	2	6
9 bushels of tail barley	16s. - =	0	18	0
3 bushels tail pease	3s. - =	0	9	0
		20	9	6
		£.	s.	d.
The five shoots weighed	stone. 13 $\frac{1}{4}$ at 3s.	19	15	3
The boar	- - 23 $\frac{1}{4}$ at 2s. 9d.	3	5	4
		23	0	7

They therefore leave a profit on fattening, of £. 2 11 1

They pay this year very well; because store-hogs were cheap, and barley very cheap. These, indeed, were my only reasons for putting up those six, and five more which are now a-fattening.—Had the market-price of the above shoots been five-and-thirty, and the market-price of brown barley five-and-twenty, instead of *gaining* 2l. 11s. 1d. I should have *lost* by fattening 1l. 3s. 3 $\frac{1}{2}$ d.

And perhaps, *in future*, if store-hogs fetch moderate prices, never fat them for sale, at 3s. a stone, on barley, which will sell at market for 24s. a quarter.

I think I can make an improvement in the mode of fattening. Perhaps, they were, this year, kept too long at *entire potatoes*, and put too soon to *entire barley*: they had it not *mixed* more than a week or ten days, because the potatoes ran-short.

Perhaps, in future,—the first week give them potatoes, with as much SALT as they will eat, or as much as may agree with them.—Then begin with potatoes and a very small quantity of barley-meal—suppose one-tenth—mixed while the potatoes are *scalding-hot*.—Continue to increase the meal, and decrease the potatoes, so as to bring them gradually to entire barley, a week or ten days before the first hog be fit to be slaughtered. The increase of meal must therefore be in proportion to the increase of their condition.

Old

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Old *Bruin* died laft.—He was very fat, and *before* he was killed, was laid at 30 ftone: after his immense paunch was extravafated, he weighed juft 23 ftone 6 lb. So endeth the Chapter of *Oriental*s.

F E B R U A R Y.

OX-COLLARS. 14. The coft of a nine-pin collar.

	£.	s.	d.
The bow (at 6d. a-pound) rivets, eyes, and catches,	0	4	0
Putting them to the pins, - - -	0	1	0
The draught-chains, 2 $\frac{1}{4}$ lb. at 6d. -	0	1	4 $\frac{1}{2}$
Smith's charge	0	6	4 $\frac{1}{2}$
Turning the pins, making the withering, and the wood if <i>elm</i> , (<i>ash</i> cannot be made for the money)	0	3	0
The buckle and buckling-piece - - -	0	1	2
	£.	0	10 6 $\frac{1}{2}$

A full-sized collar cannot be made for much lefs than this, were the Smith and Wheeler to make it their bufinefs; for I had the iron weighed, the wood meafured, and the time minuted.

The bolstered ones might be made for a fhilling or two lefs, becaufe the bow is much shorter.

SPIKY ROLLER. 14. That which was made by mine for Mr. —
coft

	£.	s.	d.
The iron-work, about - - -	10	0	0
The wood-work and painting - - -	7	0	0
	£.	17	0 0

It is completed with wheels, back-chain, and every appendage ready to go into the field; and the point of each fpike is fteeled.

Without *paint* or *fteel* (and neither of them are neceffary) a very good one, heavy enough for four horfes, might be made for about
fifteen

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fifteen pounds, which, with care taking, would last fifteen years.

What stiff-land Farmer would not pay twenty shillings for a spring and summer's use of a spiky roller? I am convinced (though a nice calculation would be difficult to make) that mine earned, last barley feed-time, more than its present value, which cannot be less than seven or eight pounds.

THE WEATHER. 19. By what law of Nature is the atmosphere actuated? We have not had any rain, generally speaking, since last harvest.—Springs have not yet begun to rise; deep wells, in general, want water: and many ponds are not yet filled; even the surface of the earth is not satisfied.—I changed the direction of the beds of a very wet field, in autumn, and have not yet been able to ascertain the course of the cross-furrow.

I am very glad that six or eight inches of snow fell last night, as it may lessen the quantity of rain, which we must expect to be deluged with during the ensuing feed-time.

STRAW: } 20. The middle way is best.—Farmers,
STRAW-YARDS. } in general, have *too little* live-stock; but
STRAW-YARD STOCK. } it is worse to have *too much*: a Farm-yard looks comfortable when it is well-littered, and when its inhabitants look sleek and healthy; but wretched, when the dirty starving stock clear the cribs to stay their hunger.

But how is this middle way to be hit? Oxen (See 6. JAN.) eat about 500lb. a-week.—I have since found that nine small cows, and one horse, eat, or blowed upon nine 50lb. trusses a-day; or each cow about 300lb. a-week; and, perhaps, 400 lb. may be taken as the medial quantity of oxen, cows, and horses.

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A middling field-load of wheat will yield a sale-load of straw, of 1296lb.---Supposing that a field jag of oats, barley, or pulse, produces 1200lb. of straw, or halm, it will keep one beast three weeks.---If the winter is not favourable, there are five straw-yard months (from the middle of Nov. to the middle of April); and on this calculation, one head of stock will destroy near seven loads of fodder.

But this is supposing them to eat but two-thirds of it; and, perhaps, a good jag at harvest will produce more than 1200lb. and, perhaps, winters, on a par, do not last more than four months and a half.---Therefore, perhaps, a cow may be wintered, on a par of years, on four or five, and an ox or horse on five or six harvest-loads of straw or halm.

And, *in future*, by these proportions I will calculate the quantity of straw-yard stock, until from further experience I can come nearer the truth.

Let me try if something cannot be drawn from this year's experience.---It must be done now, if ever; because I have just put ten cows to straw and cabbages.

The past autumn has been remarkably fine: the yards were not *open* till the 12th of December: the cattle were not *shut up* wholly until the 18th: we will, therefore, fix the time of opening to the 15th. From this to the 18th of January, we had thirty head of stock of various kinds, from yearling heifers to ten years old oxen, with four or five horses.

	Head.	Weeks.
From 15. Dec. to 18. Jan. is 5 weeks	30	150
— 18. Jan. to 18. Feb. is 4½ weeks	22	99
Or one head of stock		249

They

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They have used in this interval, the straw of

11 loads of oats,

45 loads of barley,

6 loads of pulse of different kinds,

62 loads; or, as nearly as possible, *a-load a-month*, one-with-another.

This I am certain is very near the truth:—I am quite satisfied, without further experiment—They have used it all in *open yards*.---They are healthy, and look decently.---They have eaten more than two-thirds of it. I wish that I had a like plenty for them until the middle of April.

SUFFLATION. } 21. (See 29. OCT. 1775, and 27. FEB. 1776.)
 CABBAGES. } Remarkable! The *same cow* again sufflated by *cabbages*. Ten cows have been at cabbages some days, this cow being one of them; but she was not sufflated till to-day. Nor was she, now, immediately on *eating*, but a full hour afterwards: the sufflation was not perceived until after she came from *water*.

I did not hesitate a moment to give SALT AND WATER; but it all lodged in the gullet; and as soon as her head was suffered to decline, it ran out at her mouth.—Oiled the cattle-rammer, (See 30. JAN. 1776.) and thrust it down her gullet.—Some air, but not much, rushed violently up.—Repeated the brine, which now stayed, several times.—But she was still as tight as a drum; much worse than ever she had been before.—Re-inserted the rammer (the first time, it was with difficulty she let it pass her tongue; now, she seemed to open her mouth to receive it), and again drenched her with brine and pepper.—After ramming and drenching repeatedly for upwards of twenty minutes, she began to sink; and, in a quarter of an hour afterward, was much lanker than any cow in the yard.

P p

There

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There must be something peculiar in the structure, or habit-of-body of this cow; for the other nine, and indeed every cow about the yard, except one or two, have repeatedly eaten their fill with impunity.

I am resolved that she shall not even smell a cabbage, in future. And I apprehend, that, generally, there is some caution requisite, when feeding cattle with *cabbages*, as well as with *turnips*.

M A R C H.

SERVANTS. 3. Mankind are by NATURE, undoubtedly equal; but by *chance*, they are, at present, widely distinct.—Masters and Servants are unavoidably necessary to the present state of Agriculture.—Subordination is essential to good government, whether public or private.—Anarchy and subordination are allied, as light and darkness; when one increases, the other decreases; when one wholly succumbs, the other wholly predominates.

If one man hire himself—sell himself temporarily—to another, unconditionally, he is, by the law of *right*, wholly subordinate to his *equitable* commands: if conditionally, the conditions are of course reciprocally binding.

The Master who is bound to satisfy the cravings of his Servant with wholesome food, is equally bound to feed his mind with wholesome morals. He has two motives to it; his own satisfaction temporarily, and his Servant's welfare during life.—Youth calls particularly loud for this mental aliment; and a parsimony in its supply is more heinously criminal than are scanty meals and a bed of clods.

About two years ago, It took a lad, who was puny and unfit for hard labour, from the plow, and placed him in the house.—The first year, he behaved very well;—the second, tolerably; but a falling-off was obvious.—His brother, the preceding year, had suffered

I

much

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much for want of correction, and I clearly saw that he was striding away apace to the same path.—I therefore, though reluctantly, began to administer the necessary discipline; and during that year it had the desired effect.

His vice commenced with *idle excuses*;—from these he crept on to *falsehood*; and, perhaps, this may be held as a general maxim :

The first step to destruction is *evasion*; the second, *lying*;—the third, *pilfering*;—*thieving*,---*murder*,---and the *gallows*, follow of course :---*cunning* or *impertinence* is generally an accomplice.

This, the third year, he has behaved very ill.---I was aware of evil Counsellors, but could not identify them.---At length the horsewhip totally lost its efficacy; and I, tired of correcting, sent to his friends: but he, in the mean time, (by the advice of his Council) went to a Magistrate, under the pretence of recovering his liberty and wages.

The Magistrate, whose head is as good as his heart is honest, presently saw thro' the rascality, and sent him home; and generously assisted his friends in discovering the incendiaries. Astonishing! one of them, a man who has worked for me upwards of two years, and whom I have, lately, been daily endeavouring to serve; the other (the principal), a fellow whom I have employed near twelve months, and who, in the height of his tutorship, fetched his son out of a distant county, to enjoy from me the advantages of constant employment and good usage! Nor is the boy, though he promises implicit obedience in future, free from guilt; for if the advice had not been palatable, he would not have swallowed it so greedily; and him I have been particularly assiduous to serve: I have not only taken upon myself the disagreeable task of beating him, but have rendered him other benefits which must last him his life. And I am under the most disagreeable necessity of drawing an inference, which must inevitably deprive me, in future, of a very great satisfaction;---and I will not smother my sentiments, when I believe that they were kindled

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kindled by truth;---and I am at present clearly of opinion, that
GOOD USAGE MAKES BAD SERVANTS;
I speak *generally*; and by good usage, I mean *extraordinarily* good usage.

A P R I L.

TARE-BARLEY. } 5. Finished the tare-barley-fodder to-day.
WORKING-CATTLE. } The oxen have worked hard upon it, almost all this spring feed-time;---the cows in milk have had their share;---and the cart-horses, their's. They have all eaten of it with great avidity.

Eight acres yielded ten quarters and-a-half of grain; but it was only beaten-over, not thrashed clean. (See 8. AUG. 1776.) Some of the tares, too, matured, and I have sifted out as much tare-barley-feed (about half-and-half) as has this year sowed fourteen acres with three bushels an acre. The prime barley, with a few prime tares, which remained in the sieve after the principal part of the tares, and the smaller barley had left it, is excellent horse-corn.

I am vastly pleased that the oxen have done so well upon it.---Notwithstanding it was weedy, and the barley-straw reedy, they have eaten it up very clean; and the *old* oxen have worked every day: but the *young* ones, seldom more than every second day; and yet I can see but very little difference in their looks.

I begin to look upon the working of *aged* oxen as quite a discovery. What an absurdity to throw them up at five or six years old; at an age when they are just beginning to *stand work*! These *young* ones are rising *six*; and yet, in point of work, they are mere calves, compared to those rising *eight* or *ten*.

STONE-PICKING. 14. (See 21. MAY, 1776.) I began to practise that method this year; but it has its inconveniences. The Pickers are almost

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almost as long employed in emptying their baskets, as in filling them; besides drawing them off is breaking into the day's work of a team.

I think that I have this year improved it much:—Seven or eight women boys and girls, one man, *one horse*, and a *light cart*, have run-over just forty acres in three days and three-quarters.

Four women at 10 d. is 3 s. 4 d.—four boys or girls, at 6 d. is 2 s.—the man, 1 s. 8 d.—the horse, 15 d.—wear and tear, 9 d.—Together, 8 s. a day.—30 s. for the forty acres, or 9 d. an acre for *picking and carrying off!* This is the utmost cost.—It is true, that some of the fields were not foul, but many of them had been composted, and were very full of stones and rubbish.

The Pickers in this practice have nothing to do but fill their baskets; the cart and the *man* are always at hand to *empty* them; and a strong horse will draw a great many to the next hole, slough, or gateway.

This may be a common method of stone-picking with many, in many places, but is new to me, and I am very much pleased with it.—Nine-pence an acre!—But the man was a *Bufler*.

HAY. 19. Finished binding meadow-hay.

Began to cut the stack the 23. December. From that to the 11. February, eight loads were bound.—On a calculation of the cubical feet expended, and of the cubical feet remaining, there were *then* full *twelve* loads in stack. But the whole *now* amounts to only *eighteen loads and-a-half*; and the *March-winds* are debitable for one load and-a-half at least.

Last year, a stack of mixture-hay, which I had laid, the preceding hay-time, at 18½ loads, cut-out but 12 loads and 28 trusses; but it was bound chiefly in *dog-days*.

Though.

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Though neither of these observations amount to mathematical nicety, the former comes very near it; and I am determined, *in future*, to endeavour to sell my hay before the March-winds set-in: for, generally, I would rather sell hay in *November, December, January, or beginning of February*, (before the hurry of spring seed-time begins) at 3 l. a-load, than in *March* at 3 l. 5 s. in *April*, at 3 l. 10 s. or in *Dog-days*, at 3 l. 15 s.

GENERAL MANAGEMENT. 25. My vow to CERES is performed! It is three years to-day since I first-slept in this house, and three years and a-day since I slept last in London: nor have I dined in Town thrice, nor seen it ten times during the last two years; though within an hour's ride of it.

My *sole employment*, and almost my sole AMUSEMENT, has been FARMING. Day-for-day, I have been a FARMER upwards of a thousand days; on which my *sole* attendance and attention have been duly paid to FARMING: *therefore*, if I know nothing of FARMING,—I am a blockhead*.

SWINE. }
HORSE-CORN. } 26. From Christmas until lately, the yard-
BARLEY. } hogs have looked remarkably well, though
TARE-BARLEY. } their *extra* food was trifling; they are now
shameful to be seen, though they are well fed
two or three times a-day.

I was then aware of the cause of their well-doing, and am now convinced of it. While they looked well, the oxen eat *tare-barley-fodder*, and the horses unground *barley*: for three weeks past, the oxen have been fed on the second cut of clover, and the horses on oats and Mazagans.

* Is an explanation wanted? ATTENDANCE and ATTENTION will make any Man a Farmer: No Man can be a Farmer without SELF-APPLICATION.

If

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If one may judge from their voracity and their looks, barley which has passed thro' cattle or horses *whole*, is equally *palatable*, and equally *salubrious* to hogs, as that which is fresh from the granary;—for no sooner was the *motion* made, than it was seconded by a dozen mouths at once; and a barrow full of dung from the stable, seemed a more welcome repast than a pail of wash, or a hat-full of tail-pease.

If horses can be fed as cheap on barley as on oats, what a saving of swine's meat! And I am nearly positive, that on *discoloured* barley they may be fed much cheaper.

In future, when the oxen are eating tare-barley-fodder, and the horses unground barley, I will reckon that I am keeping the yard-hogs very cheap.

CABBAGES.

} 28. Finished the cabbages last Friday.

WORKING-CATTLE.

} The *drum-head American* and the *red Scotch* stood much the longest; but the AMERICAN were much *larger* than the Scotch, and they are incomparably the best Farm-yard cabbages I have yet seen.—The *savoys* and *sugar-loaves* were soon gone.—The *green-cole* and *brown-cole* stood the winter very well; but a whole head is barely a mouthful for a large ox. The green and red *Scotch*, tho' very *hardy*, are too small. The *large, firm*, KETTLE-DRUM CABBAGE against the world—For the *larger* the cabbage, the *fewer plants* are required, and the *less the labour*, throughout the culture and the consumption.

The *cows* and *hogs* had eaten two-thirds of them, before the thought of giving them to the OXEN occurred: but observing, that while they fetched them in for the former, they were desirous to partake themselves, and the request seeming very reasonable, they had a few given them every evening, when they came from work. After having had them three or four times, they would not eat their dry meat, until

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until they had eaten plentifully of cabbages :---they have, therefore, had them regularly, twice a-day. They have worked hard on these and mouldy second cut of clover, yet are very hearty : and,

*In future,---*I will make a point of giving cabbages to working-cattle in spring feed-time.

THE SPRING-PROCESS.
PLOWING FOR PEA-BEANS.
SUCCESSION.
SEED-PROCESS.
SPIKY-ROLLER.

} 28. What useful hints have I gathered this spring feed-time? Very few indeed ; yet there may be one or two worth memorizing.

Light land may be too fallow for pea-beans. M. 6. was harrowed and horse-raked as fine as a fallow before plowing, and was then plowed in narrow eighteen-inch plits. One-third at least of the *beans* were never buried, but parched on the surface. It should have been plowed in ten-inch plits, with a good creft, and deep seams, *without preparing*. Perhaps, beans, or pease, ought to be buried from two to four inches deep ; *pease* especially : how vigorous those are, which were buried in the cart-ruts.

Fallowing for spring-corn and clover is most eligible management. The *clayey loams* of Norwood, and Wood-side, (the most untoward soils under the sun) worked like a garden ; but they were gathered, *in autumn*, into five-bout beds.

Rolling immediately after the seed is covered, and then re-barrowing, is an excellent practice : the soil is effectually pulverized ;---the moisture retained ;---and the root-weeds near the surface totally destroyed.---Rolling immediately, *without re-barrowing*, is bad management ; for the root-weeds, which are still alive, are thereby pressed into the very state most helpful to their vegetation, : besides, one time after the roller has *crushed* and *fixed* the clods, is more efficacious than three, while the entire clods lie loose on the surface, and roll under the har-

ROW :

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row: And it is obviously good management, in a *dry* spring at least, to roll as soon as possible after the seed is in the ground.

A spikey roller is an excellent Implement, where a plain roller is ineffectual.

J U N E.

SELF-ATTENDANCE.

HAZARD OF FARMING.

COWS.

SWINE.

AGRICULTURAL KNOWLEDGE.

TOURING.

OBSERVATORS OF AGRICULTURE.

THE WEATHER.

THE SURFACE.

10. (See 25. APRIL.) The 5th of last month, after some weeks deliberation, I ventured to set-out on a month's tour; and, with some reluctance, and a great many apprehensions, dared to leave the Farm to Fortune and a Bailiff.

I drew up a long list of written Orders; enumerating minutely the business of the Farm to be executed during my absence; obviating every difficulty I could foresee,—and pointing out a plan of self-comportment to the person entrusted*.

I was, nevertheless, apprehensive of the consequences which must ever attend on the management of a Servant; and therefore, whilst

* Concluding with, "See every field of the Farm once a-day; or every other day, at least: But do not stay out longer than is necessary; and remember, that the more you think, and the less you talk, the more justice you will do me.

"I beg that you will be at home on Sundays, and in the evenings; and consider well every night before you go to sleep, what is to be done next day.

"Do not think it an easy matter to take care of every thing; for if you do, you will neglect many things.

"You must not fancy that it is a clever sauntering office to be a Bailiff; but reckon it a very difficult matter to be a good servant; and I desire that you will read these orders, or hear them read, every night.—This may seem needless; but I insist upon its being done the first week, at least, and thrice a-week afterwards."

Qq

I rode

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I rode the last stage, I prepared myself to meet with intrepidity a phalanx of misfortunes; and I was *thereby* not at all surpris'd to find only two cows and two swine dead, and the Farm over-run with weeds.—The latter I place to a want of self-attendance; the former, except one, to the common hazard of Farming; and I can say, with a great degree of sincerity, “ ’Tis well it’s no worse:” For had I been present, it is probable that three out of the four casualties would have happened. Besides, the *wheat* and *clover* laugh *so* heartily, it is impossible to be out of humour.

The first subject of casualty was a cow within a few days of calving.—I had left orders, that she should be taken off the Common and put into the inclosures, to give her a flush of milk.—She had been severed from the cows among which she was to be turned, only a few weeks; and I was not aware of any ill consequences.—But as soon as she was turned into the field among the other cows, one of them set upon her, and (as the story is told) killed her on the spot—notwithstanding they were all securely **KNOBBED**.

In future,—be very careful in turning a cow heavy with calf among others, to which she is in the *least degree* a stranger: in cases of necessity, let them be carefully watched, and familiaris'd by degrees.

The other cow was one of those I had ordered down to the salt-marshes, *as a barrenner*;—but she had *stolen* her bulling, and was within two or three months of calving.—She was nevertheless *carelessly* taken down (on a *near* inspection, it must have been perceptible); and being soon after taken with the *tail* (the worm in the tail), she was *carelessly* slung, to get her upon her legs.—This killed the calf within her, and she died in a short time afterwards. It is true, she probably would have been taken with the same disorder at home; but, in all likelihood, she would have been taken better care of.—It is very dangerous to *sling* a cow that is in calf: a Neighbour had one killed by the same means, about two months ago.

The

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The swine.—Both of them had ruptures; and it is remarkable that they were both taken ill at the same time,—during a thunder-storm of hail—(perhaps thro' fear); and both died a few days afterwards.

In future,—never rear *bursten pigs*, but fell them off as *sucklings*: they are hazardous and unfightly.

Agricultural Knowledge.—How very little of that which is USEFUL, is to be acquired by *Touring*! I have rode *on horseback* four or five hundred miles; and, notwithstanding I have been incessantly observant, and frequently inquisitive, I have not picked up more than four or five ideas worth bringing home*.

The *real state* and *present practice* of ENGLISH AGRICULTURE is devoutly to be wished-for.—But it is not driving post thro' any particular district; nor even riding *in an open chaise* twenty or thirty miles a-day, tho' ever so *inquisitive* among “spirited Farmers,” masters of inns, hostlers and boot-catchers; that will gain the AGRICULTURAL KNOWLEDGE of that district. Perhaps, nothing but

TWELVE MONTHS' RESIDENCE,
ACTUAL OBSERVATION, and
SELF-PRACTICE, is equal to the task.

It is true, that in six weeks, or two months, a person might gain a competent knowledge of the *spring*-process (for instance); but he would be as ignorant of the *summer* and *autumnal*, as of the *Farm-yard* and GENERAL MANAGEMENT.

Perhaps, this is an eligible plan:

Let the *Adelpbic*, or some more *sanguine* Society place six, seven, or more proper persons (if such may be found), in the several Coun-

* Leave as much after-grass as will not lodge, for spring-feed.—Brick-rubbish, stones, ashes, or any rubbish mend a rushy ley.—Wonders may be done by *sub-draining* boggy bottoms: the quick must be pricked.—*Sur-drain* a large bog *by spits*.

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ties most noted for Agriculture: Suppose one in Essex,—one in Norfolk,---one in Yorkshire,---one in the mountains of Derbyshire,—one in Lancashire,---one in Leicestershire,---one in Hertfordshire,---one in Wiltshire,---one in Kent, &c &c.---and from their Minutes draw THE PRESENT STATE AND PRACTICE OF ENGLISH AGRICULTURE.

It is not meant that these OBSERVATORS OF AGRICULTURE should be *wholly fixed*, nor *wholly itinerant*. Perhaps, let each fix his headquarters on the best-cultivated spot of his district: Here let him become *familiar* with the Farmers of the neighbourhood (whether Aboriginal or Scientific); and Here, from *repeated* observation and *self-practice*, let him make himself complete Master of the MINUTIÆ; and by frequent *excursions* let him learn the more GENERAL MANAGEMENT of his district.

Perhaps, give to each a set of *general* instructions: but, perhaps, deliver them as *hints*, rather than as *positive orders*; for these would cramp the intention.

If one year be found inadequate, let such as are imperfect in their intelligence, return to their respective stations, and remain until they can deliver in ample and *true* accounts.

The Weather.---I kept an account of the weather during my journey, to compare it with that of this place.---The two Journals bear a much nearer affinity than I expected to have found.---The *quantity*, indeed, is different; but the *quality* is nearly the same; for while there were heavy rains here, we had showers and drizzly weather; and settled fair weather set-in at both places at the same time, and with the same prognostic, a *hail-squall*. The circumstances were somewhat remarkable.---At *Castleton*, we had a very heavy shower of hail and rain with thunder, for upwards of forty minutes;---at the distance of a mile on one side, there was no hail;---on the other, neither hail nor rain: yet at *Croydon Common*, exactly two hundred miles distant, there

was

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was at the same, or nearly the same time*, a hurricane of hail, thunder and lightning.-- After this, there has been a fortnight of *universally* fine weather; and from this and repeated observations. I am of opinion, that a HAIL-SQUALL is *the most* certain prognostic of settled fair weather †.

The Surface.---I built one for Mr. L---e, while in Lancashire.-- Its effects on the rugged face of that country is admirable.--I had, indeed, no conception of its capabilities, until I tried it there.--On their reclaimed boggy bottoms, it is trebly useful; it reduces the surface,—grinds-down the spongy black earth,—and mixes it with the sand and marl, which is thrown out in making their elaborate *thruffs*,---or sub-drains. On their uneven, sandy hills, and broken, rugged acclivities, it must be of singular use. With *tolerable* tillage and a Surface, the ill-favoured face of that country (around Rochdale) might be rendered beautiful.

OXEN. HORSES. SALT-MARSHES.	}	11. Yesterday fetched home the oxen and horses from the salt-marshes.—The oxen are as sleek as moles, and the <i>old</i> horses are become young.—The horses have cost a guinea, and the oxen sixteen shillings each; and I esteem it money exceedingly well laid out.
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I am glad to find that my censure of Marsh-Farmers, last year, was too general.—For one notoriously keen, I find there are two fair-dealing men.

It is true, that last year was not so great a grass year, as this; and Messrs. B— and L— have been better looked after than Master C— was.

* By the best intelligence the Writer can procure, the squall in Surry happened about an hour and-a-half before the squall in Lancashire.

† The Writer does not mean a *most* certain prognostic; for he is clearly of opinion, there are *no certain* prognostics of the weather.

FALLOWING.

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18. J U N E, 1777.

FALLOWING. 18. Finished stirring F. 1.

This fallow was *balked* in *November*---Part of it was *crossed* the 27. *January* ;---part, in *May*.-- The whole was *equally* harrowed and rolled last week, and was *equally* stirred yesterday and to-day.

This was not an accidental, but a designed experiment ; to know whether it is better to cross a fallow, which has been balked in autumn, (after the wheat-season) *before* or *after* the spring seed-time. And, in this instance, the experiment is perfectly decisive : The part *crossed* in *winter* is one plowing, at least, *behind* that *crossed* in *May*. If a harrowing and rolling be reckoned (and they are as necessary as the plowing, to bring them to an equal degree of tith) ten shillings an acre is not equal to the difference.--The experiment is worth repeating.

JULY, 1777. This is one of the most decisive experiments the Writer has made.--The summer proving very wet, the part *crossed* in winter is still in a vile state ; while the part *crossed* during the summer-vacation is a very forward fallow.---Fifteen shillings worth of labour spent on the former, will not bring them on a par.

But, perhaps, this disparity may not hold good generally.

THE WEATHER. } 23. (See 19. FEB.) The spring seed-
HAZARD OF FARMING. } time was moist, but not remarkably wet ;
the clouds reserved their bounty for May and June.---The middle of May was *very wet*, and so is the middle of June.---The last ten days have been (except one) uniformly rainy.---Last night it poured for eight or nine hours : perhaps, never so much rain fell in so little time.---The wheats which were good, are beaten into the ground ;---the grass which is cut, swims in every furrow ;---and the fallows are ready to flow out of the fields.---Low-land pastures are over-flowed,
and

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and the stock obliged to be taken into the house to prevent their poaching.---Work is at a stand; we cannot make hay, nor even weed.---The teams cannot plow; nor can they carry out dung, even when it is fair, with any propriety. The ground was never so wet since Noah's flood. The springs and rivers only may rejoice.---The poor are starving for want of work.

Wheat, which a fortnight ago was worth ten pounds an acre, will not, except the weather at harvest prove favourable indeed, be worth harvesting; and clover, which was *nearly made* when the rains set-in, will be reduced in its value more than half, if not totally spoiled; for there are not as yet any signs of fair weather: the wind changes to every quarter, but the weather is invariably rainy,---rainy, --rainy!

J U L Y.

THE WEATHER. HAYING. HAZARD OF FARMING. PRICE OF PRODUCE. FARMING.	}	15. (See 23. JUNE.) From that time to the 8th instant, there was scarcely a fair day.---The rain set-in on Friday the 13th of June: it therefore lasted six-and-twenty days; with scarcely one fair day intervening.
--	---	--

Prognostics---were as vague as usual.

The Barometer---hovered about changeable, and seemed to watch the motions of the *wind*.

The Wind---was generally S. W.---Whenever it chopt round to the Northward, the glass got *dry*; but as soon as it returned to its old station, the Barometer as regularly became *wet*.

The impotence of *the Moon* was fully proved: she became full, shifted her quarters, and even changed without the least effect.

We had frequently *rainbows in the evening*, with the same success.

The

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The Wind alone seemed to rule ; for as soon as it was fixed in the *North*, the rain ceased ; and before it had been eight-and-forty hours there, the weather changed from *very cold* for the time-of-year, to *very hot*. The change of the wind was preceded by a very heavy *squall* in the night.

Haying.---I began to mow clover the day the rain set in, and kept on cutting until I had finished what I intended for *wheat*, the ensuing autumn. The crop in general was large, and lodged, and must have rotted on the ground, if left uncut.

I wadded it almost immediately after the *Mowers*.--The wads were repeatedly shifted on to fresh ground, whenever a lucky blast dried the surface.---The second crop was thus greatly discombered, and the hay was preserved from being totally spoiled.

We began to carry the very day-month on which the *Mowers* began to cut ; and yet the hay is by no means spoiled.---I have made the worst of it (about thirty loads) into two stacks of equal size and quality : the one is *salted* with about a bushel (half-a-hundred weight) of salt to a market-load of hay ; the other *unsalted*.

My motives for salting were these :---I am fully convinced that it will add to the quality of the hay ; and I am in hopes that it will act as an antiputrescent, and preserve it from mould and must.

Hazard of Farming.---Hay which was *made* (but not carried) when the rain set-in, is totally lost.---Quantities have been carried into the Farm-yards for litter.---Many stacks which were caught half-made, have been pulled down, and carried back to the field to dry.---Low-land meadows have been greatly injured by the floods. In the lower parts of *Surry* and *Suffex*, numbers of acres were so loaded with sand and mud, the grass has been cut, and carried immediately to the dunghill, to secure a second crop, or after-pasture ; and many hundred loads have been swept away by the stream.

But

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But these maladies fall on the *individuals* who suffer the *total losses*, and on the *consumers*; not on the Farmer who has got his hay *tolerably*: for that which is *lost*, will raise the price of that which is *saved*; and, as there will be very little *good hay* (artificial hay at least), that which is *indifferent* will *sell* at market.

It is not with *hay* as with *corn*. The price of *corn* is regulated by the *crops of Europe*; but the price of *hay* is settled by those which happen within *the circuit of a few miles*. All the clover, sainfoin, and much of the meadow-hay *around London* is either *lost* or considerably *damaged*: *therefore*, good hay will be dear, and bad hay will find a market.

How much more comfortably I feel now, than when I began to make this Minute! The Farmer must be gloomy, indeed, who cannot on these occasions *reason* himself into good-humour.

JULY, 1777. The above was not written as a *last* Minute. The Writer, however, is much pleased to find that the MINUTES OF AGRICULTURE end in "good-humour."---He does not mean by this to intimate, that a *Farmer* has more cause of *ill-humour*, than any other man; for he can say with sincerity, that he never enjoyed so long a run of happiness, as that which he has experienced since he commenced FARMER.

Farming is like a voyage to the Indies: and he who embarks in it will probably meet with contrary winds in the Channel,—a gale in the Bay,—and a squall between the Tropics.---The Farmer, however, like the Voyager, will frequently find the wind abaft the beam; and, like him, may now-and-then glide beneath a fair gale. He must not, however, like the Adventurer, expect to fall-in with a *golden shore*: he must bear-away for the Streights of SCIENCE; leading to the Land of RATIONAL AMUSEMENT;---seated on the brink of the Ocean of NATURE.

R. r.

Or,

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Or, to conclude the MINUTES OF AGRICULTURE in a style more *farmerly*, whoever purchases or leases a Farm, must not enter upon it with high expectations of uninterrupted enjoyment, nor with elevated hopes of pecuniary gain: he must expect a variety of disappointments, and a succession of untoward incidents; resting his happiness on that rational amusement which never-ceasingly results from Scientific Agriculture, when accompanied with a philosophical observance of the operations of Nature.

THE END OF THE MINUTES.

THE
DIGEST
OF THE
MINUTES.

T H E
A P P R O A C H.

IT was not the caprice of an hour—but principle—founded on nature—actuated by experience—and confirmed by long premeditation, which led the Author from *Town* to *Rusticity*.

Youths imperceptibly imbibe and retain ideas of the objects surrounding their youth; and the seeds of Agriculture were, of course, *self-sown* in the Writer. But an utter aversion to Farming totally stopped their vegetation; until a few years acquaintance with the World had convinced him, that NATURE, RURALITY, CONTEMPLATION and HAPPINESS, are nearly allied; and a fresh sight of juvenile scenes roused the latent seeds. Books attempted to raise the puny shoots, but they poisoned the straggling plants with noxious weeds; and, on a review, the *corn* was deemed too scanty and too foul to stand for a crop. The baneful herbage was therefore plowed-in, and the soil received a three summers fallow. The soil disencumbered, he asked of NATURE some genuine seed, and he sowed it under HIS directions. The vigorous plants exceeded his ambitious wishes, and REASON attempted, but in vain, to rear them. He therefore placed them under the care of EXPERIMENT and OBSERVATION, and there are some hopes of a crop.

Literally—the Author, fearing that from *Education* and Books he had received false ideas of Agriculture, wished for a safer basis on which to place his future acquisitions.—He was aware of the influence

fluence of prejudice; and therefore resolved to throw aside Books, and endeavour to erase from his mind every trace of agricultural knowledge. A few years, and a fresh review of the Mathematics (for perhaps this, in preference to every other science, teaches and habituates Mankind to think systematically and *tensely*), prepared him for the task; and about eighteen months before the commencement of the preceding Minutes, he began THE ANALYSIS OF THE MEANS OF HUMAN EXISTENCE.—He endeavoured to trace the causes to their source, and the effects to their efflux, and to pursue the means to the extremity of obviousness. On this ANALYSIS he attempted to draw the outlines of a System of Agriculture, or of whatever the Reader chooses to name it—the Writer calls it a SYSTEM OF NATURISION—and he had some success. This made him still more anxious for a Country life.—He wished to improve and perfect by practice the theoretic sketch;—but he was impatient, and attempted the *fillings* from theory alone.—He need not acquaint the Reader, that he made *bungling-work*: however, to do the *attempt* justice, he apprehends that he owes to it some thoughts, which else might not have occurred. After he reached the field of EXPERIENCE, and, indeed, after the commencement of the preceding MINUTES, he continued to *systemize* what he thought worthy of his *System*; and the *Minutes* before January 1775, contain little more than the refuse. From that time, he threw every thing he thought *minutable*, into a series of Minutes, and digested them at his leisure.

It may be necessary to observe, that this *long story* has not been introduced to give the Writer an opportunity of talking of himself, but of telling the Reader that the HEADS of this DIGEST are taken from that SKETCH; that part of the systemized matter, whether theoretic or practical, is *here* blended with the Minutes; and that this DIGEST comprehends the *whole* (be it much or little) of the Author's agricultural knowledge,

17 JULY, 1777.

A
G E N E R A L V I E W
O F
F A R M I N G A N D F A R M E R S.

F A R M I N G.

MAN, as an animal, has few WANTS; and, probably, there has been a time, when the SPONTANEOUS PRODUCE of the soil was thought adequate to them.

In the present state of POPULOSITY, independent of luxury, the spontaneous growth would be found far short of his indispensable exigencies. Therefore, from AGRICULTURE the *necessaries* of life proceed—By AGRICULTURE Mankind *preserve* existence—And AGRICULTURE, in a state of *natural populousity*, is the NATURAL PROFESSION OF MAN.

But, in a state of *Trade*, where *gold* alleviates every *want*, it is not *necessary* that each INDIVIDUAL should be an AGRICULTURIST; nor, in a state of *Commerce*, that each COMMUNITY should produce the *immediate* means of its own preservation. It is, however, *absolutely necessary*, that the Commercial Communities, collectively, should provide for the NATURAL NECESSITIES of the COMMERCIAL WORLD.

But a state of *confirmed Commerce* is a state of *Luxury*, where natural necessity is absorbed in *superfluity*, and each Community has *other means*
of

of subsistence;—as Mining, Hunting, Fishing, Navigation, Merchandising, Trade, and Manufactures.—But Mining, Hunting, Fishing, are partial;—and Commerce, with her Train, like the serpent, crawls from place to place, and *charms* but to *destroy*. Agriculture alone is permanent, and common to the Habitable World;—from Agriculture the *lasting* welfare of a State proceeds; and AGRICULTURE, even in a state of Commercial Splendour, is the GRAND OBJECT OF EVERY COMMUNITY.

But PUBLIC and PRIVATE Agriculture differ widely.—That regards the Community, without considering the Individual:—This, *simply considered*, views the Individual, regardless of the Whole:—And PRIVATE AGRICULTURE, in a state of Commerce, where Individuals have a choice in their profession, becomes, *simply considered*, a PECUNIARY EMPLOYMENT.

But an *Individual* is a Son of Nature,—a Brother of Mankind,—a Member of Society,—and a Man;—and he has four principal

MOTIVES TO PRIVATE AGRICULTURE:

A Love of Nature,	A Love of Himself; divisible into,
A Love of Mankind,	Self-amusement,
A Love of his Country,	Self-emolument.

Until the present Century, FARMING, like RELIGION, was an *hereditary mystery*, transferred from father to son, and had no other foundation than chance-produced CUSTOM; nor was actuated by any other motive than SELF-EMOLUMENT.

REASON found her plodding through a *narrow, blind-lane—a by-road*, full of sloughs and quick-sands.—*He* led her from the mire—dressed her in a decent, rustic garb—and introduced her to BOOKS. Books recommended her to SCIENCE.—Science, unfortunately, threw her in the way of TASTE;—and *Men of Taste!* mounted her on the Throne of ABSURDITY—dressed up so truly fantastical, and placed in such an aukward light, that RIDICULE threatens to laugh her back to the dirt and darkness from whence she came.—She

is

is no longer an ART nor even a SCIENCE, but a chit-chat Companion to the FINE ARTS and BELLES LETTRES! She resembles a ruddy, buxom, cottage-bred Country-housewife, bedizened in mode and muslin, parading the Mall of Taste amidst modern Petits-Maitres.

The PHILOSOPHY OF AGRICULTURE is the first chapter of NATURAL PHILOSOPHY—as the PROCESS is that of EXPERIMENTAL; and it is an unpleasing reflection, that the FIRST OF HUMAN SCIENCES should be made *the bobby-horse of Projectors*, and *the catch-penny of Bookfellers*—or that the PARENT OF INDIVIDUALS and PATRON OF EMPIRE should become *the playmate of Taste**!

FARMING may be seen in another point of view.—For many generations before the last, it was wholly in the hands of the Illiterate, holding the management of their Ancestors sacred as their Faith. MEN OF LETTERS and TRAVEL, seeing its unfortunate situation, introduced, *practised*, and published the improvements of other Countries.—Thus CLOVER, TURNIPS, and many other obvious Improvements were denized, and adopted by the dawning Peasantry, in proportion to their utility:—and thus ENGLISH AGRICULTURE, like the English Oak, shot slowly from a stable, healthy root.

BUT MEN OF SPECULATION, unwilling to wait the tardy progress of PRACTICE, mounted the wings of THEORY—raised *specious schemes* and *flattering calculations*, and ushered them into the world, without *testing* their truth or UTILITY.

This has roused the spirit of Farming in four orders of Men.—The Man who has broken his fortune, flies to Farming to *repair* it;—the Monied-Man hopes, by Farming, to *increase* his store;—while Men of Speculation and Project eagerly embrace it as the most certain and speedy way of *making* a Fortune! But, worst of all, Men on the brink of ruin fly to it as to a Friend-in-need;—when, alas! the

* Whoever will look into the celebrated TOURS, may see Corn-Sheaves, Sculpture, and Carrots; Bullocks, Belles Lettres, and Burnet; Paintings, Pigs, and Picturesque Views; and —“ round about the May-pole how they trot!”

A GENERAL VIEW OF

delusive phantom vanishes, and the disappointment only serves to precipitate their fall. But the mischief ends not here:—The real cause of their disgrace is only known to themselves; the WORLD (or, which is the same thing, Men of moderate capacities who do not think for themselves) lay the blame on AGRICULTURE;—the Aboriginal Farmer, who is unable to distinguish Science from Speculation, and who looks upon both as intruders, is solicitous to circulate the scandal;—and thus, SCIENCE and SPECULATION are doomed, *without distinction*, to disgrace and infamy.

The Landed Gentlemen,---the Clergy,---and the Lay-Rectors, have industriously propagated this FALSE SPIRIT OF FARMING, and have successfully raised their rents and tithes.---The Clergyman's text is well chosen;---a time may come, however, when the Landed Gentleman or his posterity may look back with hearts full of repentance.---The *advance* of rent serves only as an advance of *luxury*.---But, should the *recent* prices of produce fall, (and that on a par of years they will fall, needs not the gift of prophecy to foretel) and with them the Farmer *or* his rent, a *reduction* of income will most probably prove a reduction of *happiness*.

Other promulgers of this AERIAL SYSTEM are Men actuated by a love of their Country. The sins of these are venial; because they *mean well*.---Their object is to increase the quantity, and thereby decrease the price of provisions. They endeavour to spur on the *Individual* to *spirited management*; eyeing the good of the Whole, unmindful of his welfare. But where will center the GOOD OF THE WHOLE, when the INDIVIDUALS are *disgusted*, and Agriculture is become the *derision*, not the *admiration* of FASHION?

It has been---it is---the fashion to admire it---It is beginning to be---and should this IMPOSTOR be suffered to stroll abroad unstigmatized, it may soon be---the fashion to sneer at it.---The Disappointed, who have slipt the mesh, already begin to smile at those whom they see floundering in the net,---and laugh aloud at him who is tame enough

FARMING AND FARMERS.

enough to take it.—The numbers of Disappointed will daily encrease, and the Satirists of Agriculture may soon laugh its Panegyrist out of countenance.

PRESENT FARMERS.

AFTER this cursory view of PAST and PRESENT FARMING, a review of PRESENT FARMERS will not follow unaptly; nor will a few Sketches, characteristic of this *at present* heterogeneous Fraternity, be useless to the NOVITIAL AGRICULTURIST:—for, how despicable soever some of the Brotherhood may be, in reality or estimation,—he will find himself, when he becomes a PRACTITIONER, under a necessity of being more or less connected with them:—his fields will join to their fields;—he will trespass, and will be trespassed upon;—he may assist, or he may need assistance;—he will become a Fellow-parishioner,—and will be, of course, a Fellow-member of Society, *equally* amenable to the usages and laws of his Country. Nor, perhaps, may these Sketches be altogether unserviceable to the *Characters* themselves—Vice *sometimes* startles at her own deformity.

PRESENT FARMERS may be divided into three principal classes—

The ABORIGINAL,

The SCIENTIFIC,

The AERIAL.

The first farm from CUSTOM;—the second, from EXPERIMENT and OBSERVATION;—the last, from BOOKS and BALIES*.

* *Baley*.—The etymology of this term is generally misunderstood, and its orthography erroneous. It comes directly (and not by the way of France) from the anglicised Saxon word *Bale*—“Misery and Mischief.”—Hence the adjectives *baley*, *baleful*, *balific*, &c. &c.—Its orthography, therefore, is *Baley*, not *Bailly*,—nor *Bailiff*;—and its etymological meaning, *a mischievous servant*.

A GENERAL VIEW OF

ABORIGINAL FARMERS.

These are subdivisible into

The ILLIBERAL SLOVEN,

The ILLITERATE ECONOMIST,

The APE-GENTLEMAN,

The SUBSTANTIAL,

The GENTLEMANLY.

The first of these is a fullen, designing, incommunicative Being, who holds his profession as a family-secret, though his management be execrable,—his fields are foul,—his crops wretched,—his live-stock pitiable;—his whole life is a scene of cunning, toil, poverty and wretchedness.

The second is equally illiberal, equally disingenuous, equally incommunicative, has more cunning, and is a better Farmer.—He keeps his land *tolerably* clean, and in *tolerable* heart;—his crops, and every thing around him are tolerable,;—and he gets rich in proportion to his RENT, TAXES, and LUCK. This is the money-getting Farmer, whose *Agriculture* the SCIENTIST ought to endeavour to *excel*.

The third is the Economist grown rich, or the successor of an enriched Economist.—He looks on his purse:—to him it seems very large;—it contains from fifteen hundred to two thousand pounds;—and he is not aware of any thing else being wanted to make him a *Gentleman!* His vanity swells, and thus he *sets up*:—He commences wine-bibber at Fair and at Market;—his Sons hunt the best horses in the neighbourhood—perhaps, follow a snug pack of their own;—his Wife and Daughters copy those of the Apothecary, the Parson, and the *Squire*;—they ape them in Dress, and outdo them in Entertainment;—his whole family is extravagant without gentility, and profuse without complacency.—Luxury creates indolence and false pride;—indolence, a laxity of management;—and false pride persuades

persuades him to be ashamed of that employment, which led him, perhaps, from hard labour.---His lease expires---his landlord doubles his rent---the prices of produce fall---his good-luck changes to bad---he grows poor, lives in debt, and dies a beggar; leaving an *indolent* family to crawl through a life of poverty and toil---or worse!

His is a more despicable Character than that of the despicable SLOVEN.---It is he who raises, or helps to raise, the price of land, and with it the prices of provisions.---It is he who disseminates, or assists in disseminating luxury among the Sons of Rusticity, and a false spirit of Farming among the *Daughters* of Speculation.

The fourth---the SUBSTANTIAL---springs from a long line of ECONOMISTS and industrious Housewives.---He is possessed of a fortune independant of Farming;---he is the Lord of the Village he lives in; and deals out comfort *or* oppression to his poor neighbours.---He is the counterpart of the foregoing:---for, although he is purse-proud, he is at war with every thing gentlemanly. --He would rather be thought hospitable than polite; --and would rather be *first* among his Dependants, than subordinate among Gentlemen.---But *his* is a Character worthy of his Country, and the Community has not a better Member; because, his Sons are robust, and his Daughters notable; and his whole family is a pattern of rural decency, and their manners a relick of ancient hospitality.

This is a man whom the SCIENTIST ought to court.---For though he is a CUSTOMIST, and, of course, *cannot communicate* his general management,---he knows the customs and usages of the Country he lives in, and can obviate a thousand *petty* difficulties.

The last---the GENTLEMANLY---is the Son of the SUBSTANTIAL Farmer.---He has had education enough to think for himself, knows enough of the *World* to communicate his sentiments, and is liberal enough to associate with Men of Liberality.

This

This is the man whose friendship is an acquisition to the SCIENTIST:---for *Him* he can understand, and by *Him* he will be understood;---and this is a satisfaction worth some pains to acquire. But, notwithstanding his education, his liberality, and knowledge of mankind, he can never be a genuine SCIENTIST*.---He may *improve*, but can never *perfect*;---because, he is *prejudiced* by the CUSTOM of his Ancestors, and the Country he *happened* to be bred in, whose ERRORS he has not only *received* as immutable TRUTHS, but his whole life has been employed in the *practice* of them. The SCIENTIST knows nothing but what proceeds *directly* from ANALYSIS, EXPERIMENT and OBSERVATION;---and yet they have an obvious alliance.---The CUSTOMIST may afford the SCIENTIST matter for Experiment,---and the SCIENTIST may return him the useful result of his experience.---If it be possible for the SCIENTIST to receive material assistance from any man, it is from the LIBERAL CUSTOMIST.

It is not meant that each CUSTOMIST bears exactly some one of these characters; but it is apprehended that these are the predominant characteristics of ABORIGINAL FARMERS.

THE SCIENTIST.

This is the MAN---(no matter whether born heir to wooden-shoes or a coronet) whose PARENT---PRECEPTOR---and PATRON, is NATURE. HIM he obeys,---HIM he reveres,---HIM he contemplates,---HIM he

* Here the Writer can scarcely forbear drawing parallels between CUSTOMISTS IN AGRICULTURE, and CUSTOMISTS IN LITERATURE; and between the SCIENTISTS OF LITERATURE, and the SCIENTISTS OF AGRICULTURE.---But, indeed, the likenesses are too striking to need them:---Besides, it would be cruel, it would be wantonness, to tantalize men, the flower of whose youth, and whose vigour of intellects has been spent in acquiring *those---things*---the acquisition, the burden and tendency of which necessarily preclude from the generality of capacities, almost every ray of the soul-expanding beams of NATURAL and SCIENTIFIC KNOWLEDGE.

admires,---

admires,---HIM he mentally adores---as SOUL OF THE CREATION,---
as SOLE, *comprehensible*, SOURCE OF HIS EXISTENCE.

He views the PRESENT WORLD.---*Here*, he sees a treacherous, ruffian Gang, in specious masquerade, hacking down Law, Liberty and Life, to storm the unstable FORTRESS OF POWER! *There*, a tinselled, giddy Throng, with gait voluptuous, flaunting away to the TEMPLE OF OSTENTATION. In yonder deep morasses, a dabbling, dashing Shoal, floundering on to the HOARD OF RICHES: and through yon oaken grove, a peaceful Few, walking towards the FIELD OF QUIET, bordering on the now-impenetrable FOREST OF NATURE.---These Few he joins, and there he sits down satisfied.

He has acquired the useful part of human knowledge; and Agriculture he esteems the most useful and the most abstruse of *useful* Sciences.

He *believes*; that the CUSTOMISTS, *collectively*, are far advanced on the road of Perfection; but he *knows* nothing in Agriculture, which proceeds not directly from ANALYSIS, EXPERIMENT, and OBSERVATION.

He esteems SELF-ATTENDANCE and CLOSE ATTENTION, even to the merest Minutiæ, absolutely necessary to common management; nor thinks the MANUAL OPERATION of the humblest department beneath the MAN.

Agriculture is his STUDY,---his RECREATION, and his PECUNIARY PROFESSION; for though he courts not SUPERFLUOUS RICHES, he holds SELF-INTEREST, *in a state of Commerce*, synonymous with SELF-PRESERVATION. But while he views HIMSELF, he loses not sight of the COUNTRY nor the WORLD he lives in.

He wishes for UNIVERSAL PLENTY.

He wishes to see the terrene WORLD cloathed in Luxuriance:

He wishes to see the various soils of his COUNTRY emulous to shoot forth abundance to his Countrymen.

He

He wishes to see each occupied by the Vegetable which affects it;---and, collectively, by such as are most immediately subservient to the NATURAL NECESSITIES OF MAN.

On the contrary---He wishes not to see the vegetative ELEMENTS inactive, nor exhausted by *useless* Vegetables;---nor the VEGETABLE Creation dissipated by *superfluous* ANIMALS, and suffered to revert to soil, without being immediately, or secondarily, HUMAN FOOD.

THE AERIALIST:

These are his leading characteristics :

He is constitutionally volatile, speculative, and credulous,---and habitually bookish.---He has acquired a smattering of the lighter branches,---the twigs of human knowledge;---and apes Genius, though void of penetration and judgment.

He has read the TOURS, and seen the PATENT-PLOW! and sallies forth Knight-errant of Agriculture, to rescue her from the hands of Barbarism and Boors! Like another Quixote, from Bridge he flies to Castle, and from Castle to Windmill, with equal success.---His ridiculous orders are still more ridiculously executed.---He changes his BOOKS---changes his BALEY, and changes his PLAN of management;---but all in vain:---the phantom flies before him.---At length, wearied with pursuit, he deigns to look behind him;---when, lo! at a distance, he sees PRESENT AGRICULTURE sitting at her ease, with a sneer on her countenance, in a spacious field of flowing corn.---He beholds her, astonished! Instead of a starving, puny wretch, he perceives her to be a hale, decent, respectable personage.---The chimeras of vast improvement and vast profit vanish;---and he has the mortification to see himself deservedly laughed at by the very persons he affected to contemn.---Tired out and ashamed of his burden (if not already sunk beneath it), he shifts it on to the shoulder

der of his sanguine friend, and laughs in his sleeve---without comfort*.

Generally---the Writer believes, but he may not be a judge---he therefore hopes---that these SKETCHES OF PRESENT FARMERS are drawn without favor or affection,---and without envy, hatred, malice, or any kind of uncharitableness:---His meaning is to serve the cause of ENGLISH AGRICULTURE; and he heartily wishes

Improvement to the CUSTOMISTS,
Increase to the SCIENTISTS, and,
Reformation, or, total Annihilation to the AERIALISTS †.

* The Colourings of this Sketch are left to the professional Satirist, who may be assured that COMIC NUTS are, *now*, very plentiful on the borders of the Field of Agriculture.

† No notice is here taken of the SABBATICAL Farmers around the Metropolis,---for their motive cannot be more than relaxation from the hebdomadal fatigue of the Desk or Counter;---and yet they are *noticeable*---for recreation is ever generous;---and in the region of their influence, the prices of land and of labour must be considerably raised,---idleness encouraged,---and the prices of provisions of course enhanced by a paucity of produce.

T t

THE

T H E
P L A N
O F T H E
D I G E S T.

THE matter of PRIVATE AGRICULTURE (and, perhaps, of every other *Art*) is divisible into

THEORETIC and PRACTICAL ;

or,—into

PHILOSOPHIC and MECHANICAL ;

or,—into

The ELEMENTS and the PROCESS.

The first shews what the Elements *are* by *Nature* ;—or, what they *ought to be* by *Art* :—The last teaches *how* to manage them in the highest perfection, consistent with the greatest Emolument of their Possessor.

But the Matter collected in the preceding MINUTES, is only a *part* of the Matter of private Agriculture—and will not by any means *complete* the SYSTEM mentioned in The APPROACH.—It is not sufficient even to form its Outlines. One of the principal Divisions—ANIMALISATION—(the breed, breeding and rearing, the food, feeding and fattening of cattle and sheep, &c. &c.) is scarcely touched upon, because the Writer has scarcely had an opportunity of making an Experiment—nor, of course, a Practical Reflection upon it.

it;---and he is not raising Systems, but registering Facts. He is, however, very much pleased to find, that for almost every niche of the grand compartment,---VEGETISION,---he has collected something;---and the *Process*, here-and-there, draws near to a *Finis*.

THE ELEMENTS which have fallen under his Observation, are these:

Farms.	Sandy-loam,	Lucerne,
Farmeries :	Gravelly-loam,	Rye-grass,
Stack-yards,	Gravel.	Cabbages,
Barns,	Manures.	Turnips,
Granaries,	Provocatives.	Potatoes,
Straw-yards.	Vegetables :	Carrots.
Fields.	Wheat,	Stacks.
Roads.	Rye,	Live-stock :
Shores.	Barley,	Cows,
Fences.	Oats,	Rearing-cattle,
The Weather.	Tare-barley,	Sheep,
Servants.	Tares,	Swine,
Beasts of labour :	Beans,	Poultry.
Oxen,	Pease,	Pasture.
Horses.	Blendings,	Fodder.
Implements.	Buck-wheat,	Litter.
Soils :	Rape,	Dung.
Clay,	Meadow,	Compost.
Clayey-loam,	Clover,	Markets, &c. &c.
	Mixture,	

The Branches of the Process which have occurred, are these :

The general management of Farms.	Fallowing,	Houfing,
The minutial management of Farms.	Dunging,	Thrashing,
The division of Farms.	Seed-plowing,	Winnowing, &c.
The classing of Farms.	Sub-plowing,	&c. &c.
Shoring.	Depositing,	The particular management of each species of Agricultural vegetable.
Sub-draining.	Top-dressing,	The general and particular Farm-yard management.
Fencing.	Preparing the seed,	The general and particular management of live-stock, &c. &c.
Ley-management :	Sowing,	
Leying,	Covering the seed,	
Sur-draining,	Weeding,	
Haying,	Hoeing,	
Aration :	Grazing,	
Discumbering,	Verdaging,	
	Harvesting,	
	Stacking,	

But the Author is aware of the prolixity which would be incurred by such a multiplicity of distinct divisions : He has therefore endeavoured to contract his plan in such a manner, as to mix without confusion, and has reduced it to the following general Heads :

FARMS AND FARMERIES.
SOILS.
MANURE.
SEED.
THE WEATHER.
SERVANTS.
BEASTS OF LABOUR.
IMPLEMENTS.
GENERAL MANAGEMENT.
MINUTIAL MANAGEMENT.

DIVISION OF FARMS..
LEY MANAGEMENT..
LEY VEGETABLES.
PLOW MANAGEMENT..
PLOW VEGETABLES.
FARM-YARD MANAGEMENT..
LIVE STOCK..
MARKETS.
MISCELLANEOUS ARTICLES..

F A R M S

FARMS and FARMERIES.

F A R M S.

FARMS may be divided into

TILLAGE FARMS,
LEY FARMS,
COMPOUND FARMS.

TILLAGE FARMS are subdivisible into

FOLDING FARMS, COMPOST FARMS;
or,—into

COMPACT FARMS, STRAGGLING FARMS;
or,—into

UNISOIL FARMS, POLYSOIL FARMS.

LEY FARMS, into

EATING FARMS, HAY FARMS, DAIRY FARMS.

COMPOUND FARMS, and FARMS in general, into

LIGHTLAND FARMS, STEELAND FARMS;
or,—into

UPLAND FARMS, LOWLAND FARMS;
or,—into

OPEN FARMS, INCLOSED FARMS;
or,—into

LARGE FARMS, SMALL FARMS, MIDDLING FARMS.

Perhaps,

Perhaps,—TILLAGE FARMS are more profitable to the Community; —LEY FARMS, to the Individual:—*Because*,—Tillage gives a greater quantity of human food,—and a Ley wants less labour:—the profits, however, to the Renter rest wholly on the Rent:—*But, perhaps*,---COMPOUND FARMS are by far the most eligible, both for the State and the Farmer:—*Because*,---Live Stock is necessary to Tillage,—and grass is *convenient* to Live Stock.

Perhaps,—FOLDING FARMS are preferable to COMPOST FARMS; *because* Sheep are profitable, where they can be kept with safety; and *because* they save, considerably, the expence of team-labour.

Perhaps,—a COMPACT FARM, with a central Farmery, is cheaper at 15s. an acre, than a STRAGGLING FARM of equal quality at 10s.; *because* the labour, attendance, and attention, are considerably greater on This; and, of course, the amusement and emolument considerably more on That.

A UNISOIL FARM requires fewer Implements than a POLYSOIL FARM, which, in its turn, has some advantages. It can change its own seed; it gives a greater variety of seasons; and forms a larger field for Experiment, Observation and Reflection.—But, perhaps, any Farm is better than a uniformly stiff soil Farm; because on many days in every year the teams will probably stand wholly idle, and wait the beck of the weather.

FATTING FARMS are certain bars to the population of the country in which they are suffered to abound; *because* they discourage industry, and prevent a plenteousness of human food. DAIRY FARMS feed the hungry, but do not employ the industrious, nor athleticate the individual equal to the plow, the sith, and the sickle.

Perhaps,—LIGHT LAND is fitter for corn, STIFF LAND for grass; *because* less labour will keep light land *equally* clean, and in *equal* tithe:—And perhaps, generally, a sandy loam, at 15s. an acre, is cheaper (as arable land) than a clayey loam of equal fertility at 10s.: and perhaps, stiff land arable Farms are, in general, too high-rented.

A kind

A kind soil is an exhaustless source of amusement to the rational possessor; an untoward one, the plague of his Autumns,—the pest of his Winters,—and the never-failing curse of Spring.

Perhaps,—**UPLANDS** are more eligible for Aration, **LOWLANDS** for Ley; *because* Uplands yield plumper grain, Lowlands a greater burden of grass; because grain requires wind and sun;—grass, coolness and moisture.

Perhaps,—**OPEN FARMS** are fitter for corn, **ENCLOSED FARMS** for pasture; *because* the sun and wind are the principal agents of maturation, and the most active helpmates of harvest: fences give shade in summer, and warmth in winter.

Perhaps,—**MIDDLING FARMS*** are the most profitable to the Community, and afford the most amusement, and proportionably the most emolument, to the possessor: *because* a man who has Farming-knowledge and a capital, will not accept of a small Farm, and a Plow-Farm of 500 acres is adequate to any man's attention.—Farms of less than 100 acres fall into the hands of the ignorant and indigent; those above 500, must be in some degree neglected, be the possessor ever so alert; *because*, where there is more than one Farmery, there must be *irrigid* management; and of a very large Farm with only one Farmery, some part of it must lie at too great a distance from the Farm-yard; even supposing the Farm a circle, and the Farmery its center: and whatever increases Horse-labour robs the Community.—Therefore, *perhaps*, from two to three hundred acres of culturable soil (four-fifths of which is arable), is the most *political* Farm; if not, the Writer will venture to pronounce it the most *gentlemanly*.

There are other characteristics of Farms: A Farm may be **HILLY**, or it may be **LEVEL**; it may have a retentive subsoil, or an ab-

* By a middling Farm the Writer means one, four-fifths of which is arable, containing from one hundred to five hundred acres.

serbent.

forbent one; and consequently becomes a WET FARM, or a DRY FARM.

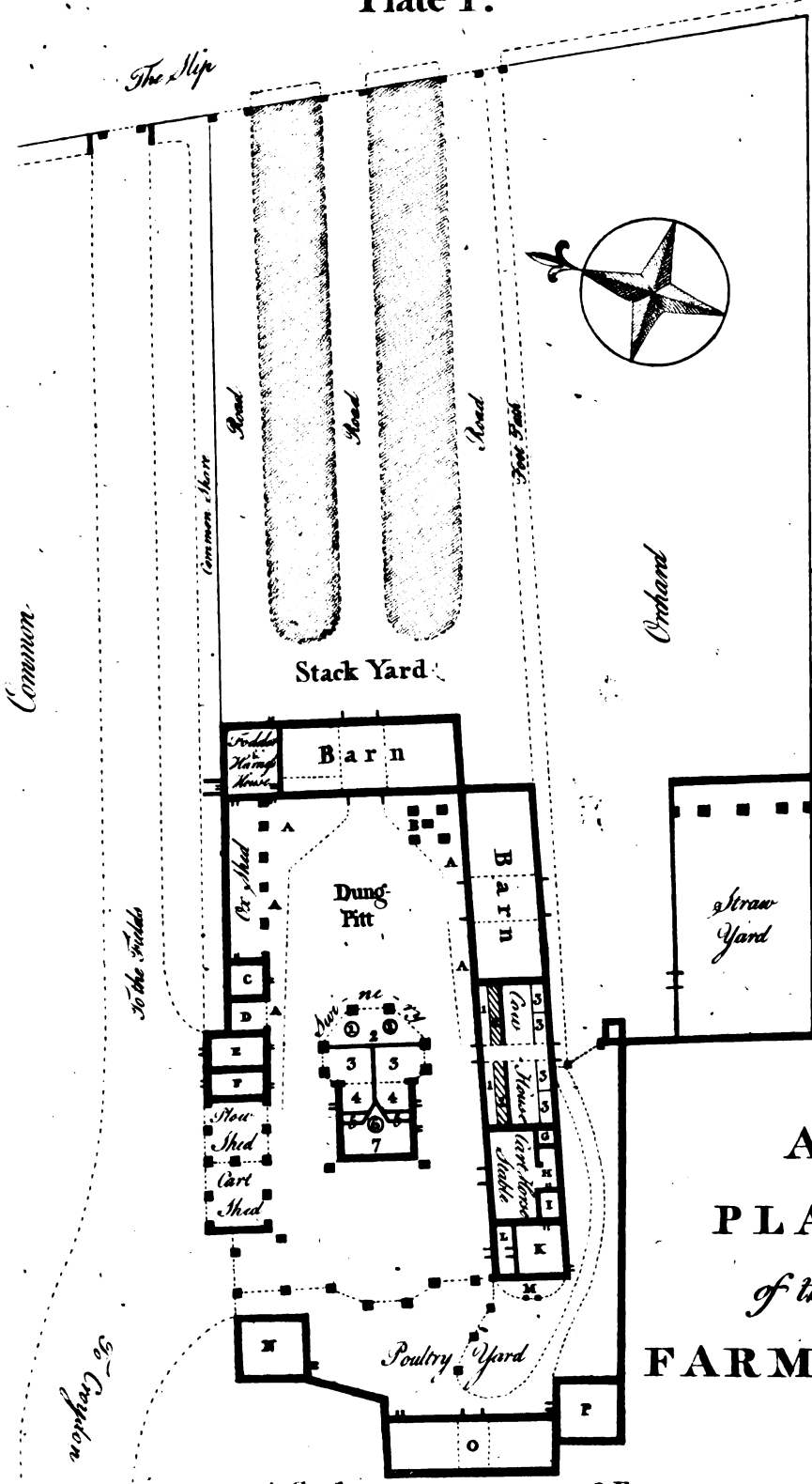
The LOCALITY of a Farm varies, considerably, its extrinsic value: the neighbourhood of a NAVIGABLE RIVER, or a CANAL; a CITY, or a MARKET-TOWN; a COMMON, or a GOOD ROAD; are valuable situations.

The ASPECT, too, is very material: a southern aspect is desirable; especially for a Corn-Farm.

But even these were not the *whole* of the accidents of a Farm, as will appear by a review of the MINUTES INCIDENT TO FARMS, which are here brought into one view.

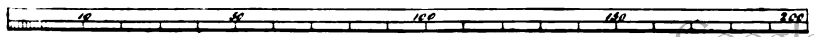
1774. Dec. 31. Public paths are nuisances of arable land.
1775. Mar. 28. Polyfoil fields are very inconvenient.
- Ap. 27. Small, straggling fields are extremely disadvantageous on a Plow-Farm.
- June 10. Incontiguity of arable land robs the Farmer of both profit and pleasure.
- July 3. It is inconvenient to have more than one Farmery.
- Aug. 15. If incontiguous arable land be foul and poor, it is barely worth the labour of cultivation.
- Sep. 13. An adjacent Common is highly advantageous.
- Nov. 23. Wet land is the bane of Farming.
- Dec. 21. It is very unprofitable to hold Farms under distinct landlords.
- How many are the advantages of a ring fence Farm?
1776. Jan. 8. Polyfoil Farms and Unifoil Farms have each their advantages and inconveniencies.
- A dry loam, culturable by whip-reins, is a most desirable Farm.

Apr.



A
PLAN
of the
FARMERY.

A Scale of Feet.



Apr. 11. A Compost-Farm requires more Team-labour than a Folding-Farm.

The Writer begs leave to close the article FARMS with this *general* caution :

DO NOT ADD FARM TO FARM.

F A R M E R I E S.

PERHAPS, the FARMERY ought to be situated in or near the center of the arable land, if the center be warm and well watered ; if not, perhaps as near as warmth and water will permit. But perhaps there are exceptions even to this : the side of a Common and the side of a good Road are desirable situations.

Farmeries vary with Farms.—An Arable-Farm requires one different from a Fattening-Farm : a Fattening-Farm, from a Dairy Farm : and a Dairy-Farm from a Hay-Farm.—Indeed, it would be as inconsistent to give a general plan for a Farmery, as to dictate, in general terms, the management of a Farm : for different Farms require different managements, and each a different suit of yards and erections. The Writer, therefore, does not offer the plan and description of *his* Farm-Yard, &c. as a pattern to *others*, but as a mirror, in which they may see the advantages and defects of their own, and as a collection of hints to the Man who wishes to plan one*. See PLATE I.

* FARMERY. The Slip or LOBBY is entered from the COMMON, and opens into GARDEN FIELD, an ARABLE FIELD, the PASTURING PADDOCKS, and the STACK-YARD. A, A, &c. the *Gangway*, or Foot-Path round the FARM-YARD. B. The *Granary*. C. A *Chaff-House*. D. A Sleeping-Place for the *Yard Hogs*. E. The *Poultry*, which also extends over (C). F. A *Stallion Stable*. G. The Chaff Binn of the Cart-Horse Stable. H. The *Harness-Closet*. I. A *Collar-Maker's Shop*. K. A *lock-up Toolery* and Carpenter's Shop. L. An *Open Toolery*. M. A large *Breeding Coop*. N. The *Saddle-Horse Stable*. O. The *Dwelling House*. P. A *Brew House*, &c. Cow-HOUSE. (1) The *Gang-way*. (2) The *Mangers*. (3) The *Calf-Pens*.

Ox-SHED. On a similar plan to the Cow-House.

SWINERY. (1) The *Wash-Tubs* (pipes, half above, ---half under-ground). (2) A pavement on which to serve the *Yard-Hogs*. (3) The *Outer Styes*. (4) The *Covered Styes*. (5) The *Troughs*, opening by flaps into the *Boiling-House*. (6) The *Boiler*. (7) The *Boiling-House* and *Repository* ; sunk three feet below the level of the yard. This apartment has a well in its centre, as also binns and other conveniencies. It is likewise occasionally used as a butcher's shop---a place for pickling wheat, and a variety of other purposes.

U u

The

The principal *fault* lies in the Dung-pit: this is situated immediately before the barn-doors, and consequently, if a cart or waggon be driven through it into the barn, the wheels collect the flush, and carry it on to the floor. A dung-pit (which preserves much of the fine part of the dung, and if the superfluous water be repeatedly thrown over it with a scoop, forwards the digestion of that which is crude, and is far more eligible, perhaps, than a dung-bill) ought to be placed on one side, leaving a free passage to the barns. It *wants*, at present, a Shed high enough to admit a load or loads of hay or corn: such a shed is very convenient in a showery harvest. If it has any peculiar *advantage*, it is in the form of the Stack-yard, which is exceedingly commodious. The Farm-yard is warm (it was not laid out as a *Straw-yard*), and its compactness makes it very convenient. The Cart-shed opens on to the Common by five-barred gates. The Swinery, too, is very commodious.

The Barns are furnished with eave-gutters, to prevent the rain-water which falls on them from running into the Dung pit. The Sheds and Hovels, too, have only half-roofs, which throw the water out of the Yard: the Dung-pit, therefore, receives only the rain which falls in the Yard, including the Granary and gang-ways.—But even this is too much for it, and in wet weather overflows the paths, part of the Swinery, &c. making the Yard uncomfortable: a Dung pit ought to receive none but its own perpendicular rain.—The edges should therefore be higher than the adjoining ground, which should have a slope from it on every side, except a few paces at its mouth or mouths.

Why not carry out the superfluous water as liquid manure? This is a tedious business; and, by a treble and accurate Experiment on clover and tares on a sandy loam, twenty pipes an acre are scarcely of perceptible service: the Experiment stands thus:

—14. Mar.

14 Mar. 77.

Two rods of the 1st long land of tares, 2 $\frac{1}{2}$ rod from the cross road.

Eleven rods of the 11th land of the clover of H. 1.

Eight rods of the bed opposite the common gate, in H. 2.

The last exactly, the others about, 20 pipes an acre.

No. 40.

In S. 5.

And H. 1.

And H. 2.

YARD-LIQUOR.

Are 20 pipes an acre obviously serviceable to tares or clover on a sandy loam?

No. Not the first year.

20 June 77.

An advantage to the first crop of clover in H. 2. is perceptible, but not obvious.

25.

In H. 1. no perceptible advantage to the 1st crop.

28.

No perceptible advantage to the tares.

24 Aug.

No service in either field to the second crop of clover.

The liquor was of middling strength; it was very high-coloured and *foul*, but not *puddy*; and was carried on in wet weather.

The Writer does not insert this Experiment as a proof of the worthlessness of Dung-water: the time of year,—the Weather,—the Soil, the Crops, &c. perhaps, were not favourable. He will, however, venture to say in general terms, that it is better management to prevent, than either to waste or cart-out a superfluity of Yard-liquor. If a surcharge cannot be avoided, and the Farmery lie higher than any part of the Farm, it may be very good management to make a channel or channels to conduct it to such lower part; but the above Experiment leads the Writer to be of opinion, that except Yard-liquor be very rich indeed, it is not an object of team-labour.

The MINUTES incident to FARMERIES are few.

7174. Dec. 7. Dung-yards ought to receive no extraneous water.

1775. Aug. 12. Finished the Farm-yard.

U. u 2

Sept.

Sept. 20. Barn-room is particularly useful in a showery harvest.

Dec. 7. A distinct chaff-house relieves the barn-floors.

1776. May 19. Granaries should be under the eye.

S O I L S.

SOILS are infinitely various; no two distinct portions being identically the same, in matter and state.

All culturable Soils are Compounds, and consequently the ordinary distinctions are in some degree arbitrary; there being no such thing, in reality, as a cultured field of *Clay*, *Sand*, or *Gravel*: these terms are, nevertheless, very useful in Agriculture; as they convey strong ideas of *very clayey*, *very sandy*, and *very gravelly* Soils.

The Author is not sufficiently intimate with Fossilogy to make a physical Analysis of Soils: he will, however, venture to set down the following distinctions:

Clay,	Slatey loam,
Clayey loam,	Chalky loam,
Loam,	Chalk,
Sandy loam,	Flinty loam,
Sand,	Flint,
Gravelly loam,	Ragstone loam,
Gravel,	Limestone loam.
Pebbly loam,	

There are other more general divisions of SOILS: they are *stiff* or *light*; that is, tenacious or pulverous: they are also *wet* or *dry*; or, in other words, they have a retentive or an absorbent *subsoil*. The

Writer

Writer is convinced, from incessant observation, that a *light* sandy loam may be so *situated* as to be wholly incapable of producing vegetation, without being artificially acclivated, so that the superfluous water may find its escape superficially.

Another, more general, division is: Soils are *good* or *bad*. Experience tells us, that a fertile soil is, by repeated vegetation, impoverished;—provided the produce be constantly carried off: But, by returning the produce, or by a foreign supply, not only that Soil may be re-invigorated, but a barren soil may thereby be made fertile.

Therefore—to vegetation, some particles of soil are *active*, some *inert*. And, perhaps, the Vegetist ought never to lose sight of this maxim:

Every active particle carried off the Farm is a real loss: every such particle brought on, a real acquisition.

Nor consequently this:

Every active particle not immediately in the field of action, is rendered inert. Every inert particle activated (roused into action) is, at least, a temporary acquirement.

That which gives an actual addition of active particles, is called **MANURE**. Whatever stimulates, or sets at liberty, those which were inert, may be termed **PROVOCATIVES**; for both of which, see the next general head.

The **MINUTES** relative to **SOILS** are the following:

- 1774. Nov. 29. A clayey loam is difficult to be plowed.
- Dec. 5. A retentive soil ought to be acclivated.
- 1775. Jan. 16. Clayey loams are fitter for the sitch than the sickle.
- Mar. 28. Patched Soils are teasing to the plow.
- Ap. 27. Light Soils are plowable at a small expence.
- May 17. Stiff Soils, on the contrary, are expensive.
- 1776. Jan. 8. A dry loam, culturable by whip-reins, is, perhaps, the most pleasant and profitable.

Feb.

Feb. 6. A clayey loam, with a retentive subsoil, is the most untoward of arable Soils.

The Writer does not mean, in general terms, to decry stiff Soils; but he apprehends they are, as arable land, often too highly estimated; for the MINUTES above-referred to, which contain a register of the Writer's unbiassed sentiments at the time of minuting, shew clearly the extraordinary expence of labour they incur, comparative with lighter Soils.

M A N U R E.

WERE the Author composing a *System* of Agriculture, he would, under the head MANURE, treat solely on the *species* and *properties* of extraneous Foods and Provocatives of Vegetation: their *Application*, and other Meliorations given by *Tillage*, *Herbage*, &c. being intimately connected with the SOIL-PROCESS; as the raising and composting of dung, &c. are with the FARM-YARD-MANAGEMENT. But the materials collected in the foregoing MINUTES will not, he thinks, warrant such a division; as it might serve to perplex rather than to inform the reader. The whole are therefore placed under this Head in the order in which they occur; yet are in some measure *classed* by the initial words.

1774. July 31. *Manurising**; composting borders is very expensive management.

Aug. 6. *Manurising*; collecting green weeds for the purpose of raising Manure, is eligible.

Oct. 17. *Manurising*; on compost-fallows.

* Raising, collecting, digesting, and composting Manure.

Nov.

M A N U R E.

47

- Nov. 5. *Tillage*; summer-fallowing meliorates a foul soil.
- Dec. 7. *Manurising*; a dung-yard should receive no extraneous water.
1775. Jan. 24. *Manurising*; fern retards the maturation of a dunghill.
28. *Manuring*; on raking a dunged sward; and the advantage of dunging a ley.
30. *Manuring*; sowing foot by hand is a dirty job: tested the sowing-cart.
- Feb. 15. *Manurising*; littering the Farm-yard with long dung forwards its digestion.
- Apr. 25. *Manuring*; sow foot immediately after fetching.
- May 10. *Manurising*; reflections on composting, with the cost.
13. *Manuring*; on sowing foot, and its cost.
16. *Manurising*; on the best mode of composting.
- June 10. *Manuring*; dunging is highly beneficial to light-land leys.
22. *Exhaustion**; perhaps it is not so much the herbage as the grain which impoverishes a soil.
- July 1. *Herbage*; when it may be used as a melioration of a summer-fallow.
13. *Manure*; perhaps the food of vegetables is not dangerously volatile.
- . *Manure*; on the production of foot.
- . *Manuring*; on feeding a firm surface.
- Aug. 12. *Manuring*; on the time of sowing foot; and on the quantity.

* The impoverishment, the reduction of the vegetative particles of the Soil.

Sept.

- Sept. 7. *Manurifing* ; do not burn, but digest weeds.
- Oct. 5. *Manuring* ; perhaps top-dress barley.
- Nov. 18. *Exhaustion* ; a rule raised to calculate it by.
1776. Jan. 18. *Manure* ; are excrements alone, or excrements
and straw, the best Manure ?
27. *Composting* ; one rod wide, and a quarter of a rod
high, is the best form of a dung-
hill.
- July 21. *Manuring* ; dung the deep-plowed rough plit of
a stiff soil.
- Aug. 4. *Manure* ; perhaps dung encourages smut.
13. *Tillage* ; the crop of wheat '76 was nearly in
proportion to the number of
plowings.
- . *Herbage* ; an instance of its assisting to give an
abundant crop of wheat.
16. *Manuring* ; the Manure ought to be incorporated
with the Soil.
- . *Tillage* ; it is only a provocative melioration.
- . *Herbage* ; nor does herbaceous melioration *add*
any thing to the Soil.
- . *Manure* ; adventitious aliment is the only per-
manent melioration.
- . *Herbage* ; and, perhaps, nothing but a scarcity
of Manure can apologize for an
herbaceous dressing.
- Sept. 20. *Manure* ; foot is favourable to young clover ;
but not to wheat on clay.
- . *Manuring* ; endeavour to top-dress the spring-
corn and clover.
- Nov. 9. *Manurifing* ; a jag of straw affords a jag of dung.
- Nov.

- Nov. 17. *Manuring*; top-dressing is of very little use to stiff land.
- 1777: Jan. 6. *Manuring*; a calculation on the value of straw for the purpose of raising Manure.

The MINUTES on *Manuring* (before JULY 1776) abound with the favorite idea of *feeding on a firm surface*; an idea in some degree erroneous. It arose from the favourable effect of dunging an Upland Ley in Winter (see 28. JAN. and 10. JUNE 1775), and a stiff-land Ley in Summer (see 13. JULY 1775), both of which practices the Writer still believes to be good. But ideas in Agriculture will seldom bear generalizing; and he is fully convinced that dunging a *stiff land Ley in Winter* is bad management. For, during the winter of the year 1776, he made several comparative Experiments (the insertion of which would over-swell this article) on both Mixgrafs and Clover Leys, with a variety of Manures; but this Hay-time can scarcely point out a distinction in the crops, notwithstanding some of the Experiments were made with twelve or fifteen loads of strong compost an-acre. It is not apprehended that this Manure is thrown away; but, being laid on when the soil was replete with moisture, it was prevented from sinking deep enough to assist the *first* year's crop; red clover especially, feeding deep, with a strong tap-root.

The Author begs leave to submit the following THEORY:—During the DROUGHT of Summer, *clayey soils* are divided by innumerable fissures; and if Manure be laid on while the soil is in this state, the first shower of rain carries down the dissoluble particles into the vegetative stratum. But, in WINTER, a *retentive* soil resembles a *sponge filled with water*; and the Manure laid on while it remains in this state, must either be washed away by heavy rains, or be lodged near the surface; and cannot possibly penetrate the soil, until it be made porous by the ensuing Summer's drought. On the contrary, an *absorbent* soil is ALWAYS open to superficial moisture: it resembles a *dry sponge*, which greedily

dily absorbs the moisture it can reach ; and as fast as the Manure laid on such a soil is liquefied, it is received by the corn-mould. The danger here, perhaps, lies in its being hurried *through* the vegetative stratum. Is not Winter, then, the fittest time of feeding such a soil, when the current of absorption is gentlest ? rather than Summer, when its rapidity may hurry down the vegetable food, and prevent its being incorporated with the plant-feeding mould ? And is it not obviously eligible on such a soil to lay the Manure on the *surface*, at the greatest distance from that depth, at which it becomes useless ? rather than to bury it *in* the soil, where it may more readily escape below the sphere of vegetation ?

The Writer is *at present* so fully satisfied with the former part, at least, of this theory, that he is determined not to manure in future the surface of a retentive soil when its pores are full : he will either embrace the opportunity when dry weather has rendered it absorbent, or bury the Manure in the soil ; in which situation it may meliorate, not only *perhaps* as a Food, but also as a Provocative.

Notwithstanding, however, this theory and conclusion aptly result from the Minutes and Experiments abovementioned, as well as from the Minute of 21. JULY 1776, the Author wishes not to have them *adopted*, by others, *on trust* ; for the science of MELIORATION,—the doctrine of INHAUSTION and EXHAUSTION, is highly important to Agriculture ; and to gain an adequate knowledge of it requires the experience of *three ages*, rather than that of *three years*.

S E E D.

S E E D.

SEEDS are the *eggs*, not the *semen* of Vegetables; and they are vivified by the soil, as those of the Turtle and Alligator are by the sand of the beach, or as the impregnated eggs of viviparous animals are by the womb of the female.

Agricultural Seeds are various: but it is not meant, here, to speak of their *specific*, but of their *intrinsic* qualities; and these principally result from

- The specific qualities of the soil;
- The intrinsic qualities of the soil; and from
- The weather, the time of sowing, reaping, &c.

Last Autumn, the Writer made several experiments on the change of the seed of wheat from *soil* to *soil* of different *species*: but this has been an awkward year for experimenting, and none of the experiments are decisive.

It is a generally-received opinion, that the *intrinsic* quality of the *soil* affects the Seed; and that Seeds raised on a *poor* soil will flourish abundantly on one which is *richer*.

That the *corporal* quality of the *Seed* is not of importance to the crop, may be seen in the following

MINUTES appertaining to SEED.

1775. August 21. Very light wheat will produce a crop.
 —. An instance that Seed ought not to be sown on its parent soil.
 Nov. 5. Wheat off a poor gravel is a good change for a clay in heart.
 1776. August 24. General reflections on sowing plump wheat as Seed.

T H E W E A T H E R.

SOIL, MANURE, and SEED, are but the *passive* Elements of Vegetation, and would ever remain spiritless, if not raised into *action* by the WEATHER: the *Clouds* prepare nourishment, the *Sun* gives life, and the *Wind* adds health and strength. These are the three *active* agents of *spontaneous* Naturifion, whose joint agency is indispensibly necessary to the existence of the Vegetable and the Animal World: yet from these principally rises the unpleasantness of Farming; the WEATHER being the BLESSING and the BANE of AGRICULTURE.

1774. Oct. 2. There is not, in England, any uniformity of seasons.

1775. June 10. A remarkably dry spring.

— Perhaps dews in dry weather are substitutes for rain.

22. A remarkable honey-dew.

28. The drought broke.

— The barometer portended the change.

Sept. 7. But the barometer is not always to be depended upon; and natural prognostics are still more vague.

8. A wet harvest is very teasing.

12. Still plaguing.

18. Downright provoking!

25. Prognostic observations during the late wet weather.

Oct. 8. A very wet, late harvest.

— Further observations on natural prognostics.

29. An exception to "a rainy Sunday a daggly week."

1776. Feb. 2. A month of very severe weather.

— Snow preserves the present crop, and perhaps frost prepares for the future.

Ap.

- Ap. 16. A remarkably wet February, and dry March.
 May 9. A most untoward Spring seed-time : the drought broke.
 Aug. 1. This Hay-time various.
 —. Perhaps Midsummer rains form, in England, the most regular season.
 ---. Prognostics were for once serviceable.
 1777. Feb. 19. A remarkably dry autumn and winter.
 Jun. 10. A comparative view of the weather throughout England.
 ---. Perhaps a hail-squall is a prognostic of settled fair weather.
 23. A remarkably wet summer.
 July 15. The rains ceased.
 ---. Prognostic observations during the late wet weather.

A SCIENTIFIC TREATISE ON THE WEATHER, by the pen of a *Philosopher*, would be an acquisition, valuable to AGRICULTURE.

There was once an Age of Gold ; since then, the Iron Age ; of late was ushered in the Age of *Fire*. At one ear we are told, that by the *Fire* of Electricity we not only live and move, but also *receive our Being*. In the other we are whispered, that the *Fire* of Combustion is inoffensive to the human frame, and that a FORDYCE or a BLAGDEN can endure, without injury, a *beated room* little inferior to the *fire* below ; consequently, we have not much to fear at our *departure from life*.

This may be very *curious*, and to some very *comfortable* ; but a more intimate knowledge of the WEATHER, as it affects us *during our earthly stay*, would be to every one *truly useful*. It would not only throw light on NATURAL PROGNOSTICS, but might lead to ARTIFICIAL ones superior to those we already have : the Community might thereby be fed with more wholesome food, and the Individual be enabled to avert the hour of anxiety. Besides, not FOOD alone,-- our HEALTH ---our LIVES depend upon the WEATHER.

But .

BUT to the text of PRIVATE AGRICULTURE. The Author has been attentive to NATURAL PROGNOSTICS, and he believes himself somewhat wiser than when he began to make his observations. On a close inspection, however, he has sometimes found those appearances which pass for *prognostics*, dwindle into what are termed in the language of Physic *diagnostics*: not *preceding*, but *attendant* symptoms.—Others he has found as uncertain and as varying as the *Wind* itself.

He does not, however, mention these circumstances to *deter* the philosophizing Few from making observations, which must afford them a great share of pleasure; but as *bints* to put them on their *guard*:—He will, nevertheless, venture to deliver as his *present opinion*, that there is more truth in the BAROMETER, than in all the PASTORAL MAXIMS which language can produce.—Yet he is by no means a believer of the infallibility of the Barometer, as he has, more than once, found it deceptive: and he repeats here, what he before has asserted,—“The Farmer who has any other *dependance* than his own “watchfulness of the fair opportunity, manages but *indifferently*.”

It is this uncertainty of the Weather that causes those unpleasing anxieties, which every Farmer must more or less feel, let him be ever so callous, or ever so philosophical. He may affect, indeed, to disregard them; but it will be in the manner in which a bad Man endeavours to hide conscious guilt. On the other hand, to repine at the Weather is to repine at Fate; and what thinking Man will wittingly aggravate his own disquiet? He will rather endeavour to *avert*, than to *contend* with Ill-fortune; and the Farmer who wishes for days of cheerfulness will ever embrace the FAIR OPPORTUNITY, and endeavour to guard against the UNCERTAINTY OF THE WEATHER.

SERVANTS.

S E R V A N T S.

THE WEATHER alone is the operative Element of *spontaneous* Vegetation: but there are other Agents necessary to *fallitious* Naturifion: SERVANTS, BEASTS OF LABOUR, and IMPLEMENTS, are essential.

The Author commenced Farming with high expectations of the happiness he was about to receive from a VIRTUOUS MANAGEMENT OF VIRTUOUS SERVANTS. He fancied himself seated amid a groupe of humble cottages, inhabited by a simple, industrious, virtuous Race, who needed nothing but a constancy of employment, and the smiles of a Master, to make them the happiest of mortals. How far reality confirmed his expectations, may be gathered from a review of the

MINUTES incident to SERVANTS.

1774. July 18. A Bailiff is incompatible with scientific Agriculture.
- Dec. 7. Thrashers of Wheat by the Quarter should be narrowly attended to.
1775. Feb. 3. Servants may be led where they cannot be driven.
4. An instance of their humanity towards the rung ox.
- Mar. 14. The treatment of an obstinate Servant.
18. Its good effect.
- Apr. 4. A second course of treatment, with its effect.
10. A careful Carter is valuable: two horses thrown upon the harrows.
11. Another instance of carelessness: a whip-rein plow broken.
13. A mute lecture on carelessness.
- May 13. The Servant who strives to improve a new Implement is worthy of encouragement.

S E R V A N T S.

- June 2. Labourers want looking-after.
- July 22. It is bad management to offer Labourers more wages than they *expect*.
23. The best team spoils the Carters.
- It is dangerous to grant a favour to Farming-Servants.
29. A Butfler, like a watch, should be frequently wound up.
- Aug. 7. Reapers by the acre require good looking-after.
- It is convenient to have a plea for leading Farming-Servants out of their own way.
17. The carelessness of Servants is a heavy curse on Farming.
28. The year's wages of a Day-labourer ascertained.
- Sept. 4. A Servant fit for semi-gardening is difficultly met with.
20. A striking instance of the inattention of Servants.
- Oct. 10. How absurd to change Farming-Servants at *Michaelmas*!
- The *Roundtowners* are wholly ineligible as *in-door* Servants.
12. A further proof of the vileness of the custom of changing Servants at *Michaelmas*.
20. A Servant is inadequate to the management of Servants.
- Requisites of a Butfler.
- There are very few good Plowmen.
21. A Servant may be a good workman, yet a bad Butfler.
31. The carelessness of Servants is a principal source of the hazard of Farming.
- Nov. 5. It is cheaper to give Labourers small-beer, than to allow twopence a-day.

Dec.

1775. Dec. 4. A thinking Servant is very valuable; but rarely to be met with.
5. A good Plowman is worth any wages.
1776. April 10. Carters are the greatest thieves in the world.
- May 7. It is downright dilatoriness, even in trifles, to confide in Servants.
19. Locks and regular accounts are the only guards against Horse-carters.
- June 6. In-door Servants are more expensive than out-door Labourers; and are peculiarly ineligible for Gentlemen-Farmers.
- . Feeding Farming-servants at their master's expence is unpolitical.
15. It is good policy in a Farmer to encourage the industry of the parish he farms in.
- . But it is bad policy to let the parishioners know it.
- Sept. 2. General reflections on Harvesters, and their management.
- . Let the individuals of each sett match well with each other.
- . One man among women, and one woman among men.
- Oct. 10. A good Bustler is a rare being.
- . When Servants form parties, discharge the whole clan.
1777. Mar. 3. Good usage makes bad Servants.

The Author was more embarrassed in the selection of the MINUTES on SERVANTS, than in the choice of those on any other subject. On the one hand, he was aware of the irksomeness which must ever accompany a recital of domestic bickerings: On the other, it would have been truly inconsistent in a Man who professedly becomes public to hold out lights to the inexperienced, to have obscured the Beacon

which ought, of all others, to be rendered conspicuous: for on a proper management of Servants depend in a great measure the Profits and the Pleasures of Agriculture. He therefore selected for Publication such, and such only, as he thought might convey some useful hint to the Novitiate Agriculturist.

For the want of the knowledge of a few such facts as are to be found in the Minutes on Servants, the Writer is conscious that he has experienced many uneasy moments: and he believes, that had he set out with the ideas he is now possessed of, he should have been esteemed a better Master (and to be thought a good Master is a laudable ambition, which Masters in general aspire at), and should have had the satisfaction of paying wages to better Servants.

It is true, the Author may have been (he hopes and believes he has been) unfortunate in the Neighbourhood he happened to fix in; yet he cannot help thinking that the seeming ingratitude of Servants is not confined to any *particular* district; but is an *universal* frailty founded in Human Nature; and depends principally upon their management.

SELF-LOVE is the sovereign of Master and Servant; and SELF-ESTEEM a fomentor of public and private discord.

By way of illustration; I am a Servant.—I receive a favour, which I did not *expect*.—I reason thus: “This favour must proceed either from my Master’s generosity or from my deserts;—my Master, it is true, is generous, and so am I deserving;—how many good offices have I done him? how often have I done those things which many other Servants would have left undone? He must have perceived this, and thus he requites me.” I *value* myself on this, but continue to do my *duty*; and my Master (who probably has put *no small estimate* on his generosity) continues to give me *good usage*: But he does not *repeat* his *extra* favour, at the time when in *my own esteem* I deserve it, and of course *expect* it. I fancy myself slighted, and grow indifferent;—my Master perceives it, and treats

me

me with reserve.—I begin to fancy my good offices thrown away, and grow neglectful of my duty; my Master sees this, and becomes authoritative. I, *fancying myself too important to be dismissed*, resent it; and he, to disburden himself of an incumbrance, discharges me. Now, and not till now, I perceive my mistake; it was not my deservingness, but solely my Master's generosity which conferred on me the favor. I did, or endeavoured to do, *my duty*; and my Master, by way of encouraging me in the perseverance of it, and to gratify his own good disposition, unfortunately conferred on me that which has been the cause of many unhappy hours, and has at length brought me to this disgrace. Had I not received a favour which I did not *expect*, I should still have been the dutiful Servant of an indulgent Master.

The Writer is so fully convinced of the mischievousness of granting *unexpected* favours to Farming-Servants (and to ignorant Servants in general), that he has more than once got peaceable riddance of a troublesome fellow by exalting him above his fellow-labourers.

This is a piece of philosophy which may seem to strike at the root of the first of Christian virtues. God forbid that it should close the hand of CHARITY, where *charity* is due! But it is a PROPER CHOICE of the object, not the GIFT, which constitutes BENEVOLENCE: It is not the NUMBER OF PIECES given, but the HOURS OF WRETCHEDNESS alleviated, which give the SUM of CHARITY. And how Christianly-soever a due proportion of well-applied Charity may be, the Author has been lately convinced from daily experience, that it is the most uncharitable thing in the world to be too charitable.

Nothing could be more absurd than to lay down *particular* RULES FOR THE MANAGEMENT OF SERVANTS; as the tempers and dispositions of both Masters and Servants are as different as their features: The Author will, nevertheless, risk the following *general* guide:

Treat them as MEN; but not as INTIMATES; nor yet as MACHINES.

For although the Wretches who have forfeited their liberty, may be reduced to the Laws of Mechanism, in the Field of War; Men,

who retain one spark of the celestial fire, will not brook such treatment in the Field of Agriculture. For in a Country tolerably free, let Fate and Fashion say what they will, Mankind—as Men—are nearly on an Equality: And in this Country, how *Machine-like* soever a Day-labourer may appear, under the immediate eye of an austere Master, he is a *Free-Agent*, at his own Fire-side, and an *Englishman*, at the Ale-house.

BEASTS OF LABOUR.

ENGLISH BEASTS of AGRICULTURAL LABOUR are,

OXEN,

SPAYS,

TWIN-BARRENS*.

BULLS,

HEIFERS,

BARRENERS,

BREEDING COWS †,

GELDINGS,

MARES,

HORSES,

BROOD-MARES,

MULES.

There is scarcely a *Writer*, or indeed a *Professor* of Agriculture who has not a partiality for some favourite species of BEASTS OF LABOUR. The Author of the MINUTES OF AGRICULTURE has his Favourites; as may be deduced from the following

MINUTES ON WORKING CATTLE †.

1774. Aug. 9. It is difficult to introduce oxen into a horse-team country; and the man who attempts it ought to have leisure.

* If a Cow bring *Twins*, one of which is a Bull, the other a Cow-calf, the female is (or is said to be) always *barren*. Such cattle are here called *Free-Martins*.

† If Brood-Mares are eligible Beasts of Labour, why not work a large *Holdernes* Cow after her flush of milk is gone, until her time of calving?

‡ Including Oxen and Bulls.

1775. Feb. 3. The first step is to make them *fine*, and treat them as horses.
6. If ungovernable, reclaim them with nose-rings: the operation of ringing is very simple.
7. Its effect, implicit obedience.
16. The true make of a working-cattle described.
24. The Writer's motives for the working of cattle.
- Mar. 1. Nose-rings will reclaim them, be they ever so rebellious.
- April 4. Purchased another team of oxen.
- . It is bad management to have them bought by a Dealer in Spring feed-time.
7. There is very little difficulty in breaking yoked oxen into harness.
12. They are easily taught to go alone.
- June 20. The origin and completion of wooden collars.
- July 11. Introduced oxen on to the road.
21. They may be used as beasts of labour, without meadows to graze them in.
28. They are handy as horses on the road.
29. They may be worked every day.
- Aug. 4. Are perfectly handy on hoeing cabbages.
17. Sufflation is a disadvantage of oxen: one blowed.
28. Working-cattle are subject to many casualties.
- Sept. 13. They are convenient in harvest; because they want no evening-attendance.
- Oct. 25. They are preferable to horses in quick-sand.
- Another proof of this preference.
27. They are perfectly tractable, and equal to every department of Agriculture.
- They are kept in Autumn at a trifling expence.
- Nov. 1. A further proof of their tractability.
10. Endeavour to dispose of a strained ox: one died.
17. Oxen.

1775. Nov. 17. Oxen are not so fretful as horses in difficult work.
 27. Their feet wear more in wet weather than in dry :
 shod them, before.
- Dec. 4. An enumeration of casualties.
 —. A young ox should not be worked too hard ; but
 ought to be broke-in by degrees.
 —. Never trust to a Dealer again to buy-in oxen.
 17. Perhaps drench cattle, in the house ; with salt and
 water.
 18. Working-cattle want no attendance, when idle.
 21. A calculation on their keep during the six winter
 months.
 —. If they be worked constantly, shoeing is necessary.
1776. Jan. 16. The flux is a disorder dangerous to cattle : an ox
 died of it.
 26. They are longer-made than horses.
 30. Whatever horses *do*, oxen *can* do.
- Feb. 26. They are versatile as horses.
- Mar. 21. They ought not to be worked more than eight
 hours, without a bait.
- April 4. They are preferable to horses on hay alone.
 10. Ox-carters want less looking-after than horse-
 carters.
 13. Cattle are perfectly manageable with whip-reins.
- May 11. Short-legged bulls are unfit for harness.
 ---. But perhaps a clean-limbed, long-legged bull is
 preferable to an ox.
- Nov. 7. Salt-marshes are highly beneficial to working-
 cattle:
 ---. Perhaps fattening them in salt-marshes is good
 management.
 16. A ten-years old ox makes remarkably fine Beef.

1777. Jan.

1777. Jan. 19. General reflections on beasts of labour.
 April 5. Aged oxen may be worked hard on tare-barley-fodder.
 ---. How absurd to throw them up at six years old!
 28. Feed them with cabbages in Spring feed-time.
 June 11. A further proof of the utility of salt-marshes to working-cattle.

MINUTES ON WORKING HORSES.

1774. Aug. 30. It is ineligible to feed them with oats in chaff.
 1775. Mar. 29. Cast-off coach or saddle-horses do very well for whip-reins.
 April 10. Two horses thrown upon the harrows.
 13. One of them died.
 July 29. Wooden collars attempted and thrown aside.
 Nov. 22. Horses are more expensive than oxen.
 ---. Began to allowance them with hay.
 Dec. 4. An enumeration of casualties.
 ---. Sell a vicious horse: he is dangerous.
 18. Cart-horses eat about a quarter of chaff a-week, each*.
 1776. Feb. 5. On the various ways of feeding them.
 Mar. 21. They may be over-worked on two bushels of oats a-week, each.
 ---. The punch cart-breed will stand work better than Mongrels.
 April 4. Horses are not equal to oxen on hay alone.
 10. It is good management to feed cart-horses on un-maltable barley.

* This, however, depends principally upon the Carter: a good Carter gives his Horses more chaff than an idle one does.

1776. April 10.

1776. April 10. Horse-Carters are perpetual plagues to a Farmer.
 May 21. A calculation on the quantity and value of cart-horse chaff.
 July 10. Horses require very little corn when they are on a tare-verdage.
1777. Jan. 19. Old cart-horses are not worth their keep.
 April 26. A further advantage of feeding them on discoloured barley.
 June 11. Salt-marshes are highly beneficial to reduced cart-horses.

It would not be consistent in an INDEX, tho' it were ever so copious and explanatory, to give a formal TREATISE on any particular Head: Nor is it the Author's intentions to attempt here a TREATISE ON WORKING-CATTLE: but, having been very attentive to the peculiar merits of such as have occurred to his experience, he will communicate, briefly, his PRESENT SENTIMENTS respecting them.

H O R S E S.

The HORSE, *in animal precedence*, stands next to MAN; his strength and docility, his swiftness and courage, taken *jointly*, placing him above every terrestrial Being, Man alone excepted.

In a general view,—He gives courage to the Warrior, pleasure to the Sportsman, and ease to the Traveller; distress to the Gamester, and hunger to the Poor. He is a never-fatigued DESTROYER OF HUMAN FOOD, without being himself an article of it.

As an agricultural Beast of Labour—he has strength, alertness, and tractability; but he is expensively purchased, expensively fed, and rendered totally worthless by age or infirmity.

B R O O D - M A R E S.

Notwithstanding this species of Beasts of Labour are unnoticed in the MINUTES, the Writer has lately made some trial of them: not enough,

enough, however, to decide with certainty upon their comparative merit; yet, from the experience he has had, he will venture to assert, that in a rough-grass Country, or with the conveniency of a Forest or Waste, they are, with tolerable luck, more profitable to the Farmer than HORSES. If they be put to the horse the latter end of June or the beginning of July, they will come opportunely between the Spring and the Autumnal seed-times, and the loss of labour will consequently fall on the most vacant part of the year.

But what would be the consequence, were Farmers, *universally*, to sell off their HORSES and OXEN, and adopt BROOD-MARES as Beasts of Labour? The answer is plain: In a few years the utmost produce of the soil would be unable to support the breed of Horses: Man, and indeed every other Animal, would be obliged to look out for foreign sustenance,—or learn to feed on Horse-flesh.

Brood-mares, therefore, tho' they may be profitable to the *few*, can never become *general*.

O X E N.

By way of Preface to this section, the MINUTE of the 19th of JAN. 1777, may be perused.

The value of OXEN can only be ascertained by comparing them with other Beasts of Labour. HORSES and BROOD-MARES are their principal competitors. BROOD-MARES are not of *general use*: the comparison, therefore, lies between OXEN and HORSES.

The comparative merits and demerits of Beasts of Labour rest on their FIRST COST,—their KEEP,—their WORK,—their VALUE AFTER WORKING.

THEIR COST.—A powerful, handsome, six-years old Ox may be purchased for Ten or Twelve Guineas:—A powerful, handsome, six-years old Horse will cost from Twenty to Twenty-four Guineas. Suppose that Ten Guineas a-head are saved by purchasing Oxen instead of Horses, and that a Farmer has occasion for three Teams;—

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he will have an addition, every ten or twelve years, of One Hundred-and-twenty Guineas to stock and manage his Farm with.

THEIR KEEP.—This depends in some measure on the prices of Hay and Corn, and on the size and voraciousness of the Beast to be fed. Taking into the account, the unavoidable pilfering of Horse-Carters, perhaps, on a par of years, an aged Ox may be kept at two-thirds of the expence of a large Cart-Horse. See the MINUTES.

THEIR WORK.—The Author will not, here, contend for *superiority*; but he will aspire at *equality*, tho' he may fall somewhat short of it. That Oxen are *equally tractable* and *equally versatile*, is fully evinced in the MINUTES:—I heir *strength* depends upon their age and breed; and their *activity* on their make and courage.

A two-years-old Ox is as worthless in work as a two-year-old Horse; and the working of either is unpardonable.—An Ox does not arrive at full strength, especially if worked while young, until he be six years old.—At this age, a large deep-chested Ox is *equal in strength* to a strong, well-made Cart-horse.

Thus far, therefore, an aged Ox is, in work, *equal* to an aged Horse; and a want of *activity* in the former can alone render him inferior.

The Author is not so partial to Oxen as to imagine, that they *can do* whatever Horses *can do*: he is, nevertheless, nearly positive, that whatever Farming-Horses *do*, Oxen (of a proper age, and properly managed) *can do*. On the road they are, beyond all doubt, equal to Horses; and at Plow they are not inferior;—except their work be very heavy. In heavy work they will not struggle like Horses; but will, in defiance, keep their steady pace. In this point of view,—and perhaps in this light only, Oxen are unequal to Horses*.

* Desirous as the Writer is to promote the working of Oxen, and charitable as his motive may be, he must not neglect telling the Reader, that he has not yet attempted to work Oxen constantly throughout the year. They have always had a Month's Marshing in the Spring, and have generally had some idle days in Winter: their fodder, however, in this case has been proportionable.

THEIR VALUE AFTER WORKING. See the MINUTES of the 10th and 13th of April 1775, the 19th Jan. 1777, and of the 7th and 16th of Nov. 1776.

Stronger evidences need not be produced to prove, that in this point of view OXEN are infinitely superior to HORSES.

RECAPITULATION.

In FIRST COST, Oxen have greatly the advantage.

In KEEP, they have likewise the superiority.

In TRACTABILITY, equal.

In STRENGTH, equal.

In AGILITY, Horses gain an ascendancy.

In VALUE AFTER WORKING, the Ox is beyond comparison superior.

Supposing the Oxen's want of agility in heavy work, added to their *supposed* incapability of being worked constantly thro' the year, to balance their superiority in point of Keep, there still remain *two* VALUABLE ADVANTAGES on the side of OXEN, *either* of which might be thought a sufficient motive for employing them in matters of Agriculture, in preference to Horses: yet, strange as it may seem, Oxen have lately been losing their repute, while Horses, almost throughout England, have been gaining ground as Beasts of Agricultural Labour.

How is this incongruity to be reconciled? Perhaps, thus: Oxen have usually been *worked too young*, and *fed too low*; the number required of course to form a Team rendering them insignificant.—Their being worked *double* made them unhandy, and rendered them totally unfit for wet land in wet weather.—Their weakness, poverty, and of course dullness, added to the uncouthness of the *Yoke* and *Goad*, when compared with the corn-fed Horse, the gaudy Harness and whalebone Whip, rendered them despicable in the eyes of the Plowman and Carter.

How trivial soever this last-mentioned observation may appear to the Inexperienced in Farming, it has, perhaps, contributed more than any other cause to the disrepute of Oxen. A good Plowman feels his consequence; and will not hold after a Team he dislikes: a good Farmer knows the value of such a Servant, and provides a Team which he thinks will tempt him into his service; and is particularly cautious, when he has got a good Plowman in his pay, not to obtrude on him a Team which he knows will force him out of it. The example is set: inferior Plowmen and inferior Masters follow the fashion.

The Author having thus communicated his unfeigned sentiments on the eligibility of Oxen as agricultural Beasts of Labour; and being fully aware that there are many Gentlemen who hold the same principles, without having had the same practice as himself, he will attempt to sketch out such a Plan of Management, as he apprehends may conduce the most toward their useful information.

The Breed.—The hornless, or the short-horned breed is obviously more eligible than that whose horns are long and wide.—Much more depends on the make of a Working-Ox, than on that of a Working-Horse: the Breed, therefore, ought to be cautiously attended to. The outlines of a true-made working Ox is given under the
16 FEB. 1775.

Breeding.—Perhaps, Steers ought to be well kept, but not worked, until they be four years old*.—Perhaps, at this age they ought to be broke in, but not worked hard until past five years old. See
4. DEC. 1775, and 5. APRIL 1777.

Buying.—The Writer would not wish to purchase an Ox for harness under six years old: he will at that age make one in a Team of four, and may be constantly worked without the danger of straining him. See 16. FEB.—4. APRIL—4. DEC. 1775; and 5. APRIL, 1777.

* Perhaps, Cattle are one year longer in reaching maturity than Horses. Perhaps, a Horse of four years old is as mature in strength as an Ox at five.

Working.—

Working.—The causes of their declension, mentioned above, may serve as guides to their re-establishment.

Do not retard their growth, endanger their health, render them insignificant in the eyes of the Many, and disgusting to their Keeper, by working them too young. There is no danger of their becoming unmanageable: Nose rings will reclaim them, be they ever so riotous.

Do not expect that they can work constantly on straw: nor expect to find them alert and spirited while their buttocks are clodded with dung, and their coats throughout are filled with dirt and vermin.

Divide them into Teams of four:—let each Team be fed by its respective Carter.—Provide him with a Curry-Comb, laquered on the back, and a Brush, bound with gilt leather.—With these he will take a delight in combing off the dirt, and brushing out the dust and filth. The Ox, too, after the sensation becomes familiar, partakes in the pleasure, and will frequently neglect his fodder to heighten the enjoyment.—His Feeder perceives this, and brushes the part which gives the most pleasure. The Ox shews his gratitude by wagging his tail:—the Carter, in return, calls him by his name, and tells him of his good qualities. Thus, not only an *intimacy*, but a mutual *affection* is formed, which at once gives ATTENTION to the Keeper, and DOCILITY to the Ox.

A good Carter feeds his Cattle early and late, and by little-and-little; being careful not to give them more at once than they will eat immediately.

Their labour and fodder ought to be so proportioned, that their health and their spirits be kept in full tone. Their Coats ought to be sleek; their Hides loose and silky;—the Flank should fill the hand, and the Shoulder handle mellow. If they be over-worked or under-fed, disease and sluggishness must inevitably follow. A Working-Ox ought always to be *Beef*, that, in case of accident, he may grace at least the Poor Man's table.

If.

If Oxen are to be *introduced* into a Horse-Team-Country, not only attendance and attention, but some address is necessary. Their Names must be Horse-names; and these, too, the most popular. Their Harness must be Horse-Harness, and their Bridles Horse-Bridles, (as nearly, at least, as the make of their shoulders and heads will permit). They must be taught the most fashionable Horse-Language of the Hundred they are to figure in; consequently, a *well-bred* Horse-Carter must at any wages be procured. He ought to be such-a-one as can swear gracefully, and bully with an air of superiority: He must be dignified with the title of FIRST CARTER, and his Team with that of BEST TEAM. Their Trappings must of course be more highly ornamented than those of the Horse-Teams; the colours of the Fringe must be brighter and more variegated; the Tassels must be larger, and the Top-knots stand higher than those of any other Team on the Farm: and, above all, his Whip must be made of better bone, and be at least a foot longer than any other Whip in the Parish. Should his Team be run-down, or should he, as Ox-Carter, be affronted by any of his Fellow-Servants or Labourers, a serious and severe reprimand ought to follow. Should any of them dare to degrade him with the hateful appellation of *Ox poker**, the crime ought to be deemed capital, and immediate dismissal should take place: for, perhaps, there is not a word in the English Dictionary which has done this Country so much mischief as that *simple compound*, OX-POKER; and he who can find out an antidote to its poison, deserves to be memorized in the Abbey of Fame.—Had it not been for its baleful influence, the insignificant Whining of the Cart-Horse might now have been drowned in the full toned resounding Low of the Ox.

But, pleasantry apart — the following curious Dialogue, which the

* This ugly word has deprived the Writer of more than one good Servant.

Writer

Writer overheard with uncommon satisfaction, may convey a useful hint to the Agriculturist who may attempt the Working of Oxen.

The Ox-Carter and one of the Horse-Carters having quarrelled over their *lunch*, and the latter being overpowered in argument, he had recourse to scurrility; and in an audible voice, as he drew-off towards his Team, began the skirmish with—"Get out, ye Ox-poker!"

The other, still sitting under the hedge, with his feet in the ditch, his knife in one hand, and his bread-and-cheese in the other, returns with disdain, "Get out, ye *Carrion-flogger!*"

Horse-Carter. *Carrion!* D---n ye, my horses are fed with good sound oats and beans; your Brutes are glad of a little straw and musty hay shook-up together: Get out, ye Ox pocker!

Ox-Carter So much the better for my Master, ye fool! You are not content with beans and oats, you know, but you must steal wheat for your *dog's meat*, and be d---'d to ye*!

Horse-Carter. Get out, ye Ox-poker!

Ox-Carter. (shaking his sides at the rancour of his antagonist, and exulting in the victory he had gained) And your Team, after all, is only fit for cur-dogs and *carrion-crows!* Mine, ye Rascal, is THE ROAST BEEF OF OLD ENGLAND, fit to be set before King George! Get out, ye *Carrion-Flogger.* Ha! ha! ha!

* On breaking open his binn, it was found to be nearly half filled with wheat in chaff! Such is *one* curse of *Carrion-floggers!*

IMPLEMENTS

I M P L E M E N T S.

UNDER this Head are classed such species of **IMPLEMENTS**, **UTENSILS**, and **TACKLE**, incident to a Farm, as have fallen under the Writer's particular attention.

1774. July 27. *Sail-Cloths*; they are very useful in hay-time.
 Sept. 11. *Multifurrow-Plow*; a plausible one idea'd.
 13. *Coulter-Rake*; tested, described, and condemned.
 Dec. 5. *Draining-Cart*; idea'd, and the wood-work made.
1775. Jan. 30. *Whip-rein Plows*; purchased two, and tested them.
 —. *Sowing-Cart*; contrived one, and tested it.
 Feb. 4. *Nose-Ring*; got the first made.
 6. *Sowing-Cart*; improved it by broader wheels.
 7. *Nose-Ring*; its merit.
 22. *Sowing-Cart*; not yet complete.
 23. *Jointed Harrows*; how the idea of them arose.
 25. *Crooked Lance*; contrived, described, and tested.
 28. ————; improved: its cost.
- Mar. 1. *Nose-Rings*; they are very valuable.
 —. *Ox-Collars*; wooden ones first made useful.
 16. *Concave Harrows*; (a) tested and approved: their cost.
 22. *Fine round Harrows*; a pair tested: their cost.
 23. *Swing-Plow*; a large one is necessary to stiff land.
 24. *Whip-rein Plows*; they have merit in a sandy loam.

(a) See the **MINUTES** of 16th **MARCH**, and 27th **OCTOBER** 1775; and 12th **APRIL** 1776; and **PLATE II**.

Mar. 24.

1775. Mar. 24. *Crooked Lance*; a defect in it.
 28. —————; its utility proved.
 29. *Trenching-Plows*; they are fitter for a loose than a tenacious soil.
 30. *Sail-Cloths*; they are useful on many occasions.
 April 3. *The Drill*; a troublesome contrivance.
 4. *Flat Hand'le-Harrows*; tested them: not equal to the common Harrows; except for couching.
 —. *Common Harrows*; they are admirably simple.
 5. *The Drill*; not yet complete!
 8. —————; nor is it yet perfect.
 13. —————; finished: its merit.
 14. ————— (*b*); its various merits enumerated.

(*b*) DRILL. (See PLATE II.) The Cells, Dints or *Dimples* in the Roller receive the Pease in the *Seed-Box*, and deliver them into the *Conduits*, which convey them into the cavities of the *Coulters*, which at once make the Trenches and deposit the Seed in the soil. The *Depth* is regulated by the *Coulters*; and the *Quantity*, by the *Bristle Regulators* which appear in the inner side of the *Seed-Box*.

As it is difficult to fit the bottom of the *Seed-Box* so exactly to the Roller as to prevent the small Pease from escaping between them, the Hopper is bottomed with leather, which embraces the Roller and divides it from the Pease; except immediately over the *Dimples*.

The *Coulters* pass obliquely thro' the mortices of a strong wooden Bar, which goes from shaft to shaft, and is so situated, as just to leave room for the *Conduits* to lie, without being crushed, between the *Coulters* and the Roller. (This *Cross-Bar*, in the Drawing, is wholly hid by the Hopper or *Seed-Box*).

The *Wheels* run on gudgeons fixed in the Roller, which on the road is as inactive as the axle of a common Cart. The method of putting it in action is described by the small figure between the Shafts in the Drawing, which represents the end of the *Nave*, with the *Axle*, &c. The *Cross* which appears is the *Washer*, which instead of being put on loosely upon a Round, is fitted to the end of the *Axle* on a Square. Upon the road, this *Washer* is of course as inactive as the *Axle*; but by inserting a *Pin* in the end of the *Nave* between the horns of the *Washer*, the Roller no longer remains inactive, but becomes subject to the motion of the *Wheels*. Draw the *Pin*, and the *Drill* is again reduced to a *Cart*.

At the Turnings the whole Machine is borne from the ground by the Man and Horse, and consequently no Time is lost, nor Seed wasted.

1775. April 15. *Horse Broom*; a crooked one contrived.
 18. — — —; it is an improvement of the bush-harrow.
 20. *The Surface (c)*; its history, and singular use on fallows.
 —. *Carrot Draw-Drill*; its description.
 29. *Barley Flute (d)*; its description and use.
 May 2. *Double Hand-Hoe (e)*; improved and described.

(c) SURFACE.—See PLATE II. The *Osagonal Roller* breaks the large clods;—the *Cross-bar* (which slides in a groove on each side, and acts in the very same manner as the *Iron* of the Joiner's *Plane*) takes off the prominences, collects the clods, (which by being kept in agitation before it, are lessened, if not wholly ground down), and leaves them in the lanks and hollows;—the *plain Roller* closes the operation, leaving the surface of the ground smooth and even.

If used merely as a smoother of the surface, the *Sliding-bar* (or Bars, it being in two divisions) ought to be set at such a depth, as in general to have a collection of mould before it, without suffering the clods to run over the upper division; which mould may, by lifting up the handles, be left *wobly* in any particular hole or hollow place.

n h: Drawing, it is set as when going from field to field).

If used as a Pulverer and Compressor of fallows, this *ading Bar* ought to be set deeper; and, if the soil be foul with couch or other obstructions, the upper division (which sits on to two iron pins fixed in the under one) should be taken off, that the mould and trumpery may run-over more easily, and prevent the load from becoming too heavy for the Team.

The longer this Implement is made, the leveller it leaves the surface: and the wider, of course the more expeditious. That from which the Drawing was made is six feet square.

The *Osagonal Roller* is made by nailing four triangular slips on to a square piece of timber; as appears by its end, in the Plate. The other angles are likewise nailed, to prevent their splintering.

(d) The Author claims no *originalty* in the process of FLUTING; which is only a new name and a new method of performing an old operation. It is the *common* practice of some places in the West of England to plow early for wheat, and at Seed-time to harrow down the stale plits, and raise the surface into ridgelits by a kind of *Drag*. This process has been very much improved by the ingenious Mr. DUCKET, who has invented an Implement, which on his light-fandy soil is admirable: it not only raises the soil into ridgelits, but performs this with such an exactness, as to admit a range of Hoes to follow it. Hoeing of *Corn-crops*, however, does not come within the *Writer's* Plan of Management; and, as every *Votary* of Invention *ought* to be a *Votary* of Fame, he will here declare as his clear opinion, that whether or not the operation of Fluting had priorly been performed, he should nevertheless have *contrived* his *Carrot-Drill*, and *hit upon* his *BARLEY-FLUTE*: which, and the *CROOKED LANCE*, led him to the more perfect Implement (described at the close of this *General Head*) for raising convex beds into broad-cast Flutes.

(e) *DOUBLE HAND-HOE*.—See PLATE II. and the *MINUTES* of the 2d, 13th, and 16th of *MAY* 1775; and 30th *APRIL* 1776.

1775. May 3.

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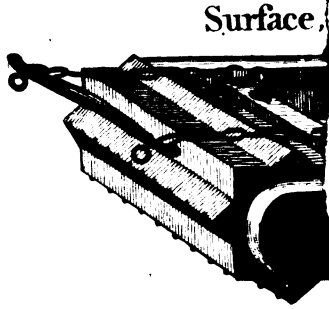
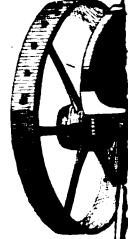
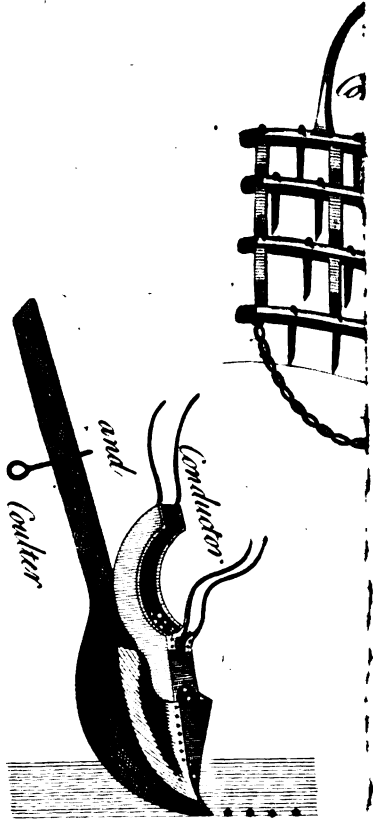
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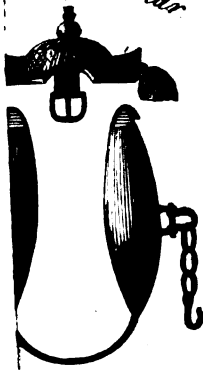
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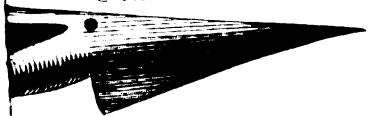
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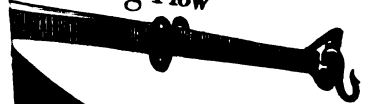
the Pin Collar



Share



Wood Swing-Plow



Miles farm

1775. May 3. *Spikey Roller*; a most useful Implement.
13. *Sowing-Cart (f)*; it sows foot very cheap.
- *Double Hand-Hoe*; the mode of using it.
16. —————; it will hoe pease very cheap.
17. *Whip-rein Plows*; the Yorkshire-shaped ones are too stubbed.
30. *Double Earth-up*; not equal to the Double Hoe.
- June 3. *Common Hand-Hoe*; its merit in earthing-up pease.
20. *Ox-Collars (g)*; at length completed.
21. *Break-up Plow*;—described.
24. *Double Plows*; they are very useful.
- July 4. *Sowing-Plow*; on the situation of its coulter.
6. *Two-wheel Waggon*; its description and cost.
28. —————; its usefulness.
29. *Wooden Horse-Collars*; tested and laid by.

(f) SOWING-CART. This Implement is on the same principle as the DRILL; except that the Roller, instead of being *dimpied*, is *fluted*. When the Nave-Pin is in, the Flutes gather the foot, which presses on the Roller, and scatters it on the soil: draw the Nave-pin, the Roller becomes inactive, and the Implement, of course, a common Cart.

(g) OX-COLLAR. See MINUTES of the 20th JUNE 1775, and 30th JANUARY 1776, and PLATE III. The *Nine-pin* one is taken in front; the other exhibits the side which the Ox draws against. The *Bolster* is convex; and is in the fullest part from one to three inches thick, according to the size and shape of the Ox's shoulder.

Notwithstanding the neatness and simplicity of the NINE-PINS, and notwithstanding the MINUTE of the 30th JAN. 1776, (for the disadvantage there mentioned is easily obviated by rounding-off the outsides of the Bolsters) the Writer is now of opinion that the BOLSTERS, if either, have the preference; because they are *firmer*: The Iron-bow of the *Nine-pins* being long, it is liable, if not made very heavy, to be twisted; by which means the tenons which go into the mortices of the *withering* are forced out of their parallel (Of this the Writer had not had an instance when he made the *Minute* above-mentioned). This however is not difficult to rectify, and he is not yet determined which of them on the whole has the preference. *Either* of them is *much* preferable—*incomparably* preferable—to any other OX-COLLAR the Writer has made use of.

1775. Aug. 1. *Nose-Hook (b)*; it is useful in Ox-hoeing.
 24. *Double-Shaft Plow*; its history and condemnation.
 —. *Plows*; the Share ought to precede the plow; and the plow should follow the cattle.
 Sept. 28. *Double Plow*; its merit in moulding cabbages.
 Oct. 10. *Sub-Plow*; a good one is difficult to be contrived.
 27. *Round Harrows*; they are very eligible.
 Nov. 9. *Trenching-Plow*; a Swing-trench-plow idea'd.
 —. *Fin Coulter*; it is fit only for a firm, clean soil.
 —. *A Bent Coulter*; it unsteadies the plow, and prevents the turning of the plit.
 —. *Swing-Plow*; no plow equals it in a wet-land country.
 —. —————; a short keel unsteadies the plow.)
 —. *Bean-marker*; idea'd.
 11. —————; gave rise to the Bean-Flute.
 —. *Bean-Flute*; idea'd.
 14. *Two-wheel Waggon (i)*; improved; with general reflections on its utility.
 27. *Chaff-Box*; it is convenient for a Farmer to have one by him.
 Dec. 9. *Bean-Flute*; tested it.
 —. *Saw-Horse (k)*; a simple one contrived, and described.
 26. *Implements*; it is convenient to have a list of them.
 —. —————; many petty ones may be improved.

(b) *Nose-Hook*. See the *MINUTE* referred to, and *PLATE III*.

(i) *CART*. See the several *MINUTES* and *PLATE IV*. The Hook, or Hasp, which fastens the Body of the Cart to the shafts, is explained in Figure (A.)

(k) *SAW-HORSE*. See the *MINUTE* and *PLATE IV*.

1776. Jan. 30. *Ox-Collars*; an advantage of the nine-pin collars.
(But see Note (g)).

— *Cattle-Rammer*; prepared one: its proper length ascertained.

Feb. 6. *Bean-Flute*; an improvement attempted.

March 6. *Swing-Plow*; it is the only plow of general use.

— ———; its imperfections in this Country pointed out.

— ——— (l); considerably improved; besides the addition of a *Bury-sod* (m).

1776. Mar. 16.

(l) SWING-PLOW. See the MINUTES of the 9th Nov. 1775, and 6th MARCH 1776: and PLATE III.

Without the BURY-SOD, or Skim-coulter, (which is taken away or replaced in five seconds) this is the best SWING-PLOW the Writer has experienced. *With* the Bury-sod, it is a SWING *Trench-Plow*; which may, in preference to any *Trench-Plow* the Author has seen, be used in wet land laid up in narrow beds; the SKREW-BANDS rendering it so exceedingly easy to be rectified or altered.

The Share, Land-board, and Mould-board of the BURY-SOD are cut out of a Plate of milled Iron, *entire*: the Coulter is then welded on; the Share turned up and steeled; and the Mould-board hammered into the form exhibited in the Drawing: its simplicity is obvious, and the Author, tho' as yet it is something new, is fully convinced of its utility. It pares off a narrow Surface-Plit of two inches, or any given thickness, and throws it into the preceding Plow-furrow, or leaves it hanging by the edge to the main Plit, which in either case totally buries it, leaving the fresh-made surface as friable and clear as a Fallow.

When the Writer first thought of the SKREW-BAND, he applied it to a common Beam with a *Coulter-Hole* morticed thro' it; but a Mortice weakens the Beam very much in the part where the greatest strength is required: besides, by placing the Coulters on the outside of the Beam (where they stand *equally* firm as if they passed thro' a Mortice) the Land-board, the Fore-sheath, the Brace, the Coulter, and the Bury-sod, stand in a direct line; consequently, the least possible friction is given, and the Plow works steadily.

There are two BRACES; one for *wet* weather (drawn separately), the other for *dry* weather (drawn on the Plow). When a *clingly* soil is *wet*, it sticks to *Iron* much more than to *Wood*: when any Soil is *dry*, it consequently wears away wood faster than iron.

The Coulters are fixed and unfixed by the handle of the *Plow-hatchet*, inserted in the ring of the Skrew.

(m) Without a PROPRIETY of TERMS, every Science must be more or less ambiguous. The term *Trenching* is corruptly borrowed by Agriculture from Gardening.

A Gar-

1776. Mar. 16. *Bean-Flute* (*n*); it performed very well at last.
 20. *Cresting-Iron* (*o*); it is a very useful appendage to a Swing-Plow.
 26. *The Drill*; its merit drawn from comparison.
 April 11. *Plain Roller*; on its multifarious merits.
 —. *Spikey Roller*; it is highly meritorious when the plain one is ineffectual.
 12. *Round Harrows*; they are highly useful.
 13. *Whip-Reins* (*p*); they save a Boy; or 13 l. a year.

A Gardener, before or during Winter, *buries the Surface* of his Soil by a layer of fresh earth; which, to expose it to the weather, he leaves in ridgelits, with *Trenches* between them, and calls the operation *Trenching*. The Agricultor having discovered a method of *burying the Surface* by a Plow, and being in want of a Term, copies the Gardener, (who also uses it in this corrupt sense) and calls the operation *Trenching*, altho' he leaves no more *Trench* (or *Trenches*) than in a common Plowing: nor indeed so much; for the sod being cut off, the plits break to pieces, and the Surface is left in a manner level. The Author hopes that no other apology will be wanted for calling the operation what it really is, *burying the Surface*; and the instrument which assists in performing it, a BURY-SURFACE, or BURY-SOD; it being peculiarly useful on a *Ley*.

(*n*) BEAN-FLUTE. See the MINUTES of the 9th and 11th of NOVEMBER, and 9th of DECEMBER 1775, 6th FEBRUARY and 16th of MARCH 1776; the close of this Head;—and PLATE II.

(*o*) CRESTING-IRON. See PLATE III. where it is drawn on the Mould-board of the Swing-Plow; with a cross section marked (A).

(*p*) WHIP-REINS. See PLATE III. The *Handles* are made of Hemp, closely twisted, with *eyes* in their butt-ends, which the Plowman holds in his hands, or occasionally puts them over the ends of the plow-handles. The *lashes* are made of jack-line, or any similar small cord; they pass from the Handles to the out-side rings of the bits, thro' staples or loops in the hames or back-bands; the inner-rings of the bits being connected by a halter or cord about three feet long. Their use therefore as REINS must appear evident; but their use as WHIPS may not at first sight be so obvious: the *Stroke* can only be acquired by practice: it is given by a circular motion of the hand terminating with a sudden jerk towards the body, downward; not much unlike the motion which a Coachman makes in using his long-whip. The WHIP-REIN in the hands of an Adept, is equally, if not more terrific than the Whale-bone Whip. It must be observed, that the Whip-Rein in the Drawing is put on to the Handle of the Bury-sod Swing-Plow, merely for the sake of description; Whip-Rein-Plows being drawn by two Horses or Oxen a-breast, and are made much slighter than that described in the Plate, which requires at least four strong Oxen or Horses.

1776. April 16.

1776. April 30. *Double-Hoe*; the more it is used, the more useful it appears.
- May 2. *Shaft-Hoes*; they did not answer the Writer's intentions (*q*).
9. *Spikey-Roller*; an instance of its utility: set the spikes a-zigzag.
- Oct. 3. *Swing-Plows*; a stern which could be readily widened or narrowed would be convenient.
1777. Feb. 14. *Ox-Collars*; the cost of the Nine-Pins.
- . *Spikey-Roller*; the cost of one complete is about 15 l.—on its utility.
- June 10. *The Surface*; its effect on the rugged parts of Lancashire.

See the last MINUTE of 24th MAR. 1776. The good effect of fluting those two lands, led the Writer to make farther experiments on broad-cast Flutes; but the Barley-Flute being *straight*, it was unfit for *round* beds, which evidently require (to flute them long-way) a *crooked* Flute: an increase of coulter to the narrow-cast Bean-Flute (see 11th Nov. 1775.) immediately furnished the Implement wanted. See PLATE IV.

One Man—one Horse, and a Pair of Whip-reins are every thing necessary. The Horse draws in the inter-furrow; and, by going twice or thrice in a place, leaves the beds *perfectly* resembling a range of fluted columns.

(*q*) The Reader may form an idea of the *Shaft-Hoes*, by supposing four Hoes to be fixed in the Beam of the FLUTE in PLATE IV. Were the Writer to attempt an improvement of the *Shaft-Hoes*, it would be in this manner: He would separate the Implement by taking out the Skrew-Bolts which form the joint, and fix an additional handle to each division; the two parts would be *jointly drawn* by two Horses, in file, in the Furrow, but *separately held* by two Men guiding two Hoes each. This, if practicable, would be expeditious, and the Beans might be hoed, when a considerable height, without being injured by the Horses feet.

The

The Author has not used this Implement, nor does he mean to use it, except to *freshen* a stale Plit: a well-turned fresh Plit needs nothing but the broad-cast Seed-box and the Harrow.

This Implement is not yet *perfected*: the coulters in the front are *straight* fronted (See the Plate), and those behind the beams are *hanger*-fronted; whereas, for *stiff*-land they ought all to be straight, and for *light*-land they should all be made *hanger-fashion*; because the straight-fronted ones *rarify*, and the hanger-fronted ones *condense*, the surface.

GENERAL MANAGEMENT.

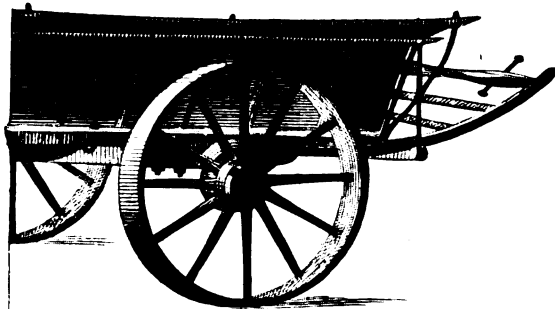
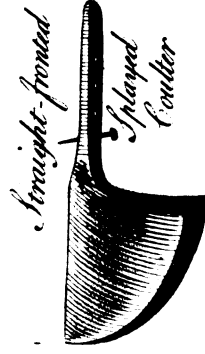
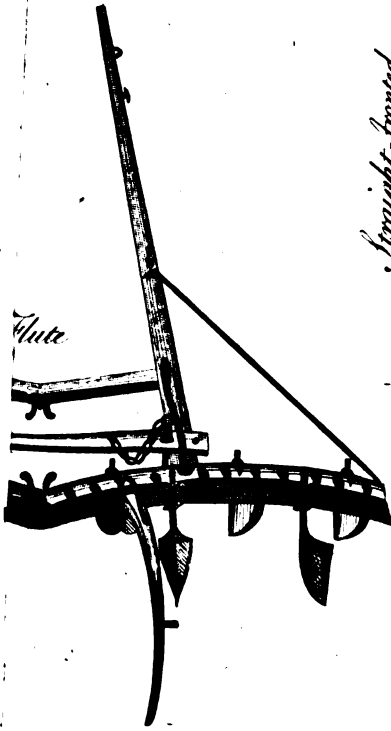
UNDER this Head are classed such MINUTES, or PASSAGES of MINUTES, as do not fall aptly under any PARTICULAR HEADS: as also such as are of sufficient moment to appear in the most conspicuous place.

The reason for placing this GENERAL HEAD, here, is this: The *foregoing* Articles relate principally to the ELEMENTS: This and the *succeeding* to the PROCESS. (See the PLAN, Pages 15 and 16.)

1774. July 31. Composting Borders is very expensive management.
- Aug. 9. The NECESSARY business of the Farm ought not to be interfered with by ANY THING NEW.
- Sept. 18. If Verdage and Pasturage be wanted, verd with Spring-Corn and Ley-Grasses.

1775. Sept. 55.

e IV.



be Act directs 20. March 1770

G E
1774. Sept. 2
Oct. 2
Nov.
Dec. 3
1775. Jan.
Marc

A

1774. Sept. 25. Rather be before than behind the Seasons.
 Oct. 2. Embrace the fair opportunity, and prepare for the uncertainty of Seasons.
 Nov. 5. Summer-fallowing is the most spirited of all spirited Managements.
 22. It is bad Management to thrash-out Horfe-corn before the Straw-yard be open.
 Dec. 31. Shut out Foot-paths, or ley the fields they lead through.
1775. Jan. 30. Plowing light Soils with Whip-Reins is highly advantageous.
 —. If Litter be wanted, *chop* Stubble; if not, ox-rake it off, or leave it on the land.
- March 25. It is dangerous to adopt practices on the sole authority of Custom.
 28. Perseverance perfects both the Art and the Artist.
- April 5. Have the Implement ready before it be wanted.
 13. Draw lessons from ill-luck.
 16. Who would stir light-land fallows without Whip-reins?
 27. At any price cleanse land intended to be leyed.
- May 3. No stiff-land Farmer should be without a Spikey Roller.
 5. Young Farmers must expect bad plowing until they learn to hold the Plow.
 10. Never sow out of Season.
 20. Pasture a Ley the first year.
- June 1. Hoeing random Crops is a good job; but very expensive Management.
 2. Self-attendance is necessary to Farming.

B b b

1775. June 19.

1775. June 19. Collecting Succulent Weeds for Verdage is changing evil into good.
30. Self-attendance is the soul of good Management.
- July 28. Perhaps plow-in a straggling foul Crop.
29. Something-new must be self-attended to.
- . Can a Farm be managed without the Pen?
- Sept. 4. Perhaps deep-plowing is universally good Management.
4. An arable field is a large kitchen-garden.
20. Self-attention is the best Bustler.
- Oct. 8. A Sunday's Dinner is better than a Harvest Supper.
20. Self-interest alone is fit for a Bailiff.
23. *Clover, Wheat.*—has many advantages.
- Nov. 1. Present Profit is certain Profit.
- Dec. 4. It must be a bad Misfortune indeed which does not produce a good Lesson.
1776. March 26. Scepticism should begin where Self-experience ends.
- April 10. Many advantages arise from Binding Hay for Farm-yard consumption.
21. Do not violate the Soil by sowing unseasonably.
- May 19. Keeping up Corn or Pulse, in grain, is gaming at a disadvantage.
- . A Granary-Account guards against pilfering.
- July 10. Every Farmer ought to promote the destruction of Sparrows.
21. Plow-in or Verdage-off a foul Crop.
- Aug. 8. Perhaps make the Farm-yard consumption the object of the Fallow-crop.

1776. Aug. 11.

1776. Aug. 11. A comparative view of the Row and Random Cultures.
- Sept. 19. Never sow small patches; except by way of experiment.
- Oct. 13. The Farmer who accommodates Hunting, will always be favoured by a Sportsman.
1777. April 25. Attendance and attention will make any Man a Farmer: no Man can be a Farmer without SELF-APPLICATION.

The GENERAL MANAGEMENT is *principally* dividible into,

The LEY-MANAGEMENT.

The PLOW-MANAGEMENT.

B b b 2

MINUTIAL

MINUTIAL MANAGEMENT.

THIS Article is similar to the last, they being equally Receptacles for such *radical* appurtenances of the Process of Naturifion as cannot, with propriety, be classed under any *peculiar Branch* of Management. Their difference is this: The last appertains to the GREAT or General Management; This to the MINUTIÆ: That to the PRECEPTIVE; This to the EXECUTIVE Department. The last belongs solely to the MASTER; This, in his absence, to the BUSTLER.

MISCELLANEOUS MATTER.

1774. July 28. Bustling is necessary to Haying.
 Aug. 6. Top Thistles, while in blossom, in and around the Farm.
 Sept. 3. Bustle in the morning, and defy the little difficulties of the day.
 Nov. 19. Never suffer a Boy to drive the dung-cart.
1775. Mar. 30. A convenient method of conveying Oats-in-Chaff.
 April 27. A scattered Farm requires great alertness in the Minutial Management.
 May 5. Round Ridges should be rolled diagonally.
 —. On the method of using the Double Hand-Hoe.
 June 2. Labourers want looking-after.
 July 29. The Minutial Management is an exhaustless source of amusement.
 Oct. 20. Keep the Teams and the Day's-men as near together as may be.
 ---. Somebody must be, or seem to be, in a hurry.
 Nov. 17. Number and register Padlocks and their Keys.
 Dec. 26. Call over the Implements twice a-year.

1776. Jan. 11.

1776. Jan. 11. A plenty of Litter with indifferent Fodder, is preferable to good Fodder with a scarcity of Litter.
26. Teach Oxen tractability by exercising them on leisure-hours.
- Feb. 5. Allowance Cart-horses with Hay as well as with Corn.
- Mar. 21. Bufling may be over-acted.
- May 21. On Stone-picking.
- . General Reflections on Weeding.
- Aug. 18. On Harvesting in Sheaf.'
21. Six-penny-worth of Ale, in Harvest, is more acceptable than twelve penny-worth of Silver.
22. On Harvesting Spring Crops.
24. On carrying Spring-Corn.
- Sept. 2. General Observations on Harvesting.
- Oct. 2. Sow when leisure offers, and cover when most convenient.
5. Sow five-bout Lands singly.
1777. April 14. Carry off stones in a one-horse Cart as they are picked.

P L O W M A N S H I P.

1775. March 14. How to set a Plow is perhaps the most difficult lesson on Plowmanship.
29. Perhaps two Plows are necessary to bury the surface of a foul tenacious Soil.
- May 20. How to throw two wide Lands into one.
- Aug. 22. Herbage may be tucked in with a timber Chain.
- Sept. 4. Seven-bout Lands are difficult to be laid round from a level.
21. To lay very high Ridges still round.
- Oct. 14. Plow-in Herbage with a Bury-surface-plow.

1775. Oct. 20.

1775. Oct. 20. To land-up neatly is the perfection of Plowmanship.
 Dec. 5. To reverse five-bout Beds.
 7. On Balking: or, more properly, *Trenching* *.
 1776. Oct. 3. If five-bout Beds lie high, they must be reversed with a wide-sterned Plow.
 Dec. 12. On plowing a Clover-Ley for Wheat.

H A Y I N G †.

1774. July 26. Carry Hay while you may.
 28. Bulling necessary to Haying.
 1775. July 1. A method of making Mix-Grafs and Clover-Hay adopted.
 8. Its eligibility.
 11. An experiment on Pitch-Cocks.
 19. The effect of making Hay in Cocklits in drizzly weather.
 July 31. A comparative view of the costs of different modes of Hay-making.
 1776. June 20. Rake straggling Clover into swath.
 July 18. Re-load under-made Hay.
 Aug. 1. On making Tare-Hay.
 —. Beware of Midsummer rains.
 4. Cut Clover early,—Meadgrafs late.

* See the Note (*m*) under the head IMPLEMENTS.

When the operation mentioned in the Minute above-referred-to is performed on a *firm* surface, it is literally BALKING; but when it is performed on a *loose* fallow, it is not *balking* (because the whole soil is more or less moved), but literally TRENCHING; and, if properly performed, gives *perfectly* the appearance of a garden neatly *trenched* with the spade; and TRENCHING (except ridgeliting) is the *only general* term that can with PROPRIETY be given to the operation.

† Haying appertains both to the *Ley* and the *Plow-Management*; and cannot be classed with propriety under either of them: it is therefore placed under this more general head.

Sept.

Sept. 14. Whether the Crop be thick or thin, wadding puts it equally out of harm's way.

1777. July 15. On the good effects of wadding Clover in wet weather.

Be the weather and the mode of making what they may, do not put Hay into Stack before it be *rustlingly dry*; for if it be put together *cold* and limber, it will cut out mouldy, musty, or at least *dusty*, and be totally void of flavour. Perhaps generally, there is more danger of its being spoilt in the stack than in the field; especially if kept in cocklits.

S T A C K I N G.

1775. Feb. 27. Attend well to the frame before the corn be put upon it.

Mar. 28. A Hay-Stack ought to be topd up with Band-Hay.

Sept. 20. Be careful to re-dry every lock in rainy weather.

Oct. 21. Square Stacks are preferable to round ones.

1776. Aug. 28. The method of Stack-making fully treated on.

DIVISION

DIVISION OF FARMS.

THIS Head, in a SYSTEMATIC view, is divisible into

PLANNING, or laying out an Open Farm.

CLASSING a Farm, already laid out or inclosed.

DIVIDING a Farm, whether by Lines or Fences; which consequently includes

ROADS, SHORES, FENCES:

The MINUTES incident to this Article are the following :

MISCELLANEOUS.

1774. Dec. 31. Arable Farms should be divided into large Fields with straight Hedges.
1775. Apr. 27. A disadvantage of small Fields and crooked Hedges.
- . Arable Land should lie near the Stable.
- July 26. Fields should lie north-and-fouth.
1776. Jan. 8. General Reflections on the Division and Classing of Farms.

F E N C E S.

1774. Dec. 31. A Calculation on the Expence of altering Fences.

1775.

- 1775. Mar. 9. On planting Quicks in a Trench *.
- 10. On transplanting old Quicks.
- 24. An advantage of planting Quicks in a Trench.
- Apr. 7. Giving wood is a bad custom.
- 1776. Aug. 17. High Fences are nuisances of arable land.
- Oct. 13. On the general treatment of Fences.

Perhaps, if Quicks, or other live stuff, be *too young to be plashed*, and are not an immediate Fence, raise a dead hedge behind it; being very careful to trim off the spray, that it may not over-hang and drop upon the young Shrubs: this precaution is very material. In like manner, perhaps, if live stuff be *too old and stubbed to be plashed*, cut it about a hand-breadth above the surface of the ground; and, if an immediate Fence be wanted, raise a dead Hedge by the side of the stubs, being very attentive in placing and trimming it in such a manner that the young shoots may be *sheltered* by it, without its being a *check* to their growth.

R O A D S.

On a Soil free from obstructions of the Plow, Roads are readily formed, and completely adjusted with the Plow, the Harrow, and the Surface.

▪ The Hedge, the subject of the Minute referred to, has thriven exceedingly well; except where it was checked by the remarkable drought of the spring immediately succeeding the planting; which was performed too late. In general, however, it promises a good Fence; but whether it is 4d. a rod better than it would have been if planted in the usual method, may be a moot point. However, whether or not this mode of planting may be eligible when a *new* ditch and bank are made, the Writer will venture to recommend the practice on *old* banks (to make up breaks, or to continue an old Quick Fence), care being taken to make the Trench on the warmer side, and to dig it deep enough to plant the Quicks in the Corn-mould. See PLATE IV.

C c c

Clayey

Clayey Roads are wet in Winter, and rough in Summer ; especially in the former part of it. The latter inconveniency, however, may be obviated at a trifling expence, by running them over with the Harrow and Roll, in the critical instant between wet and dry.

S H O R E S .

Notwithstanding Shores are unnoticed in the MINUTES, the Writer has experienced the good effects of deep ditches.

On making a common Shore from the Farmery, &c. he met with a vein of gravel, at the depth of four foot and-a-half, which serves so completely as a sub-drain to the adjoining fields, that the soil near the ditch is changed from being remarkably retentive to a firm, absorbent soil : and this will ever be the case, when a vein of gravel or a quick-sand is *pricked*. Besides, where there are deep ditches, there are always ready receptacles for the Surface-Water : And, generally, small ditches on a wet-land Farm, from which there is a natural fall, are unpardonable.

T H E

THE PERENNIAL LEY-MANAGEMENT.

THE MINUTES appertaining to the LEY-MANAGEMENT are not numerous, when compared with those on Aration, or the PLOW MANAGEMENT; the general Management of a Ley being conducted on a very confined scale, and affords little variety of incidents.

The Process of LEYING (and this partakes principally of the Arable Process) furnishes the majority of the MINUTES on LEY-MANAGEMENT.

L E Y I N G.

1774. Sept. 18. Verdaging the Corn encourages the young Grasses.
 Dec. 5. A retentive Soil may be leyed too flat.
 ---. An acclivated Ley vegetates earlier than one which lies flat.
1775. Feb. 27. Another field spoilt by being leyed flat.
 ----. Rye-Grass is an improper Seed for leying with.
 Mar. 28. A disadvantage attending an uncultivated retentive Ley.
 May 20. The process exemplified in Foot-Path-Field.
1776. Apr. 21. Hand-rake-in the Seed.

S U R - D R A I N I N G a L E Y.

1774. Dec. 5. A Surdraining Cart-idea'd, and the wood-work finished.

C c c 2

1776.

LEY - MANAGEMENT.

1776. Jan. 1. Surface-Drains are expeditiously made by the Plow.
 Apr. 18. And the plit is easily reduced by shaving-off the
 crum with a sharp hoe.
 — This is a most eligible mode of Sur-draining.

VEGETIZING PROCESS for a LEY.

1775. Jan. 28. Lacerating a Ley in winter does not harm the suc-
 ceeding crop.
 Feb. 27. Perhaps a Ley may be rolled too wet.
 June 9. Verdage weedy margins early in Summer.

If Meadows be foul of Thistles or Docks, Weeding is an excel-
 lent practice, performed at a small expence.

PASTURING a LEY.

1775. May 20. Pasture a Ley the first year.

Perhaps, on a Farm where Pasturage and Hay are equally wanted, Leys ought to be alternately pastured and mowed: *Because*, a Ley which has been pastured, will produce better Hay in greater quantity, than a Ley which has been usually mown; *because* perpetual mowing reduces the variety of Herbage, and impoverishes the Soil.

HAYING PERENNIAL GRASSES.

See MINUTIAL MANAGEMENT, Page 66.

Perhaps, generally,—If the ground be *cold*, cock after the sith, or as soon as actual rain will permit.

If the ground be *hot*, leave it in swath to wither,---break it into *Beds*,---turn,---carry.

But, be the ground hot or cold, and the weather settled or unsettled, do not stack until *rustlingly dry*.

For the MANURING of Leys, see MANURE, Page 26.

PERENNIAL.

P E R E N N I A L L E Y - V E G E T A B L E S.

L EY-VEGETABLES are almost as numerous as the Tribe of Perennials; but they are here divided into

M E A D - G R A S S .	R Y E - G R A S S .
M I X - G R A S S .	L U C E R N E .

SAINFOIN and BURNET might have been added; the Writer believing the former to be an excellent Ley-Vegetable on the soil it affects: The latter would be so likewise,---if a proper Soil and proper Animals could be *created*.

M E A D - G R A S S .

See the last General Head,--and MINUTIAL MANAGEMENT.

M I X - G R A S S .

This is as indefinite as the former Article.—By Mix-grass is here meant a compound of WHITE-CLOVER, RYE-GRASS, and TREFOIL. This mixture is not fixed upon as the most excellent, but as one whose ingredients are easily procured. There are, no doubt, other Herbs, whose feeds are equally eligible to be sown as Ley-grass feeds: The WHEATEN-BENT and MEADOW-SWEET (vernal) are esteemed excellent in a Meadow: and were their feeds sold currently at the Seed-shops, they would no doubt be adopted as valuable acquisitions to a Perennial Ley.

1775. May 20. White-Clover propagates by the joints of the stem as well as by seed.

For

For the mode of *Leying*, &c. see the **MINUTE** above referred to.—
For the method of *Haying*, see **MINUTIAL MANAGEMENT**, page 66.
and **LEY-MANAGEMENT**, page 72.

R Y E - G R A S S .

1775. Feb. 27. It is wholly improper as a Perennial Ley-Grafs.
June 15. A Rye-grafs Ley requires to be fallowed for Wheat.
1776. May 5. Rye-grafs is valuable as a Spring verdage.
June 19. As an annual Ley-grafs, perhaps it has merit on
a burning foil.

L U C E R N E .

1775. July 31. Perhaps, clean random Lucerne by hand-raking.
1776. May 5. Lucerne is an excellent Spring-verdage.
Perhaps, there are few Soils fit for Lucerne.—Perhaps, the vegetative stratum ought to be deep, and lie on an absorbent subsoil.

P L O W .

PLOW-MANAGEMENT.

THE Process of Aration is divisible into

THE GENERAL PROCESS. THE SEED PROCESS.
THE SOIL PROCESS. THE VEGETABLE PROCESS;

each of which are subdivisible.

THE GENERAL PROCESS.

This division relates principally to the SOIL, its Aspects, &c. different soils being affected by different Vegetables, and requiring a different Plan of Management; and to the SUCCESSION, every distinct Vegetable being partial not only to particular Soils, but to particular Vegetables, and to particular Modes of Management. Thus Corn likes to succeed Pulse; Pulse, Corn; and Vegetables in general a Summer-Fallow.

1774. Nov. 5. Summer-fallowing, if the Soil be foul, is most spirited Management.
1775. July 13. *Wheat succeeding Clover* was a remarkable fine Crop.
- Oct. 23. How many advantages result from *Clover, Wheat*.
- Nov. 5. Wholly fallow, or wholly crop.
- . The succession of *Tick-Beans, Wheat*—is bad.
1776. Feb. 6. General Reflections on the Arable Process.
- . A Review of Fallow-Crops.

1776.

1776. Mar 26. A Sketch of the Writer's general Plan.
 April 11. Fallow-Crops viewed in another light.
 26. Perhaps substitute *Rye, Clover*---in the room of
 Spring-Corn, Clover.
 June 19. Endeavour to get a burning Soil covered early in
 the Spring.
 July 21. Plow-in, or verdage a foul Crop.
 Aug. 8. Perhaps adapt the Fallow-crop to the Farm-yard
 consumption.
 13. *Beans, Wheat*; an instance of its being a bad suc-
 cession.
 15. Tare-Barley is preferable to Beans as a Fallow-
 crop.
 Sept. 8. A seeming disadvantage of *Barley, Clover*, ; but not
 a real one,
 19. Never have less than ten or twelve acres of any
 particular crop.
 1777. April 28. *Fallow, Oats, Clover, Wheat*—is a convenient round
 on stiff-land.

Much, no doubt, depends on a judicious CHANGE OF CROPS. To suffer a Crop to succeed itself, without some intermediate Melioration, is very bad Management.—*Corn* after *Corn*, perhaps, is likewise bad: and, perhaps, *Grain* after *Grain*, without dung or a Summer-fallow, is not good.

A regular ROTATION of Crops and Fallow is, perhaps, more *convenient* than *profitable*: for, perhaps, the more VARIETY OF CROPS, the less Vegetable Food will remain useless in the Soil; for, perhaps, every Vegetable, as every Animal, has its favourite food.

The Author's adopted ROUND is,—*Fallow, or Fallow-crop—Spring-Corn—Clover—Wheat*:—but he has not, yet, sufficiently experienced it to recommend it to others. To ascertain with precision the best SUCCESSION, whether *regular* or *irregular*, is the work of a life-time.

THE

T H E S O I L - P R O C E S S .

T H I S division alone would furnish Matter for a Volume in Folio. Its BRANCHES are numerous, and its MINUTIÆ endless. It receives the SOIL from the hands of NATURE, let the state be ever so rugged, and fits it for the reception of the SEED; being the most laborious department of FACTITIOUS VEGETISION.

The following is a part of its various tasks: Grubbing,—Stoning,—Sub-plowing,---Trenching,—Pulverizing,—Couching,—Feeding,—Folding,—Provoking,—Texturing,—Surfacing,—Acclivating,—Turn-plowing,-----Buryfod-plowing,-----Draining, &c. &c. These, however, might be contracted into DISCUMBERING, FALLOWING, MELIORATION, DEPOSITING; tho' not with strict propriety: The Author, therefore, avoids a division which might serve to perplex rather than inform, and refers to the MINUTES miscellaneously as they occur.

- 1774. Oct. 17. On Compost Fallows.
- Nov. 5. An instance of the good effects of Summer-fallowing.
- 29. A clayey loam plowꝑ better when quite wet than between wet and dry.
- 1775. Feb. 27. The good effects of setting-out the ridges of a level Ley, intended to be plowed early.
- March 23. Stiff Soils should be acclivated.
- 28. How much depends on Plowmanship!
- April 10. Plow deep, or Buryfod-plow for drilling.
- 16. A calculation on the advantage of plowing with Whip-Reins.
- 20. The Surface is highly beneficial to Couchy Fallows.
- 27. A proposed Proceꝑs of Couching.

D d d

1775. April 27.

1775. April 27. A further Proof of the advantage of Whip-
Reins.

29. A calculation on the expence of Couching.

May 3. Spikey-Roller is highly beneficial to a Cloddy
Fallow.

5. Bury the surface of a Ley intended for the Drill;
or plow deep, with a high crest.

10. Except the soil be very clean, an April Fallow
ought not to be given up for early sowing.

13. On plowing Land-for-land.

20. Two instances of the apparently good effects of
plowing a Fallow very wet.

June 3. Winter-fallow or bury the surface of a Stubble
for drilling.

6. A dry Summer quells the roots, and a showery
one exhausts the Seeds of Weeds.

15. The disadvantage and the advantages of a Dog-
day's-fallow.

July 1. On laying-up Summer-fallows.

26. Ridges should lie North-and-South.

28. Bury-fod-plowing will not destroy Weeds.

Aug. 16. Sub-plowing is efficacious in clearing away surface-
weeds.

Sept. 4. Perhaps deep-plowing is univerfally good Manage-
ment; especially of a retentive foil.

— Seven-bout Lands are too wide to be laid up
round from a level.

7. Perhaps it is better to digest than to burn
Weeds.

11. A further proof of the utility of deep-plowing a
retentive foil.

— A Fallow for Wheat should be landed-up in
September.

1775. Oct. 10.

75. Oct. 10. Sub-plowing is a difficult operation.
 20. It is, nevertheless, exceedingly beneficial in dis-
 cumbering the surface.
 24. On opening Inter-furrows.
 25. How necessary to cross-furrow a retentive foil!
 ---. A flat field ought to be crossed with an ambi-
 dexter Plow.
 27. Five-bout beds are convenient to harrow.
 Nov. 11. The cost and utility of cross-furrowing.
 13. An instance of the utility of cross-harrowing
 Fallows between the plowings.
 23. A slight frost prevents harrowing.
 30. Buryfod-plowing is not peculiarly favourable to
 potatoes.
 Dec. 5. On Landing-up a retentive foil, and its utility.
 7. The intention and mode of Balking, or more pro-
 perly *Trenching* a foul Soil.
 1776. Feb. 6. Arguments for and against Fallows and Fallow-
 crops.
 March 20. An instance of bad Plowing, and the cause.
 24. A general Guide for acclivating.
 26. Flat Beds are unpardonable on wet land.
 —. A disadvantage of plowing wet for a Crop.
 April 11. Roll or surface a Fallow very hard between the
 Plowings.
 ---. If a plain roller cannot reduce the clods, use a
 spikey one.
 16., Perhaps harrowing checks animalcules.
 ---. A disadvantage of plowing for Spring-corn in wet
 weather without acclivating.
 May 21. *Trenching* (or Balking) is much the best way of
 breaking up a Summer-fallow.
 ---. The general process of Fallowing.

1776. May 21. Five-bout Beds are weeded conveniently.
 July 21. Deep-plowing gives Seed-weeds:
 ---. To increase judiciously the depth of Corn-mould:
 Aug. 4. Perhaps tillage prevents smut.
 11. A comparison of the Row and Random Cultures.
 13. This year's Crop of Wheat bears an affinity to the
 number of plowings.
 16. Sub-plowing does not give a Tith equal to
 repeated turnings.
 ---. On Tillage, as a melioration.
 17. Perhaps, round ridges and open furrows prevent
 Wheat from lodging.
 Oct. 27. Nothing but a rough Fallow and hot weather can
 clean land from couch.
 Dec. 12. One instance of the advantage of a good seed-
 plowing.
1777. April 28. Light-Land may be plowed in two narrow plits
 for Beans.
 ---. An advantage of landing-up Winter-fallows in
 Autumn.
 June 18. Let a Fallow, *Trenched*, or *Balked*, in Autumn,
 lie in trenches till after the Spring-feed-time.

For the Proceeds of MANURING, and for other MELIORATIONS of
 the Soil, see MANURE, Page 26.

T H E

T H E S E E D - P R O C E S S :

THIS Department of the ARABLE-PROCESS receives the SOIL after the Seed-Plowing, furnishes it with the *immediate* Means of propagation, and again deposits it in the hands of NATURE.

THE SEED PROCESS is divisible into the TIME OF SOWING,---the PREPARATION OF THE SEED,---the MODE OF SOWING,---the QUANTITY OF SEED,---COVERING,---ADJUSTING.

The MINUTES relative to the SEED-PROCESS are the following.

1774. Sept. 25. On the bad effects of backward-sowing.
 1775. March 18. A disadvantage of the Row-Culture.
 24. On Sowing over the stale plit.
 28. The good effects of lanceing before harrowing.
 April 13. The cost of drilling with the new drill.
 14. On the mode of drilling with this drill.
 15. On covering with the ox-brooms.
 29. Sowing late in the Spring is beneficial to the soil,
 but may be hurtful to the crop.
 May 2. An experiment on steeping the seed.
 10. On the time of sowing Spring-corn.
 June 10. Early-sowing has an advantage, if the Summer
 prove dry.
 July 1. On the quantity of seed.
 Sept. 4. On adjusting, by semi-culture.
 18. Early-sowing has many advantages.
 22. Thin-sowing gives a reedy straw, which is bene-
 ficial in a wet Harvest.
 Oct. 5. On Sowing on the fresh plit.
 — On Fluting.
 Nov. 1. On Sowing in Rain.

1775. Nov. 9. On sowing and adjusting Cross-furrows.
1776. Feb. 2. Experiments on Spring-seeds sown in Autumn.
 6. Another disadvantage of the Row-Culture.
 16. On sowing narrow-cast ; with its cost.
- March 11. Perhaps never attempt to force a Season.
 24. Spare no expence of harrowing.
 26. On narrow-cast and broad-cast Flutes.
- April 4. An experiment on harrowing before sowing
 broad-cast.
 —. A favourable view of broad-cast Flutes.
 11. Roll between the harrowings.
 16. A further proof of the use of good harrowing at
 Seed-time.
 —. On the Spring-Seed-Process.
 21. Do not ravish a Season.
 —. Cover Grass-seeds by hand-raking.
- May 14. The result of sowing Spring-crops in Autumn.
- June 19. Endeavour to sow a burning Soil early.
- July 10. Early-sowing has its disadvantage.
- Aug. 11. A comparison of the Row and Random Cultures.
 24. Perhaps pickling deprives puny seeds of their
 vegetative qualities.
- Oct. 2. On covering the Seed immediately after sowing.
 5. On sowing five-bouz Beds singly.
- Nov. 17. An observation on the time of sowing.
 —. An experiment on the quantity of seed.
 —. Another evidence that pickling Wheat injures its
 fructuosity.
 —. It is better to flute the stale than the fresh plit.
- Dec. 12. Break-in whole plits with fine harrows.
1777. April 28. Rolling between the harrowings is an excellent
 practice.

THE VEGETABLE PROCESS.

THIS division of the ARABLE-PROCESS may be subdivided into the VEGETIZING-PROCESS, — TOP-DRESSING, — PASTURING, — HERBACEOUS MELIORATION, — VERDAGING, — HAYING, — HARVESTING, — STACKING, — HOUSEING, — UNSTUBBLING; each of which will admit of still lower subdivision.

But the *general* matter of the VEGETABLE-PROCESS is not much; as almost every species of PLOW-VEGETABLES requires a peculiarity of Vegetable-Management: for the *particular* matter, therefore, see the several Articles of the next general Head.

MINUTES ON THE VEGETIZING PROCESS.

1775. May 5. High ridges should be rolled diagonally.
 16. On hoeing Inter-furrows.
 —. On hoeing with the Double-hoe; and the cost.
 June 1. On hoeing random crops.
 July 7. Checking the first Coming-up does not retard it enough for the second to overtake it.
 Aug. 30. Perhaps harrowing Winter-crops in Spring, generally, is bad Management.
1776. May 21. General reflections on weeding.
 Aug. 17. On hoeing Inter-furrows.

FOR TOP-DRESSING, see MANURE, Page 26.

MINUTES ON PASTURING.

1776. Jan. 16. To prevent cattle from being sufflated by succulent herbage, muzzle them partially.

For

PLOW-MANAGEMENT.

For HERBACEOUS MELIORATION, see MANURE, Page 26.

MINUTES ON VERDAGING.

1774. Sept. 18. If Verdage and Pasturage be wanted, verd with Spring-corn and young Grasses.
1775. July 21. Clover and Tare verdage are affected by oxen.
 Aug. 11. Potatoo-verdage is affected by cows and hogs.
 18. It is excellent for cows.
1776. July 21. Perhaps, generally, it is good Management to verdage a foul straggling crop.

For HAYING, see the MINUTIAL MANAGEMENT.

MINUTES ON HARVESTING.

1775. Aug. 18. A cost of carrying Spring-corn.
1776. Aug. 18. On making and shocking sheaves.
 22. On harvetting Spring-crops.
 24. On carrying Spring-corn.

For STACKING, see MINUTIAL MANAGEMENT.

MINUTES ON HOUSEING.

1775. Jan. 21. Perhaps, generally, it is bad Management to House corn whilst cold and limber.
 Aug. 9. Be careful to clear the Barns from vermin before harvest.
1776. July 15. Take in a loose-Corn Stack, in parts:
 Sept. 19. One Horse is as good as almost any number of Men on a Corn-Mow.

MINUTES

MINUTES ON UNSTUBBLING.

1774. Dec. 31. On harrowing down Stubble.
 1775. Jan. 4. The ox-rake gathers it clean in damp weathers.
 30. The costs of chopping and ox-raking, &c. are equal.
 ---. Chopt Stubble is fit for horse-litter; raked Stubble for the Farm-yard only.
 Oct. 28. General reflections on Unstubbling.

PLOW-VEGETABLES.

THE AGRICULTURAL ANNUALS occurring in the MINUTES are the following:

WHEAT.	PEASE.	CARROTS.
BARLEY.	PEA-BEANS.	RAPE.
OATS.	BEANS.	BUCK-WHEAT.
CLOVER *.	POTATOES.	RYE-GRASS *.
TARE-BARLEY.	TURNIPS.	RYE.
TARES.	CABBAGES.	

To treat fully on this general Head, would require as many Volumes as there are separate Articles contained in it; each Vegetable having, perhaps, its favourite SUCCESSION,-----SOIL,-----MANURE,----SOIL-PROCESS,---SEED-PROCESS,---VEGETIZING-PROCESS,

* Although Clover and Rye-grass are in themselves *Perennials*, they must here, as *Plow-Vegetables*, be considered as *Annuals*.

E e e

—VEGETABLE;

---VEGETABLE-PROCESS,----BARN-MANAGEMENT,----DISPOSAL ; each of which admit of various subdivisions, enumerated under the General Heads SOIL, MANURE, SEED, PLOW-MANAGEMENT, FARM-YARD-MANAGEMENT, MARKETS.

The Author will exemplify this in the article

W H E A T .

The S U C C E S S I O N proper for W H E A T .

1775. July 13. Clover, Wheat---gives a remarkably fine crop
 Oct. 23. Clover, Wheat---is at least convenient.
 Nov. 23. Fallow, Wheat---exceedingly inconvenient.
 1776. Aug. 13. Beans, Wheat---(the Beans not dunged for) bad.
 ---. Herbaceous Fallow, Wheat---gives a fine crop.

The SOIL proper for W H E A T :

The MINUTES are silent on this head : It is, indeed, a difficult subject on which to make comparative experiments and observations, different soils being variously affected by the same weather. Nothing but a Series of Experiments could be decisive. It would, no doubt, be useful, in estimating the value of land, to know the degree of affection which Wheat bears to each species of soils : the Writer, however, is clearly of opinion, that the Crop depends more on the Weather, the Manure, and the Soil-Process, than on the *specific quality* of the soil ; and that any *species* of soil will produce a good crop of Wheat, if it be well dunged, well plowed, and properly acclivated ; provided the weather prove favourable to its specific quality, joined with its situation.

MANURE proper for WHEAT.

1775. Aug. 12. Soot is of some benefit to Wheat on loam.
 1776. Aug. 16. Dung, or other extraneous food, can alone keep the Soil in vigour.
 Sept. 20. An instance in which Soot was not favourable to Clay.
 Nov. 17. Soot was of very little service on stiff land.
 —. Lime from chalk was still less beneficial.
 —. Dry Wood-ashes are equal to Soot.
 —. Rough Gravel on Clay was of no service to Wheat :
 The Author means in the experiment referred to, which was not by any means decisive: It may, nevertheless, be admitted as a good evidence.

SOIL-PROCESS proper for WHEAT.

1776. Mar. 24. Flat Beds are improper for Wheat.
 Aug. 13. This year's Crop was nearly in proportion to the number of Plowings.
 ---. Herbaceous Melioration is favourable to Wheat.
 16. Several instances in favour of Tillage.
 17. The Soil ought to be laid up round for Wheat.

On the SEED of WHEAT.

1775. Aug. 21. Plumpness is not essential to Seed-Wheat.
 Nov. 5. A judicious change of Seed is beneficial to the Crop.
 1776. Aug. 24. Further experiments with thin Wheat.

The SEED-PROCESS proper for WHEAT.

1775. Aug. 7. On Sowing over-plit and under-plit.
 21. March is an improper Month of Sowing.
 Nov. 1. On Sowing in Rain.

1776. Mar. 24. Harrow the Seed in thoroughly.
 April 16. Spare no pains of harrowing.
 June 19. Sow early on a burning Soil.
 Aug. 4. A void experiment on pickling:
 16. On the mode of Sowing.
 Sept 20. On Top-dressings, harrowed-in with the Seed.
 Nov. 17. Several experiments on the same.

The VEGETIZING PROCESS of WHEAT.

1775. May 16. On hoeing the inter-furrows of Wheat.
 June 1. If Wheat be thin and foul, hoe it, verdage it,
 or plow it in.
 Aug. 12. On the process of Top-dressing with Soot.
 Oct. 14. The weather influences the Crop.
 1776. Feb. 2. Frost without Snow is pernicious to Wheat.
 May 21. General reflections on Weeding.
 Aug. 17. The good effects of open Inter-furrows.

The VEGETABLE-PROCESS of WHEAT.

1774. Aug. 20. Let blighted Wheat have a shower in shock.
 30. A method intended of drying wet Wheat.
 1775. Jan. 21. Perhaps there is more danger of harming Wheat
 in mow than in shock.
 Aug. 7. On Reaping and Mowing of Wheat.
 9. On the Cost, &c. of Mowing.
 1776. Aug. 18. On drying wetted Wheat.
 — The future Process of Harvesting-Wheat proposed.

For UNSTUBBLING, see PLOW-MANAGEMENT. Page 85.

BARN-MANAGEMENT of WHEAT.

1774. Dec. 7. It is necessary to attend narrowly to the Thrashing
 of Wheat.

Wheat-straw ought to be bound neatly for the London markets.

DISPOSAL

DISPOSAL of WHEAT.

1776. May 19. Keep Wheat in Straw, or sell it at the market-price.

What a boundless field for investigation is AGRICULTURE! A Volume in Quarto is inadequate to the mere delineation: yet, strange as it is, *every Man who has seen a plowed field is a Farmer!*

The Author having exemplified in the article WHEAT, that any department of Naturifion is reducible to SCIENCE, he will not embarrass himself nor his Reader by dividing, *systematically*, the matter of the other Plow-Vegetables above-enumerated, but refer, *chronologically*, to the respective MINUTES.

B A R L E Y.

1775. Apr. 29. An advantage of sowing late.
 May 2. Steeping the Seed did not forward its coming-up.
 May 10. If the soil be clean, sow early; if foul, late.
 June 28. A disadvantage of sowing late.
 July 1. On the quantity of Seed.
 4. The Seed lay two months in the ground, without vegetating.
 Sept. 20. Barley in swath should not be turned with the head of a rake.
 22. On harvesting Barley, and the quantity of Seed.
 Oct. 5. A small quantity of Seed will produce a large crop of Barley.
 —. Perhaps, top-dress Barley.
 Dec. 4. If the Soil be foul, an April-fallow ought not to be missed.
1776. Feb. 2. Barley may be sown with safety in Autumn.
 Apr. 10. If Barley be spoilt for malting, feed Cart-horses with it.

1776. May

P L O W - V E G E T A B L E S.

1776. May 14. The Autumn-fown began to ear.
 June 19. Endeavour to fow early on a burning Soil.
 July 21. Cut the Autumn-fown Barley the 19th July.
 —. Reflections on sowing Barley in Autumn.
 Aug. 22. On Harvesting Barley.
 Sept. 8. Further observations on Harvesting.
 20. Top-dressing must be very beneficial to Barley.
1777. Apr. 26. Further evidence in favour of feeding Cart-Horses with unmaltable Barley.

O A T S.

1775. Mar. 24. Sowing Oats over the stale plit is ineligible.
 Aug. 18. A calculation on the cost of carrying.
1776. Feb. 2. A severe Frost nips the Blades, but does not injure the Roots.
 May 14. Autumn-fown Oats do not shoot up in Spring, like Autumn-fown Barley.
 July 31. Cut the Autumn-fown Oats to-day.
 —. Observations on sowing Oats in Autumn.
 Aug. 22. On Harvesting Oats.
 Sept. 20. Perhaps top-dress Oats and Clover.
1777. Apr. 28. Fallowing stiff Land for Oats and Clover is good management.

C L O V E R.

1775. June 15. Clover-Leys are more eligible for Wheat than are Rye-grafs-Leys.
 July 13. A Clover-Ley dunged in July gave a very fine crop of Wheat.
 21. Clover-Verdage is affected by Working-Cattle.

1775.

1775. Aug. 1. Cut Clover early, or cut it but once.
 Oct. 23. How convenient are Clover-Leys for Wheat !
 Nov. 23. A further proof of this conveniency.
1776. Apr. 13. Perhaps hand-rake-in the Seed.
 21. This mode of covering adopted as a general practice.
 26. Perhaps sow Clover-Seed over Rye instead of Spring-Corn.
 June 19. Clover is hazardous on a burning Soil.
 Sept. 8. Raising it with Barley is eligible.
 14. Wad the second crop immediately after the sith:
 20. The infant plants of Clover require nourishment.
 ---. Soot is favourable to them.

T A R E - B A R L E Y .

1775. May 10. The reason for first Sowing Tares with Barley:
 Sept. 28. Began to cut the Herbage : Observations on-it.
1776. Feb. 6. Tare-Barley is, perhaps, the first of Fallow-Crops.
 Aug. 8. A further trial of it, with the results.
 15. It is far preferable to Beans as a Fallow-Crop.
1777. Apr. 5. Tare-Barley Fodder is well-affected by Cattle :
 26. And is at the same time serviceable to the Yard-Hogs.

T A R E S .

1775. June 22. Tare-Verdage is a very profitable Crop.
 July 11. Tares for Verdage should be *supported*.
 21. Tare-Verdage is well-affected by Working-Cattle.
 Sept. 19. Tare-Seed is a very uncertain Crop.
1776. Feb. 2. Summer-Tares will not stand a hard Winter.
 ---. Winter-Tares are invulnerable to Frost..

1776.

P L O W - V E G E T A B L E S.

1776. Feb. 2. Tare-Herbage is excellent as a Fallow-crop.
 Mar. 11. Further proofs of the hazard in raising Tare-Seed.
 Apr. 11. Observations on Tares as a Fallow-Crop.
 May 5. They come too late as a Spring-Verdage.
 14. Summer-Tares will not stand the Winter.
 ---. Observations on the Species of Tares.
 July 10. Horses fed on Tare-Verdage require very little Corn.
 Aug. 1. Tare-Aridage is generally allowed to be excellent Fodder.
 ---. The Process of Tare-Hay-Making.

P E A S E.

1775. Apr. 10. Plow deep, or bury the Surface for Drilling.
 June 3. A future Pea-Process proposed.
 1776. Feb. 6. Pease are a valuable Fallow-Crop.
 Mar. 26. The Seed-Process this year; with general Observations on the Culture of Pease.
 Apr. 11. As a Fallow-Crop, they intrude on Spring-Corn Seed time.
 23. Pease may be rolled while young with safety.
 27. Observations on covering the Seed.
 30. They are conveniently hoed with the Double Hoe.
 1777. Apr. 28. They should be buried deep on a dry Soil.

P E A - B E A N S.

1776. Aug. 7. Two Experiments on Pea - Beans, with their Results.
 11. A comparative view of random Pea-Beans and drilled Mazagans.

1776.

1776. Aug. 22. Perhaps cut them under-ripe for Farm-Yard-Consumption.

B E A N S .

1774. Sept. 6. Observations on Drawing Beans.
 1775. Jan. 8. On the Purple or Cape-Bean.
 Mar. 1. A Method of winnowing pulled Beans.
 —. An Advantage of Drawing Beans.
 18. A Disadvantage of Drilling Beans.
 Apr. 13. They may be drilled very cheap with the new Drill.
 May 19. An improvement in the mode of winnowing Pulled Beans.
 Nov. 5. The Succession of—*Tick Beans, Wheat*—is bad.
 11. Contrived an Implement to draw a line to direct the Dibblers.
 1776. Feb. 2. It is dangerous to sow Beans in Autumn.
 6. Observations on the Seed-Process.
 —. Horse-Beans are the worst of Fallow-Crops.
 16. On sowing Narrow-Cast, with its cost.
 Mar. 11. *December* and *January* are improper months of Sowing.
 —. The future Bean-Process proposed.
 26. Finished sowing Narrow-Cast, with Observations.
 Apr. 11. Beans as a Fallow-Crop intrude on the Spring-Corn Seed-Time.
 21. Observations on the impropriety of planting Beans in a Puddle.
 23. Infant Beans may be harrowed and rolled without real injury.
 May 2. On Hoing them with Shaft-Hoes.

F f f

1776.

P L O W - V E G E T A B L E S .

1776. May 10. A calculation of the expence of the first Hoeing.
 14. The fate of the Autumn-sown Beans.
 June 11. The cost of the second Hoeing.
 Aug. 8. General Observations on the Bean as a Plow-Vegetable.
 11. A comparative view between Drilled Beans and random Pea-Beans.
 15. Not equal to Tare-Herbage as a Fallow-Crop.
 24. The result of the Experiments on sowing Beans in Autumn ; with general Observations on the time of sowing*.

P O T A T O E S .

1774. Oct. 17. On raising Potatoes in Compost-Fallow.
 Dec. 26. Given to hogs boiled and warm, they are excellent preparatives to Pease or Barley.
 1775. Jan. 3. They are much superior to cabbages, as relaxatives.
 June 24. Potatoes in rows are neatly and readily earthed-up with the double Plow.
 Aug. 11. The halm of Potatoes is well affected by Cows and Hogs.
 18. It affords remarkably sweet butter.
 —: On planting them with Cabbages.
 21. The stumps of the amputated Halm bleed profusely.
 23. The lower they are cut, the more they bleed.

* Generally on BEANS.—Notwithstanding the Writer is convinced that Beans are ineligible in the rotation he has adopted, he does not presume to decry them altogether; for he apprehends, that were he situated on a uniformly stiff-so FARM, in a country where the planting of Beans is an established custom, and where dung can be plentifully purchased, he should cultivate Beans in the round of *Clover, Beans, Wheat.*

1775.

1775. Sept. 12. The result of the Experiments on verdaging the Halm ; with Observations.
 Nov. 30. Deep-plowing not beneficial to the crop.
 —. A general observation on the Culture of Potatoes.
1776. Feb. 6. They are not eligible as a Fallow-Crop.
 Apr. 11. They interfere with Spring-Corn Seed-Time.
 12. An eligible mode of Planting hit upon, and adopted.
 May 7. Experiments and Observations on Planting, and Plants.
 Oct. 27. The result of these Experiments ; with the cost of Digging-up the Crop.

T U R N I P S .

1775. Oct. 5. Sheep prefer young Rape to young Turnips.
 1776. Feb. 6. Turnips are a most eligible Fallow-Crop.
 Apr. 11. A further proof of their eligibility as a Fallow-Crop.
 July 12. Perhaps, generally, hand-rake in the Seed.

C A B B A G E S .

1775. Jan. 3. Observations on Cabbages as Hog-Food.
 10. A Patch of Cabbages is a valuable appendage to a Farmery.
 Mar. 30. An Experiment, with Observations on Planting.
 July 15. Mend the Plows with the weak Plants.
 Aug. 18. On planting them between the rows of Potatoes.
 Sept. 28. On moulding them with a double Plow.
 Oct. 29. A Cow sufflated by Cabbages.

P L O W - V E G E T A B L E S.

1776. Feb. 6. Cabbages are an eligible Fallow-Crop.
 Apr. 11. A further proof of this.
 July 21. The Planting Process this year.
 Aug. 31. Farther observation on Planting.
 1777. Apr. 28. A comparative view of the species of Cabbages..

C A R R O T S.

1775. Apr. 20. A mode of Drilling hit upon..
 June 16. The future process of Drilling proposed.
 July 28. What a plague is a crop of Carrots !
 31. A mode of Weeding.
 Aug. 22. Another : but the badness of the crop prevented
 a decision on its eligibility.

R A P E.

1775. Oct. 5. Sheep prefer young Rape to young Turnips..
 1776. Apr. 11. Rape is eligible as a Fallow-Crop ; because it does
 not interfere with Spring-Corn Seed-Time..

B U C K W H E A T.

1766. Apr. 11. As a Fallow-Crop, it does not interfere with
 Spring Seed-Time.
 Sept. 19. If sown late, it is inconvenient to let it stand for
 Seed..

R Y E - G R A S S (an Annual Ley-Vegetable).

1776. May 5. Rye-Grass is eligible as a Spring-Food ; but it is
 a weed in arable Land.

1776.

1776. June 19. Perhaps on a burning soil it is preferable to Clover.

R Y E .

1776. Apr. 26. Rye is valuable as a Spring-food.
 — Perhaps substitute Rye for Spring-Corn, as a nursery of Clover.
 May 5. Another instance of its eligibility on a Spring Verdage.

There may be many other valuable PLOW-VEGETABLES ; but they have not occurred to the Writer's EXPERIENCE.

FARM-YARD MANAGEMENT.

T H I S general Head is principally divisible into

BARN MANAGEMENT,	LITTER AND LITTERING,
FODDER AND FODDERING,	MANURING ;

each of which admit of Subdivision.

BARN MANAGEMENT.

This Section is divisible into the GENERAL ECONOMY, —THRASHING, —WINNOWER, &c.

1774. Nov. 22. A sketch of the general Economy.
 Dec. 7. It is necessary to attend narrowly to the Thrashing of Wheat.

1775-

98 FARM-YARD MANAGEMENT.

1775. March 25. It is tedious to winnow with sackcloth Fans.
 Aug. 9. Barns ought to be cleared from vermin every
 Time they are emptied.
1776. July 15. In showery weather, take in a loose corn-stack in
 parts.
 Sept. 19. One Horse on a mow is as good as almost any
 number of Men.

FODDER and FODDERING.

Fodders are almost as various as Agricultural Vegetables: In a
 general view, however, they are either VERDAGES or *Aridages*;
 the latter of which are either STRAW (including Halm),—STRAW-
 HAY,—HAY, or Corn.

1774. Sept. 18. If Verdage be wanted, Verd with Spring-corn,
 and Ley-grasses.
1775. June 10. Hay *yields* well in dry weather.
 July 21. How the different sorts of verdage are affected by
 Oxen.
 Aug. 11. Potatoe-verdage is affected by Cows and Hogs:
 18. And gives very sweet Butter.
 Sept. 14. Observations on making Straw-hay.
 Nov. 23. Further observations on it.
1776. Jan. 16. Turnips should be sliced.
 —. Cabbages should be quartered.
 —. Hay-bands should be untwisted.
 18. Should Straw be animalized in a hovel or an open
 yard?
- Apr. 10. Observations on binding Hay for Farm-yard
 consumption.
 May 5. An enumeration of Spring-verdages.
 21. Hay and Straw lose much of their weight by
 being exposed to the air.

1776. Aug. 8. Perhaps make Farm-yard-consumption the object of the Fallow-crop.
1777. Jan. 6. An experiment on the quantity of Straw eaten by Oxen; with observations.
- Feb. 20. Cattle, on a par, eat about a load of Straw a-month. See the MINUTE.
21. There is some caution requisite in feeding Cattle with Cabbages as well as with Turnips.
- April 19. Endeavour to fell Hay before the March-winds set in.
- — — — — ; a general Rule raised.
26. Feeding Beasts of Labour with Barley is advantageous to the Yard-hogs.

LITTER and LITTERING.

STRAW, STUBBLE, FERN, RUSHES, and other WEEDS, are the subdivisions of LITTER.

1775. Jan. 24. A comparative view of Fern and Straw, as Litters.
30. Observations on Stubble, as Litter.
- Feb. 15. On the utility of littering Farm-yards.
- Oct. 28. On collecting Stubble for Litter.
1776. Jan. 11. It is absolutely necessary to keep Straw-yard-stock well littered.
18. A further proof of it.

For MANURIZING, see MANURE, Page 26.

L I V E - S T O C K .

IN a full SYSTEM OF AGRICULTURE, the Elements and Processes of ANIMALISATION would form one of its principal divisions. The GENERAL MANAGEMENT would be divided into BREEDING, REARING, DAIRYING, FATTING; each of which would admit of a variety of SUBDIVISIONS. Each SPECIES of AGRICULTURAL ANIMALS (as each species of Vegetables) would likewise have its SUBDIVISIONS.

But the Author of this DIGEST is not attempting a Work which calls for the attention of Ages: he only means to systemize such FACTS and REFLECTIONS as have resulted from his own EXPERIENCE; and, as he passes along, to shew that *every Department* of NATURISATION,—that *every Branch* of that ART which *assists* NATURE in *vegetizing* the ELEMENT, and in *animalizing* the VEGETABLE, is subject to ANALYSIS; and is consequently reducible to SYSTEMATIC SCIENCE.

The Species of LIVE-SOCK * which occur in the MINUTES are,

COWS.	SWINE.
SHEEP.	POULTRY.

C O W S .

- 1774. Aug. 29. Lost a Cow in the Red-Water.
- 1775. June 10. Cows milked well in a dry Summer.
- 19. It is good Management to collect Weeds for Milch-cows.

1775.

1775. Aug. 11. Cows affect Potatoe-halm :
 18. Which gives remarkably sweet Butter.
 Sept. 13. The future Cow-Management proposed.
 Nov. 5. Perhaps make rearing of Hogs the object of Cow-keeping.
 Dec. 4. Raise them from low to richer Feed by degrees.
 —. Never refuse Two Guineas for a scouring, lean Barrener.
1776. Feb. 28. Experiments and Observations on Suckling.
 1777. June 10. Never turn a Cow heavy in calf among strange Cows.
 —. Nor sling a Cow big with Calf.

S H E E P.

1775. Oct. 1. Perhaps, on a Compost-Farm, it is better to let Sheep feed, than buy-in Sheep to eat it off.
 5. Sheep prefer young rape to young turnips.

It is not from any general dislike to SHEEP that the Writer has not attempted a Flock : On a sound Folding-Farm, he believes them to be a very profitable species of Live-Stock. Indeed, in his present unfavourable situation, he has resolved more than once to try a *few* Sheep ; but his next day's ride has generally staggered his resolution. He has either met with a starving Lamb, bleating over its mother lying dead of the rot ; or found a straggling, shepherdless Flock in his own or his neighbour's fields, doing more damage in twenty-four hours than the amount of their profit at the year's end. These, however, may be local evils, and the Author does

* For *Working-Stock*, see BEASTS OF LABOUR.

not mean in general terms to decry a *few* Sheep: he will, nevertheless, venture one general assertion—The *Profit* is in proportion to the *Attendance* given them;—and, therefore, an Aboriginal Farmer who has two or three Sons to assist him in keeping them, is more likely to profit by them than a Gentleman-Farmer, who must in a great measure depend upon Servants.

S W I N E .

1774. Dec. 26. Potatoes boiled and warm are good preparatives to pease or barley.
 29. Unground barley is improper for Hogs.
1775. Jan. 3. Cabbages are not equal to potatoes, as relaxing preparatives.
 —. Raw cabbages are nevertheless eligible for the Yard-hogs.
- Feb. 10. Farrowing Sows should not have too much litter.
- March 7. A calculation on Fattening.
 31. Coupled the first Hogs.
- June 17. An advantage of coupling Hogs.
 29. A coupled Hog hung.
- July 3. Another hung! The cause.
 July 4. Hogs do not affect stewed clover.
 7. They are awkward to serve in couples: uncoupled them.
 29. Re-coupled them: they are in perpetual mischief.
- Aug. 11. They affect potatoe-verdage.
 Oct. 20. A calculation on fattening Porkers.
 31. Two large Hogs hung! General observations on coupling.

1775.

1775. Nov. 5. A calculation on the profits of Swine.
 Dec. 4. Clip mask and uncouple them before Acorn-time.
1776. Jan. 18. An Ox made 200 gallons of soup and bouille.
 Oct. 15. A comparative view of the breed of Hogs.
1777. Jan. 28. A calculation on Fattening; with an improvement
 in the mode of it.
 —. A final proof of the ineligibility of the Oriental
 Breed.
 April 26. Barley which passes whole thro' Cattle or Horses
 is beneficial to Hogs.
 June 10. Rearing bursten Pigs is bad Management.

P O U L T R Y.

1776. March 24. Laid out a Poultry-yard.

The Writer will close the Head LIVE-STOCK with this general
 observation: It is as bad Management to *over-stock* as to *under-stock*
 a Farm; for the old maxim is not more vulgar than just: "If they
 " won't pay for keeping, they won't pay for starving."

M A R K E T S.

AT MARKET (taken in a general sense), and then principally,
 the Aboriginal gains an advantage of the Scientific Farmer.
 He can get drunk with his Host, and sell his Corn, Hay and Straw
 to advantage: He can cringe to the Squire, and tamper with his

G g g 2

Groom;

Groom; haggle with the Mealman, and wrangle with the Butcher. These things the Scientist *cannot* do; therefore, the seldomer he goes to Market, *unnecessarily*, the more profit and peace of mind he may expect.

But to Market *He*, his *Agent*, or his *Servant*, must more or less go.

If he, *in person*, drive his Cattle, Sheep, or Hogs to the Fair, or even bear his own Sample-bag to Market, he will find himself in a most awkward situation; and, more than probably, will not venture himself *alone* a second time.

Agents or Brokers may be very useful Go-betweens in Trade; but, perhaps, they can seldom be made use of with propriety in Agriculture. The MINUTES of the 4th APRIL, and 4th DECEMBER 1775, shew the impropriety of employing a Country Salesman to *buy-in* cattle: the Author has lately had a stronger instance of the unfitnes of employing a Smithfield Salesman to sell them out again*.

A *menial* Market-man, therefore, seems necessary to the Scientific Farmer: He can haggle, drink, and wrangle in character; yet implicit confidence must not be put in a *Servant*; and whether in the Field, the Farm-yard, or the Market, he still should be under the eye of his Master.

* The circumstance is this: An Ox which he valued at *Fifteen Guineas*, and for which he had actually refused *Fifteen Pounds*, he sent to Smithfield (among four or five Barreners which had been fatted in the Salt Marshes) and to his great surprize received an account from the Salesman of no more than *Eleven Pounds Ten Shillings!*

The Writer does not mean to call the Smithfield Salesmen a pack of Scoundrels, or to say that they will sell at one price, and render an account at another; but in duty to his unexperienced Readers around the Metropolis, he will deliver as his opinion, that some of them at least will favour a Butcher when they are selling for a *chance* Customer, in order that they may favour in turn their more *constant* Employers.

MISCELLANEOUS

MISCELLANEOUS ARTICLES.

BESIDES the CONNECTED SYSTEM, there are various

APPENDAGES OF AGRICULTURE.

To be an *Adept* in the SCIENCE OF NATURISION, the SCIENTIST should be acquainted with the *Rudiments*, at least, of NATURAL PHILOSOPHY, particularly with the PHILOSOPHY OF THE WEATHER. He should likewise have a knowledge of NATURAL HISTORY. He ought to be master of FOSSIOLOGY, so far as it relates to *Soils*; and of CHEMISTRY, as it appertains to *Manures*. He ought to be intimately acquainted with BOTANY, and the VEGETABLE ECONOMY; as also with ZOOGRAPHY, and the ANIMAL ECONOMY; with a competent knowledge of the THEORY and PRACTICE OF FARRIERY. Nor should he be unacquainted with MORAL PHILOSOPHY, to assist him in the management of *Servants*: nor with MECHANICS, and the Theory of INVENTION, to help him in the construction of his *Implements*. SURVEYING, too, would assist him in the *Division* and *Classing* of his Farm; as an adequate idea of ACCOUNTANTSHIP would in the *Management* of it, &c.

The APPENDAGES hereafter enumerated are such as have occurred to the Author's practice; and are here inserted with no other *precedency* than that which is given by the *Dates* of the *first References*.

HAZARD OF FARMING.
FARRIERY.
VEGETABLE ECONOMY.
PUBLIC AGRICULTURE.
INVENTION.

AGRICULTURAL KNOWLEDGE.
WORKING ON SUNDAYS.
RENT AND TAXES.
ACCOUNTING.

Besides the above classes, there are two or three

MISCELLANEOUS MINUTES.

1775. Oct. 30. On Fire in chimneys *.
 1776. Sept. 9. On Hunting.
 1777. July 15. On the Prices of Produce ; and, on the Profession
 of the Agriculturist.
-

HAZARD OF FARMING.

NEW as this Article may be to WRITTEN AGRICULTURE, it has been known too long to PRACTICAL FARMERS. The THEORIST who is desirous to be convinced of its *reality*, may depend on the authenticity of the MINUTES here referred to. Should he still doubt, he may himself become PRACTITIONER.

1774. Aug. 29. A Cow died of the Red-water.
 1775. April 10. Two Horses thrown upon harrows.
 13. One of them died.

* The Writer has already made an apology for inserting the MINUTE here referred to, which apology he means here to do away, and offer one which is much stronger. Altho' a Fire in the Chimney of a *tiled* house situated among other *tiled* houses, may be in a great measure inoffensive ; a Fire in the Chimney of a *thatched* house situated amidst other *thatched* buildings, and adjoining to a *Stack-yard*, may in dry weather be very fatal. In this light, therefore, the MINUTE is peculiarly Agricultural.

1775.

1775. Aug. 17. An Ox died of sufflation.
 Sept. 18. Sundry instances of damage by trespass.
 Oct. 1. Several Sheep worried.
 10. Barley damaged, and Clover spoilt by the weather.
 31. Two Hogs hung in couples thro' carelessness.
 Nov. 10. An Ox died of a strain.
 Dec. 4. An enumeration of casualties, with lessons taken from them.
1776. Jan. 16. An Ox died of a scouring.
 March 11. A crop of Tares spoilt by the weather.
1777. June 10. A Cow killed by being turned among strange Cows.
 —. Another killed by injudicious flinging.
 —. Two Pigs died of ruptures.
 23. Corn damaged and Hay spoilt by the weather.
 July 25. Further instances of damage by rain and floods.

The Author expects blame from the *Jesuitic* Theorist, for telling tales which blacken the cause of Agriculture. The truth is, the Author was so very attentive to his favourite motto,

TRUTH IS ALWAYS VALUABLE,

that he did not more than once advert to the consequences which may attend the publication of SCIENTIFIC TRUTHS, whatever may be their hue.

But the crime committed, reflections follow of course.—Suppose this Article should fall into the hands of the *sinking* Man, will it induce him to catch at Agriculture as the Twig of Salvation? No.

Suppose

Suppose the fluttering *Speculatist*, should chance to settle on the haggard page, will it invite him to the Field of Agriculture in search of Golden Clods? No. But suppose the NOVITIAL SCIENTIST should peruse it with attention, what impression will he receive? He will be struck with the appearance of an Article, which he had never heard of, in his ideal account of *Profit and Loss*, which account he will find wholly deranged; and a few minutes reflection will point out to him clearly, that the only means of re-adjusting it, will be by a deductory transfer from *Rent and Taxes*. Lastly, Suppose this fable list should fortunately catch the eye of the LANDED GENTLEMAN, will it not assist in effacing those false ideas which he has recently formed of the value of his land? Will it not make him a happier Landlord, by increasing his good opinion of the industry of his Tenants? Nay, may it not prevent an intended Rise of Rent, which would at once have brought ruin on the Tenant, with shame and disgrace on his Landlord? The Author hopes and trusts it may!

FARRIERY

F A R R I E R Y.

TO the PRACTICE of FARRIERY the Author pleads ignorant: and he has always thought it safer to trust to *Practice without Theory*, than to *Theory without Practice*.

The following references are principally to MINUTES on SUFFLATION and the FLUX; which are, indeed, the only disorders that have engaged the Writer's particular attention.

1774. Aug. 29. The state of a Cow which died of the Red-water.
1775. Oct. 29. Sufflation cured by salt and water.
- Nov. 10. The state of an Ox which died of a strain and scouring.
- Dec. 4. Do not depend implicitly on the Farrier's carefulness.
17. Perhaps drench working-cattle with salt and water.
1776. Jan. 16. Sufflation fully treated on.
30. On the proper length of a Cattle-rammer.
- Feb. 27. Sufflation again cured by salt and water.
1777. Feb. 21. And again; with the additional assistance of the Cattle-rammer.
- June 10. It is dangerous to sling a Cow heavy in Calf.

VEGETABLE-ECONOMY.

WHAT a field is this for philosophical disquisition! or rather an extensive wild, whose paths, as yet, are few, and these still dark and intricate. The Sun of Philosophy, however, has lately broken thro' its shades, and has already enlightened some of its recently obscure recesses.

The following trifles, which the Writer gleaned out of the MINUTES, while he formed the other Articles of the DIGEST, are offered to the Labourer in this laudable department of Philosophy.

1774. Dec. 5. Ley-Vegetables which stand dry, vegetate earlier than those which stand wet.
1775. Jan. 8. The prolifickness of Vegetables is not hereditary:
 May 16. Perhaps the *motion* of Vegetables is their *exercise*, and gives *strength* and *health*.
 20. White Clover propagates by the joints of the stem as well as by the feed.
 June 10. Dry weather gives *substance* to Vegetables, wet weather adds *sap*.
 2. Perhaps the seed of Vegetables exhausts the Soil more than does their herbage.
 July 7. Vegetables are much sooner *renewed* from a root already formed, than they are first *formed* from the feed.
 13. Perhaps the food of Vegetables is neither principally nitrine, nor dangerously volatile.
 Aug. 21. Plumpness of seed is not necessary to its propagation.
 —. Wheat which vegetated in Autumn would not grow in Spring, yet vegetated the following Autumn.

Aug. 21.

1775. Aug. 21. Potatoo-stumps bleed profusely after cutting the halm.
23. The lower the halm is cut, the more the stumps bleed.
- The quantity of element ejected ; with conjectures on the perspiration of Vegetables.
- Sept. 4. On the quantity of mould necessary to the purposes of vegetation.
- Oct. 14. Wet weather gives Bran, dry weather fills it with Flour.
- Nov. 18. Vegetables exhaust the soil of *that* which dung replenishes it with.
1776. Feb. 2. Perhaps Snow preserves the present Crop, and Frost prepares for the future.
- April 23. Infant Beans may be macerated without material injury.
- Aug. 4. Tho' Vegetables shrink before cutting, they do not lose their substance.
- On the disease of smut in Vegetables.
16. Another instance of the fixidity of Vegetable food.
- It is as necessary to replenish the Corn-Mould as the Manger.
24. Perhaps the generative quality of the Seeds of Vegetables may be destroyed by strong Brine.
- Nov. 17. The Agents of Vegetation are various.

PUBLIC AGRICULTURE.

PUBLIC and PRIVATE Agriculture have generally been *confused* by Agricultural Writers; who, to add dignity to their subject, have mounted the stately Steed of PUBLIC GOOD; and, in their lofty career, have cavalierly trodden under-foot the good of INDIVIDUALS;—who have only been considered as the IMPLEMENTS OF PUBLIC AGRICULTURE.

There are, no doubt, times and situations in which Private Interest ought to give way to Public Welfare; and the Writer of this page has, perhaps, as elevated an idea of a REGULUS, a HAMPDEN, or a WASHINGTON, as the more splendid Authors of Patriotic Agriculture. But the *internal Policy* of the State is a *public* not a *private* concern; and the advancement of it lies with the AGENTS, not with the INDIVIDUALS, of Society.

The Author has hitherto kept his eye on the FARMER; he will now for a moment look up to the STATE; and with the frankness of an ENGLISHMAN, speak his sentiments on PUBLIC AGRICULTURE.

He has already, in the MINUTE of the 10th of JUNE 1777, spoken of OBSERVATORS OF AGRICULTURE; he now means to speak of AGRICULTURAL COLLEGES: not as the Institutions of *particular Societies*, but as the Foundations of SOCIETY AT LARGE.

LEARNING and TASTE are the ORNAMENTS of a State:—but what avail the Rose-trees and Daisies which grow on the Counterscarp, when the Garrison is assailed? NAVIGATION and AGRICULTURE are the BULWARKS of this Country.

A ROYAL ACADEMY OF ARTS has lately been planted near the COURT: would not a Suit of PARLIAMENTARY ACADEMIES OF AGRICULTURE be useful Ornaments of the COUNTRY? The *Pencil* and *Graver* may be play-things for a PRINCE; but would not the

the *Plow*,—the *Rein*,—the *Firelock*,—and *Broad-sword* better grace the hands of MEN?—of ENGLISHMEN?—who *still* remain Lords of the Ocean, and the awful Arbiters of *Europe*.

The Wastes of England are numerous and extensive; and the *Gentleness* of the rising Generation is inauspicious to this Country; at least to its Constitution: would it not be political in the present Race to check the torrents of *Dissipation* and *Effeminacy*, by teaching their Offspring to *think*, and act with *Manliness*, in COLLEGES OF AGRICULTURE, reared in those WASTES which now are a shame on their Country?

The ENGLISH UNIVERSITIES *were* laudable institutions, and have duly received the applause of Mankind. They have aided considerably in the advancement of ENGLISH LITERATURE: the SCIENCES and PROFESSIONS, too, may have been benefited by them: they have had the honour of dictating to a LOCKE and a NEWTON—(so had the Nurseries of these great Men).

But do the Universities of OXFORD and CAMBRIDGE fulfil *any longer* their *primary* intention? Is Learning in England *still* in its infancy? Does it *now* need the leading-strings of ATHENS and ROME?

It may perhaps be said, that the UNIVERSITIES are Seminaries of RELIGION, as well as of SCHOOL PHILOSOPHY and CLASSICAL LEARNING. This is granted: But are *public* Universities any longer the proper Seed-beds, in which to raise *Christian* Ecclesiastics? Can the sentiments of VOLTAIRE, of HELVETIUS, and PRIESTLEY, be excluded the Colleges of Oxford and Cambridge? And how blasphemous in a DEIST to preach up CHRISTIANITY! Should RELIGION be still thought serviceable to MORALITY, let the intended Promoters of it be bred in solitude and caves: not in the open air; lest they catch the infection of a H—ne or a D—d.

That the *primary* intentions of the *present* Universities were highly praise-worthy, and that the present state of Learning is considerably indebted.

indebted to them, seems as evident as that those primary intentions are no longer answered,—that the present system of education, whether in or out of College, is disgraceful to this country,—and that the public Universities of Oxford and Cambridge are *bars to improvements* in USEFUL KNOWLEDGE, *subverters* of that RELIGION they affect to promote, and *promoters* of those VICES they affect to subvert.

HUMAN KNOWLEDGE is *now*, perhaps, at a more elevated pitch than has ever been known to *former* ages: at least to those ages whose existence we *know of*. Is not, therefore, the period arrived, at which Englishmen may venture to think for themselves? Shall they still meanly cling to ANTIQUATED DOGMAS? still tamely halt on the crutches of CUSTOM? or establish their principles on NATURE and REASON?

WHAT ARE THE ESSENTIALS OF THE HAPPINESS OF MANKIND IN THEIR PRESENT STATE?

FOOD.

CLOATHING.

SHELTER.

COMMUNICATION:

HEALTH,

LIBERTY.

MORALITY.

EMBELLISHMENTS.

IS NOT HUMAN HAPPINESS THE TEST OF USEFUL KNOWLEDGE? Ought not the EDUCATION OF INDIVIDUALS to be in some measure subservient to the HAPPINESS OF THE SPECIES? Would not some certain number of Establishments, bearing resemblance to the outlines hereafter-sketcht-out, be ORNAMENTS of the *present*, and SECURITIES of the *ensuing age*? Nay, might they not give permanency to this people as a FREE and GREAT Nation, until the Earth may no longer trace its present orbit?

FOOD.—Let AGRICULTURE be the PRIMARY OBJECT of these Establishments: where *actual Wastes* do not occur, plant them in the *least populous* districts. Admit ALL DEGREES OF MEN, from the
PEASANT

PEASANT to the PRINCE. Let *every* Student handle the PLOW, wield, *alike*, the PRONG and FLAIL, and eat the bread he has aided Nature in producing. Let the PROCESSES OF EXPERIMENTAL AGRICULTURE be considered as their *employment*. Let their *Amusements* be the CHACE and OBSERVATORY EXCURSIONS: their *Studies*, the THEORY and the APPENDAGES of AGRICULTURE *.

CLOATHING.—To furnish the Students with adequate ideas of the MANUFACTURES OF THEIR COUNTRY, and to shew to them the various operations which are necessary to the COMFORTS and EMBELLISHMENTS OF DRESS, let the FLEECE be shorn from the sheep they have kept; let the wool be prepared, the yarn spun, the web wove, dyed and finished under their immediate eye, and with their manual assistance: Let the FLAX, too, which they have raised pass through the various processes of Manufacture: let the HIDE which they have frequently caressed be prepared;—and let the FUR from the game they have pursued, be raised by Manufacture into an honorary ornament. Let every other NECESSARY and DECENCY OF DRESS be prepared, and let each Student wear the vestments he has more or less assisted in manufacturing.

SHELTER.—A turf hut might screen us from the tempest; and, in a state of Nature, might be adequate to human happiness. But, now, the *necessaries* of life are not more essential to our happiness than are its *conveniences*. Besides, the stately mansion adds magnificence to the face of Nature, and to the Nation it is reared among: Public edifices are still greater proofs of national munificence. The great design, too, enlarges the mind of the Architect, and the execution athleticates the body of the labourer.

The THEORY OF ARCHITECTURE, therefore, ought not to be neglected: but let it be such Architecture as may convey MORAL

* See Mis. Art. page 107.

LESSONS to the minds of the Students : let *Ingenuity* give place to SIMPLICITY, and *Elegance* to GREATNESS.

COMMUNICATION.—Let the ENGLISH LANGUAGE form a principal part of their studies : Let it be considered as an INDEPENDANT LANGUAGE, which is still in a STATE OF IMPROVEMENT, and will yet admit of MANY EMBELLISHMENTS : Let it be purely spoken, purely written, carefully improved, and carefully cleansed from the *dregs of classicity* ; which, though not abundant, will ever foul the fountain, and render of course the stream impure : Let RHETORIC, LOGIC, and every Science which may add to the FACILITY and EMBELLISHMENT of COMMUNICATION, be added to this important article of the essentials of human happiness.

HEALTH.—Let ANATOMY and the ANIMAL ECONOMY, PHYSIC and SURGERY be taught in their fullest extent. Let the NONNATURALS be a principal study, and teach the PREVENTION as well as the CURS of DISEASES.

LIBERTY.—Let each COLLEGE be a regular FORTIFICATION, supplied with artillery, arms and ammunition : Let every Student be a Soldier : Let regular guard be kept, and field-days be observed : Let TACTICS and FORTIFICATION be their studies ; RACING, WRESTLING, BOXING, FENCING and SWIMMING be the *amusements* of this department.

But it is not enough for ENGLISHMEN to stem the torrent of FOREIGN INVASION : the INVASIONS OF AMBITION must likewise be repelled. The LAW OF NATURE—the LAW OF NATIONS—the LAWS OF THE COMMUNITY, and the HISTORY OF FALLEN STATES should therefore be inculcated, that BRITONS may descry and check TYRANNY in the BUD.

MORALITY.—Let each COLLEGE be a COURT OF MORAL JUSTICE : Let VIRTUE be borne in triumph, and VICE punished without reluctance : Let ETHICS be taught in their fullest extent ; and let this leading truth be inculcated,

“ On

“On LIBERTY *without* LICENTIOUSNESS, and SUBORDINATION
 “*without* PASSIVE OBEDIENCE, rests the Welfare of Communities, and
 “the Happiness of Individuals: RESIGNATION is due to
 “PROVIDENCE,---AND TO PROVIDENCE ALONE.”

That TRUTH may be traced with precision, let the MATHEMATICS be taught: Let ASTRONOMY, COSMOGRAPHY, and the MINUTIÆ OF CREATION be disclosed, that GOD may be evinced by the RECORDS OF NATURE.

EMBELLISHMENTS,---When *Politeness* pervades even the Cottages of EUROPE; and when *Grimace* and *Punctilio* fill the place of GOOD-BREEDING, exclude not the *Graces* from these TEMPLES OF MANHOOD: Let the LAWS OF GOOD-BREEDING be taught as a SCIENCE: Let the social Circle, the Ball-Room and the Theatre add the *technical Graces of Politeness*: not the finical finesse of a C---d; but that MANLY COMPLACENCY,---that SIMPLICITY OF MANNER,---that FRANKNESS OF ADDRESS, spontaneously flowing from a LIBERALITY OF SENTIMENT, which elevates the Man above the level of his Species.

GENERALLY---Let AGRICULTURE be the BASES of these Establishments: Let its PROCESSES and IMPROVEMENT be considered as the *daily Care* of the PROFESSOR, and the *Employment* of the STUDENT; to whom the *other ARTS AND SCIENCES* may serve as *relaxations*.

Let EXPERIMENTS and OBSERVATIONS be *carefully made* and *duly registered*; and let a RECIPROCAL COMMUNICATION be kept up between the several COLLEGES.

When an IMPROVEMENT has been discovered, and *deliberately tested*, let it be communicated to the ADJACENT DISTRICTS, and let the DISCOVERER be honoured with a REWARD proportioned to its UTILITY.

Let the SEED-TIMES and HARVEST be announced with solemnity, and closed with rejoicings. Let the WINTER-SOLSTICE be a *Festival*;

the VERNAL EQUINOX a *Day of Mirth*: The SUMMER SOLSTICE a *Libation*; the AUTUMNAL EQUINOX a *Day of Gratitude*.

Let the AMUSEMENTS of those MIRTH-DAYS be *athletic* and *exhilarating*: But let EBRIETY be disgraceful, as the BANE OF SOCIALITY; and GAMING be reprobated, as the PANDER OF DEPRAVITY, and the DISHONOUR OF RATIONALITY.

Thus, the Author hopes he has obviated every objection that can be raised against him as an ADVOCATE for PRIVATE, and a NEGLECTER of PUBLIC AGRICULTURE; but he here repeats, that the advancement of the latter lies with the AGENTS, not with the INDIVIDUALS of SOCIETY.

As to his DELINEATION, he expects not to have it approved by the CUSTOMISTS IN EDUCATION: he hopes, however, that MEN WHO THINK FOR THEMSELVES, will trace it a second time before they condemn it.

MINUTES. incident to PUBLIC AGRICULTURE.

1775. Feb. 24. Perhaps the working of cattle is political in the Legislature, and patriotic in an Individual.
1776. June 6. It is impolitic to feed Servants at their Master's expence.
- July 10. Would it not be political to lessen the number of sparrows?
- Nov. 16. Cattle may be worked until ten or twelve years old, without injury to their beef.
1777. Jan. 19. How much more political to use Oxen than Horses as Beasts of Labour!

And yet sanguine as the Author is in the cause of CATTLE, he is aware that the working of them will not become *general*, until the Practice be promoted by LEGISLATIVE AUTHORITY.

The

The Writer is not less averse to RESTRAINTS, than are the most tenacious of his Countrymen. But what are *Laws* in general but *Restraints*? Laws are necessary; therefore Restraints are necessary; and consequently judicious Restraints are good Laws.

HORSES are the principal competitors of CATTLE, as Beasts of Labour; and a *restraint on the increase of Horses* would of course promote the working of Cattle. How are Horses increased in England? Not by *importation*, but by *breeding*: and perhaps a moderate TAX ON THE BREEDING OF HORSES would be the most salutary means of ENCOURAGING THE WORKING OF CATTLE, and be the most effectual method of LOWERING THE PRICE OF HUMAN FOOD.

I N V E N T I O N .

PERHAPS a natural genius is not more necessary to a useful Inventor, than is the ART OF INVENTION.

Before the Author commenced Contriver of Implements, he digested his ideas on the Art of Invention. The Analysis, however, he found difficult, and the result is not at present sufficiently scientific for the Public Eye: he will therefore, here, only refer to such MINUTES as may throw more or less light on this abstruse Art.

1775. Mar. 24. What a keen-eyed Critic is Practice!

28. Perseverance perfects both the Art and the Artift.

April 4. It is dangerous to generalise ideas hastily in matters of Invention.

1775. April 14. Perhaps never swerve far from *original ideas* before they be tested.
20. Miscarriages may sometimes lead to useful Inventions.
29. Things uselefs in themselves may lead to things useful, when excited by necessity.
- May 13. The best mode of using is sometimes more difficult to ascertain, than the best mode of construction.
- The Ufer is more likely to find out this than the Inventor.
30. Another miscarriage by generalization:
- July 4. And another.
29. Self-attention is necessary to the Maturation of Inventions.
- Aug. 24. Simplicity is the test of Agricultural Implements.
-

AGRICULTURAL KNOWLEDGE.

THE SOURCES of AGRICULTURAL KNOWLEDGE are various: By the PRIVATE AGRICULTURIST, however, they are principally divisible into SELF-EXPERIENCE and the EXPERIENCE OF OTHERS.

SELF-EXPERIENCE is gained by ANALYSIS, by actual EXPERIMENT, or by actual OBSERVATION; either on Self-management, or on the Management of others.

The EXPERIENCE OF OTHERS may be acquired from BOOKS, or by PAROLE.

The

The following are references to such MINUTES as appertain to the acquisition of AGRICULTURAL KNOWLEDGE.

1775. Mar. 25. It is dangerous to adopt practices on the sole authority of Custom.
 May 13. An instance of the Utility of registering Observations.
 Oct. 10. Books should be read with caution.
1776. June 20. Useful knowledge cannot be too strongly impressed on the memory.
 July 18. Observations on the Utility of Minuting.
 Oct. 2. Nothing but Analysis can eradicate Prejudice.
 Nov. 17. Reflections on Experimenting.
 —. A scientific Method adopted.
 —. Further Observations on Experimenting.
1777. April 25. No man can be a Farmer without Self-application.
 June 10. Observations on Touring.
 —. A plan for acquiring the present State and Practice of English Agriculture proposed.

From the *slow* progress which AGRICULTURAL KNOWLEDGE has heretofore made under the patronage of the *illiterate*, it seems but reasonable to infer, that *Letters* may be made usefully subservient to its advancement. Besides, memory to some is treacherous; it is fallible in all; and perhaps it is not in any man equal to the retainment of the Knowledge requisite to a perfect practice of Agriculture. And the *Pen* seems not less necessary to FARMING than to PHYSIC, PHILOSOPHY, or any other *abstruse* ART OF SCIENCE.

Lest an incongruity of sentiment should seem to escape the Author with respect to WRITTEN AGRICULTURE, he here begs leave to explain himself.

It

It is true, he is *writing a Book*; in which it is also true, he has more than once *laughed at Books*; and he is now absolutely recommending *written Agriculture*.

He *writes a Book to put the unexperienced on their guard in reading Books*. He *contemns Books*, because there are too many *Books on Agriculture* which are *contemptible*. And when he recommends WRITTEN AGRICULTURE, he means such only as results immediately from DELIBERATE ANALYSIS, ACCURATE EXPERIMENTS, and WELL-DIGESTED OBSERVATIONS.

WORKING ON SUNDAYS.

THE Author did not commence Farming with a *premeditated* intent on Sabbath-breaking: He reveres the LAWS OF MEN, whether they are Religious, or *professedly* Political, when the LAWS OF MEN are founded on the LAW OF NATURE: Nay, he can allow for the misconceptions of Human frailty, and venerate the *inoffensive* LAW OF CUSTOM, tho' established in ERROR. But when the LAW OF MAN is evidently subversive of the LAW OF GOD, what unprejudiced man can hesitate to condemn it?—at least in his own mind.

Nor did the Writer begin the practice of Working on Sundays *precipitately*; but was deliberately convinced of its propriety, by a series of circumstances, and a long train of reasoning.

The *first year*, he saw his Hay lose its essence, and his Corn its wholesomeness, with passive obedience to the Laws and Religion of his Country.

The *second year*, perceiving more evidently the mischievousness and absurdity of a Custom which counter-acts the bounteous intentions

intentions of Providence, he began to reflect on the consequences which would result from a non-compliance; and lifted, particularly, into the Sabbath-day-employment of his weekly Servants.

One, he found digging in his garden:—another, quarrelling with his neighbour:—a third, gambling:—a fourth, bl—g 'himself and blaspheming his Maker, by way of amusing the hour of indolence: the rest at the Ale-house, squandering those wages which ought to have administered comfort to themselves, their Wives, and their Children, thro' the ensuing week.

The wane of the Harvest 1775 was uncommonly precarious, and the impropriety (not to say the impioufness) of neglecting any opportunity which might preserve the gifts of Nature from actual waste, was painted in such striking colours, that the Author no longer hesitated to listen to the dictates of NATURE, REASON, and COMMON-SENSE.

See the MINUTES of the 11th SEPT. and 8th OCT. 1775.

The more the Author practised the WORKING ON SUNDAYS in HAY-TIME and HARVEST, the more clearly he saw its PROPRIETY: He eagerly wished to see it the *common Practice* of this Country; and was ambitious of setting the PATRIOTIC EXAMPLE.

His Patriotism, however, was not seen so clearly by his Neighbours as by himself; and he incurred the censure of many, whose good opinion he wished not to have forfeited.

The circumstance which gave the greatest offence, happened *since* the close of the foregoing MINUTES; the Author, nevertheless, in support of his conduct, will here insert, tho' out of form, Abstracts of a Series of MINUTES on WORKING ON SUNDAYS, made during the backward Hay-time, and the Harvest of 1777.

SUNDAY,

● ● ● ● ●

SUNDAY, 3. AUGUST, 1777.

“ Last Sunday, the Meadow-hay was in swath, and might *then* have been cocked: no opportunity of Cocking has *since* occurred, and it is *now* yellow and almost rotten. It is true, I was sacrilegious enough to turn some which was then spoiling; but the Men *appeared* to think it wrong, and to-day I did not dare to ask their assistance.

“ Tho’ it has been a heavenly day, not a man was to be found, even to uncover the stacks.

TUESDAY, 5. AUG. 1777.

“ It may be very good policy to have days of Relaxation and Sociability; but surely these days ought not to be so *bold* as to interfere with the *sacred* Laws of Nature: it can never be good policy, in the Members of any State, to squander wantonly the means of their own preservation.

(See the 3d.) “ Had the Hay mentioned been then shook into Cocklits, it would have been ready to *carry yesterday*; but it was obliged to be *made yesterday*, and was *caught* in the Rain of to-day!

SUNDAY, 7th SEPT. 1777.

“ The last week has been very slack Harvest-weather; except yesterday, which was very fine.

“ We had this morning about thirty loads of Wheat,—thirty loads of Oats,—fifteen loads of Barley,—and twenty acres of second cut of Clover down; and most of them fit to be carried.

“ The Month of September is very uncertain Harvest-weather: The days grow short;—the dews remain long on the ground; the fogs frequently hang on till noon; and, until past the middle of the month,

month, the Weather is generally squally and uncertain; tho' the latter end is as generally fine: this, at least, was the case in the September of 1775 and 1776*.

* The following is a literal Transcript from the DIARY, described under the Article ACCOUNTING.

1775.			1776.		
<i>Morning.</i>	<i>Noon.</i>	<i>Evening.</i>	<i>Forenoon.</i>	<i>Afternoon.</i>	<i>Night.</i>
1. Fine,	fine,	rainy.	1. Blank,	blank,	heavy rain.
2. Showery,	showery,	fine.	2. Heavy showers,	fine,	dry.
3. Rainy,	rainy,	fine.	3. Showery,	cloudy,	dry.
4. Fine,	fine,	fine.	4. Fine,	v. h. squall,	dry.
5. Rain,	fine,	fine.	5. Showers and	gleams,	dry.
6. Cloudy,	fine,	fine.	6. Foggy,	fine,	dry.
7. Tempestuous,	fine,	fine.	7. Fine,	threatening	blank.
8. Cloudy,	rain,	fine.	8. Blank	blank,	dry.
9. Cloudy,	showers,	fine.	9. Very fine,	very fine,	dry.
10. Rain,	rain,	rain.	10. Foggy,	cloudy,	dry.
11. Delugy,	showery,	fine.	11. Foggy,	cloudy,	dry.
12. Fine,	fine,	cloudy.	12. Foggy,	cloudy,	dry.
13. Rainy,	fine,	rainy.	13. Foggy,	fine,	dry.
14. Tempestuous,	fine,	showery.	14. Foggy,	very fine,	dry.
15. Rain,	rain,	rain!	15. Foggy,	very rainy	showers.
16. Rain,	fine,	fine.	16. Foggy,	fine,	dry.
17. Fine,	fine,	fine.	17. Foggy,	rainy,	dry.
18. Drizzly,	rainy,	rain!	18. Foggy,	rainy,	dry.
19. Drizzly,	drizzly,	drizzly!	19. Fine,	showery,	white frost.
20. Cloudy,	fine,	fine.	20. Fine,	showery,	dry.
21. Showery,	fine,	fine.	21. Fine,	fine,	frosty.
22. Fine,	fine,	very fine!	22. Fine,	fine,	frosty.
23. Fine,	fine,	fine.	23. Bleak,	bleak,	frosty.
24. Blank,	blank,	blank.	24. Fine,	fine,	dry.
25. Fine,	fine,	fine.	25. Mild,	mild,	rainy.
26. Fine,	fine,	fine.	26. Fine,	showers,	dry.
27. Cloudy,	fine,	fine.	27. Lovely,	lovely!	dry,---rain.
28. Cloudy,	cloudy,	cloudy.	28. Drizzly,	fine,	fine.
29. Fine,	fine,	cloudy.	29. Fine,	fine,	dry.
30. Fine,	fine,	fine.	30. Fine,	fine,	fine.

What provident Man would *depend* on the Weather in the fore part of September?

K k k

“ Last

“ Last night the sun set well, and there was every other appearance of a fine day succeeding. I promised every man who would work, in case of a fine day, two shillings, and as much roast-beef and plum-pudding as he would eat, with as much ale as it might be fit for him to drink.

“ To-day (which has been transcendantly fine) nine men,—three boys,—three teams,—and four carriages, have made a very handsome Wheat-Stack of eighteen harvest loads, and have put two or three loads of clover into stack, in exceeding-high order. The labourers have behaved themselves like *men*, and are gone home well-satisfied with breakfast, dinner, and supper, and with each half-a-crown in his pocket.

“ I sincerely thank Providence for such a favourable opportunity of setting so *patriotic* an example to this country; and my vanity is still more flattered when I reflect, that not one *sober** man has, yet, condemned my conduct: But I am not so sanguine as to think that no sober man will condemn me,—if an Enthusiast can be called sober. But I am confident that every sober man of sense must applaud me in his own mind: for it is not vague reasoning to say, that some hundreds—some thousands of quarters of corn will be spoiled, or damaged, because Farmers in general have not embraced this heaven-born day, to secure their crops from the uncertainty of the weather

* Two drunken fellows d——d and bl——d the eyes and limbs of the Stackers, because they did not go to church; and other two, who could scarcely stand, stopped one of the teams, and insisted upon unloading the waggon in the road; because as how it was very wicked to carry Wheat on a Sunday! They were about to fall upon the Carter, when two gentlemen came up, and persuaded them that they were mistaken, for it was really Monday: they, nevertheless, went off big with the thoughts of their Christian-like effort!

The whole neighbourhood seems to be alarmed! Numbers came on the Common to peep; and several, unwilling to believe their own eyes, went into the Stack-yard to touch the sheaves.

at

at this season of the year: the quantity of *sound* corn will be of course lessened; the price, in consequence, augmented*.

WEDNESDAY, 10. SEPT. 1777.

“ Strange! the whole Country is agitated, and men in their sober senses think it was not quite right. Let me take a retrospect—look into my motives; and see if I have *really* offended Nature, Reason, and Common-Sense.

“ Was not SELF-INTEREST the first mover?—It could not: there was a *certain loss* of at least a guinea, without any *certain gain* †; a *chance* of gain, indeed, might influence; but this *was not* my prime motive.

“ Was a CONTEMPT OF RELIGION the stimulus?—No: I revere every Religion which teaches Morality, and instils a grateful regard of that bountiful Power to which we owe our existence.

“ And, on the maturest reflection, I am confident beyond a doubt, PHILANTHROPY was my leading motive; My leading principle was the increase of the quantity, and the decrease of the price of *wholesome* bread.

“ But what mighty difference will one stack make in the assize of bread? Ridiculous! It is not meant that the saving of one stack, nor twenty stacks, would affect it sensibly; but, were it the universal practice of every Farmer, in every year, to work on Sundays in July, August, and the beginning of September, who will deny that the Community would be benefited? And, I declare,—nay, I

* It is true, the ensuing week *happened* to prove fine; but does this affect the principle of action? Might not a week of incessant rain have *happened*? Is any man vain enough to pretend to foreknow the weather *three* days together in the fore part of September? And, on the 6. Sept. the Writer had *seven* days work to do; for, notwithstanding the fineness of the ensuing week, it had been dark two hours on Saturday night before the teams brought the tidings of harvest home.

† The harvest month being up (see a note under 2. SEP. '76), the same men would have done the same work on Monday for 20d. a-day, — *wages only*.

K k k 2

will

will swear by the sacred laws of Nature, or by the holy tenets of any Religion now existing, or which ever did exist, that it was the EXAMPLE I principally meant to hold out *. And although it has met with the censure of *Some*, I hope in that Providence which I trust led me to the act, that it will meet with the approbation of the *Many*, and that WORKING ON SUNDAYS in SEED-TIMES and HARVEST will be, sooner or later, the *universally applauded* practice of ENGLISH AGRICULTURISTS †.

* * * *

The Author would not have cumbered his work with these interloping Minutes, nor would he have published his sentiments so freely, had he not been called upon by that awful Tribunal, which every Social Being ought to hold most sacred:—for *the man who contemns THE GOOD OPINION OF OTHERS, is, in himself, most probably contemptible*:—And although he may differ with others in sentiment, he hopes, as a Man and as a Member of Society, to be most-esteemed by those with whom he is best-acquainted.

R E N T A N D T A X E S .

IN a state of NATURE, the surface of the Earth is common:—Land-marks are unknown.

In a state of PROPERTY, each Land-owner cultivates his own share, or lends it conditionally to another to cultivate.

ENGLAND has long been in a state of Property, and the Rental Value of Land has long been ascertained.

The RENT OF LAND will ever be proportionate to the

* The Writer has already acknowledged, that self-interest bore a share in the business of this unhallowed day: it would, indeed, be mere philanthropic bombast to say, that self-interest was neuter when self-emolument was concerned: But he again declares, had not self-interest been seconded by CONSCIOUS RIGHT, she might, *alone*, have sued in vain.

† Since writing the above, the Author has been informed that an old law exists (mentioned by Dugdale), which tolerates Husbandmen in Working on Sundays in harvest: and in proof thereof a Gentleman in the North has uniformly carried one load every year on a Sunday.

PRICES OF ITS PRODUCE: for, if the prices of produce rise, the Tenant becomes *too low-rented*: the Landlord perceives this, and raises him.—The Rise being universal, the Prices of Produce are *fixed* at the advanced rates; for the Farmer must keep up his prices, or forfeit his Farm: *therefore—the Prices of Produce will ever keep pace with the Rent of Land*; for, reverse the proposition, and suppose that Farmers in general are *too high-rented*, the Land-owners must lower their rents, or the Farmers must raise the Prices of Produce, or consign themselves to ruin.—The Landlords (who have taken another stride towards the Temple of Luxury) will not recede; and to suppose that the whole body of Farmers would rather bring utter shame and disgrace on themselves and their families, than use every means in their power to raise the Prices of their Produce, would be weakness in the extreme; and of course, in a few years, *if not restrained by Law*, the Rate of Produce must necessarily be raised to the rate of Rent.

The **PRICES OF LABOUR** must ever be proportionate to the **PRICES OF PROVISIONS**; for the Labourer, like the Farmer, will, *if not restrained by Law*, consult the means of his own immediate preservation, let the consequence to the Community be what it may.

The **PRICES OF MANUFACTURES** must ever keep pace with the **PRICES OF LABOUR**. This, in a general light, is too obvious to need an argumentative proof.

The **EXPORTATION OF MANUFACTURES** is more or less influenced by their **PRICES**; for suppose any particular article to be the Manufacture of two distinct Countries, and that a third Country has a demand for this article, will not this third Country apply to that Market at which it can be supplied the cheapest?

ENGLAND owes her present *splendour* to her **MANUFACTURES**: and, considering Manufactures as the promoters of **NAVIGATION**, to Manufactures in some measure she owes her *Strength*.

Is it then for **ENGLISHMEN** to preach up a **RISE OF RENT**! For **ENGLISHMEN** to blast the strength and splendour of **GREAT BRITAIN**! May Shame confound such Preachers, and Oblivion, without delay, swallow up, at once, their Folly, and their Sermons!

By

By the PRIVATE AGRICULTURIST the RENT of LAND must be viewed in a different light.

LANDLORDS and TENANTS must be considered as two distinct Bodies of Men; holding interests distinct and opposite.

In a State of MONEY, SELF-INTEREST is SELF-PRESERVATION; for Money is the Means of Subsistence: and consequently Money is the Goal of Landlord and Tenant.

If a Land-owner *sell* his Estate, he sells it to the Man who offers the most Money; and on the same principle, if he *lett* his Estate, he lets it to the Man who will give the most Rent*.

If a Tenant want a Farm, he is actuated by the self-same principle: he looks around the Country, and pitches upon the Farm he can rent the cheapest.

Therefore—every Farm, which is lett publicly, on a fresh lease, to a fresh Tenant, is lett precisely, or nearly, at its Rental Value; that is, nearly in proportion to the present or recent Prices of Produce.

But the Prices of Produce are fluctuating; and although in England the rise has been pretty regular, if taken Century after Century; yet viewed year after year, an irregular rise and fall would be perceived: this, indeed, must necessarily be the case; for altho' the Prices of Land and the Prices of its Produce may never lose sight of each other, yet the Prices of the current Year depend on a variety of circumstances, which circumstances may not be annual, but may last thro' a series of years. *Therefore—the Tenant who leases a Farm after a fall, or during a long stagnation of Prices, rents it to advantage; while he who takes one during or immediately after a rapid rise, most probably rents it too dear.*

* There are, no doubt, some *generous* exceptions to this general rule. There a'ways have been, and still may be, some few Land-holders who have suffered, and still suffer their hereditary Tenants to sit at ease on their patrimonial Rents: But the Landlord who wants money (and who will deny that Landlords *in general* do not want Money?) lets his Land to the best advantage; and every new Lease lett by such a Man, is lett at, or nearly at, the rate of the recent Prices of Produce.

Within

Within the last five-and-twenty years, the Prices of Produce have had a rapid rise in England, and the Farmers who had long leases unexpired have been acquiring Wealth *; the consequence of which is a rapid rise of Rent.

In the year 1774 (and for some years preceding), Wheat was sold for 60 s. a-quarter, more or less; and Farms, in general, have since then been lett at that all-ruining rate: notwithstanding Wheat is now, and has almost ever since been, under 50 s. a quarter.

What must be the consequence? One of these: the Landlord must reduce his Rent to under 50 s. a-quarter; or the Tenant must re-advance the Prices of his Wheat to 60 s. a-quarter; or, he must annually sink a part of his capital.

Some Landlords may, but Landlords in general will not reduce their Lease-rents. The Farmer cannot, as yet, re-advance his Produce (for many Leases, much cheaper than his, are still unexpired: Besides, the Act to regulate the Importation and Exportation of Corn, which took place the 1st of January 1774, and which fixes the Importation Price at 48 s. a-quarter, is another material hindrance to the re-advancement of Wheat to 60s. a-quarter.) And the Writer will venture to predict, that the Farmer who has taken a long Lease of a large Farm, within the last three years, the letting of which has been publicly known, has laid the foundation of his own and his family's ruin.

The MINUTE of the 2d Nov. 1775, shews clearly that the Farmer's Profit or Loss rests, principally, on Rent and Taxes;

* But, perhaps, not so abundantly as is generally imagined: some few, no doubt, have amassed fortunes; but more generally this has been the state of the case: 'The Farmer has had a *good thing*; that is, he has been lucky enough to take a Farm clandestinely; or has had the good fortune to take one when the Prices of Produce have been low; added to this, he has worked hard, lived penuriously, and when Luck has smiled upon him, has *put-out* Forty or Fifty Pounds a-year. At the expiration of twenty or thirty years, he finds himself worth the enormous Sum of a Thousand Pounds! He buys himself a decent Suit—his Wife a Riding-habit, and each of them a Nag to ride to Market on; and thus gets the name of being worth a *World of Money*.

but

but a Summer-fallow being included in that Calculation, the Writer here gives one (he could give fifty) wherein a Summer-fallow is not concerned.

The Entry in his JOURNAL stands thus :

LOWLANDS TO SUNDRIES :

For 10 $\frac{1}{2}$ Acres of Oats.

To LABOUR ; for Plowing (once), Harrowing, and Sowing ; taking 16 Teams and 1 $\frac{1}{2}$ Man, at 8 s. and 1 s. 8 d.	£.	s.	d.
	6	2	6
To OATS 1775 ; for 41 $\frac{1}{2}$ Bushels of O. and A. at 19s.	4	18	7
To RENT and TAXES 1776 ; (together about 30s.)	15	15	—
	<hr/>		
	£.	26	16 1

These Fields produced 16 $\frac{1}{2}$ Jags of Oats ; which being stacked with other Oats, the exact quantity of Grain cannot be ascertained : suppose they yielded 3 Quarters to the Jag (the Straw being long they could not yield more), which at 19 s. a Quarter, is

£. 47 0 6

Deduct for Exhaustion of Vegetable-food

(See 18th Nov. 1775.)

16 10 0

£. 30 10 6

These Fields were in exceedingly fine Tilth ; they received the preceding year, a Fallow almost equal to a Summer-fallow ; to which this Crop of Oats is indebted at least one Stirring and one Harrowing ; which, supposing that they took nine Teams, at 8 s. is

£. 3 12 0

There now remains a nett Produce * of

£. 26 18 6

And, of course, a nett *profit* on the 10 $\frac{1}{2}$ Acres, of £. 0 2 5 †.

* Supposing the Straw to pay for Weeding, Mowing, Cocking, Raking, Carrying, Stacking, Thatching, Houfeing, Thrashing, Winnowing, and carrying the Corn to Market, which it might do, and somewhat more.

† A poor Pittance towards Houfe-keeping.

The

The Rent of these Fields was about 22 s. an acre •—the Taxes (exclusive of Land Tax) about 3s. and the Tithe, Fencing, &c. about 5s. an acre.

Suppose the Rent had been 5 s. an acre, the Rent and Taxes, instead of 15 l. 15 s. would have been 5 l. 12 s. 10 d. and consequently there would have been a *profit* on the 10½ acres of 10 l. 4 s. 7 d.

Suppose the Rent had been 40 s. an acre; the Rent and Taxes would have been 26 l. 15 s. 6 d. instead of 15 l. 15 s.; and consequently there would have been a *loss* of 12 l. 12 s. 11 d.

Consequently the Farmer of 1000 Acres at 5 s. would have been *gaining* about 1000 l. a-year; while the Farmer at 40 s. would have been *losing* 1250 l. a-year.

It would be as superfluous to give any further example, as it is injurious to intimate that the Farmer's interest does not principally depend on his Rent.

There are five things which considerably influence the Farmer's interests : RENT,—THE PRICES OF MANURES,—MANAGEMENT,—PRICES OF LABOUR,—PRICES OF PRODUCE,—LUCK. The two latter are adventitious; the three former are more intrinsic.

RENT.—Although a Shilling an Acre may not be seen in the *Produce* of a Farm; it makes a very conspicuous Figure in the *Profits* of a Farm. And although there may be some petty *Cottagers* in the North of England (and perhaps in every quarter of the Island), who, by an over-indulgence of their Landlords, are rendered indolent by being too low-rented, is this a *general* malady among *Farmers*? Are the Farmers of England such jades to their own interest as to need the spur! Whoever is weak enough to believe this, is weak indeed; or knows but very little of English Farmers. And is a Man who can get a few Shillings before-hand, less likely to serve himself and the Community, than the slave who is ever plodding in

* The rack-rent Value of which is 15 s. which Rent the Writer offered; but it was refused: he therefore gave up the above-mentioned Division (the property of two or three different Men) last Michaelmas.

poverty? whose Farm is for ever under-stocked, under-dunged, and under-tilled! This may be very good doctrine—very good Farming, in a garret; and whether the Landed Gentlemen feel the force of it or not, who can blame them for listening to it.

MANURE.—The Soil is the Farmer's Cash-book, and every Crop he takes is a draught on his Banker, the amount of which Manure alone can replace.

It is fortunate for the Farmer who can discover any *fossil* Manure on or near his Farm: It is also advantageous, if he can purchase *Dung* at a reasonable rate: But even dung, precious as it is to a Farmer, may be bought too dear: and the prices of Farms have not risen more rapidly of late than the Prices of Dunghills, which (around here at least) have got up to 60 s. a *Quarter*.

MANAGEMENT.—The Author has already said, that the Aboriginal Farmers, *collectively*, are far advanced on the Road of Perfection: But this need not discourage the young Agriculturist; for, taken *separately*, they are not arrived at that desirable Achme. The *Improvements* in Agriculture, however, he apprehends, are rather *numerous* than *great**; and perhaps it requires no small share of attendance and attention to improve *materially* the Management of some *present* Farmers.

The requisites of good Management are **SKILL** and **INDUSTRY**: the last paragraph alludes to the former, the ensuing to the latter.

That the majority of Farmers are an industrious set of people will not—cannot be denied. But that there are many drunken, idle, improvident Farmers, is as true as that there are drunken, idle, improvident Mechanics, Tradesmen, and Merchants; and dissipated, gambling, improvident Men of Fashion. Thus, the Son frequently sinks the few hundreds his Father has scraped together on the identical Farm; which now falls into the hands of a third person; who, at the identical Rent, makes a Farmer's

* The Writer here speaks, *generally*, on lands which have usually been cultivated: not on Bogs, Wastes, &c.; which by draining and culture may, no doubt, receive *very great* improvement.

Fortune upon it: not by his superior SKILL, (for the Son had the skill of his Father) but by his superior INDUSTRY.

Generally.—If there are no *great* improvements to be made in MANAGEMENT; if MANURE cannot be *purchased*, or if the *price* be adequate to its *value*; and if the prices of LABOUR are settled, what can influence the Farmer's interest, *considerably*, RENT excepted? For let him plant, drill, or sow broad-cast, the Soil will throw-out a Crop in proportion to the MANURE and the TILLAGE it has received. There are many *common* Farmers who PLOW DEEP and DUNG WELL, and *therefore* there are many *common* Farmers who are *nearly* at the height of their profession*: But common Farmers get rich or poor in proportion to their Rent; *therefore* on Rent principally rests the Farmer's interest.

The Author has spoken *generally* throughout this Article: there are so many incidents and appendages of Agriculture, that, to treat this subject *minutely*, would require a separate Volume. His sentiments are briefly these: The Farmer's LOSS or GAIN rests principally on his RENT †. The Rents of Lands are at present getting above the rental Value of Lands: and on the rate of Rent depends, in some measure, the welfare of this Island. If he is wrong, he will thank, sincerely, the Man who will set him right.

Before he close this Head, however, he will by way of corroborating almost every argument used in it, give a Sketch of one of those *few* Farmers who have really made a genteel Fortune by Farming; and who farmed on the verge of this Parish.

This *industrious* Man left his Son a Fortune of Ten, Fifteen, or Twenty Thousand Pounds. Suppose Fifteen Thousand Pounds. He held two or three distinct Farms, under separate Leases, on different terms: Suppose he occupied, on a par, 800 acres, at 7s. an acre, during 40 years. This, if not the truth, is sufficiently near it, on which to found the following calculations:

* The Writer means as *private* Agricultors in *England*.

† The Author speaks of Farmers in general: not of the Spendthrift and downright Sloven.

If

If in 40 years he gained 15,000 l. he cleared (setting aside the ideas of interest, and original capital which was but small) 375 l. a-year; besides paying his Rent and Taxes:

800 Acres at 7 s. amount to	£. 280 00 00
Suppose the Tenants Taxes at 3 s. in the Pound,	42 00 00
	£. 322 00 00

His Farms, therefore, produced, independant of *Labour, Manure, Seed, Tithe, PERSONAL EXPENCES, &c.* 697 l. a-year.

Suppose he had paid 14 s. an Acre:

800 Acres at 14 s.	£. 560 00 00
Taxes on 560 l. at 3 s.	84 00 00
	£. 644 00 00

which taken from 697 l. leaves 53 l. his yearly saving; which in 40 years amounts to 2,120 l. the Fortune he would, at 14 s. an acre, have left his Son.

Suppose he had paid 28 s. an Acre:

800 Acres, at 28 s.	£. 1120 00 00
Taxes on 1120 l. at 3 s.	168 00 00
	£. 1288 00 00

which cannot be deducted from 697 l. This, however, may be easily taken from 1288 l. and leave a *loss* of 591 l. a-year! Consequently, had this *industrious* Man, *skilful* as he was, begun with a Capital of even Fifteen or Twenty Thousand Pounds, he must, before the expiration of 40 years, have been reduced to beggary! And yet the Author can assert, from *very* good authority, that a principal part of these 800 Acres is lett at, or *nearly* at, this ruinous Rate of 28 s. an acre! Time alone can shew whether the present Lessors (they are not yet Possessors) will be raised to Riches, or reduced to Beggary*.

* It is true, the Prices of Produce are higher *now* than they were *forty years ago*; but they are not so high *now* as they were *ten years ago*; and the advance on a par bears no proportion to the excessive Rise of Rent.

A C C O U N T I N G .

ACCOUNTANTSHIP is the Oracle of the PRIVATE AGRICULTURIST. A Farmer, it is true, may in a course of years, know, by his *Purse*, whether he gains or loses *in the gross*, by Farming; yet his Purse cannot *particularise* his Loss or Gain on the different departments of Agriculture: REGULAR ACCOUNTS alone can do this.

SIMPLICITY and PERSPICUITY are the Bases of ACCOUNTANTSHIP; and on these the Author endeavoured, at least, to raise *his* Plan of ACCOUNTS; which he will here communicate as briefly as possible.

When he first commenced *his own Bailiff*, he kept a regular Journal (by way of detail) of every petty Transaction; and also an *imperfect* Register of the daily employment of each Man; that, at the week's end, he might ascertain, precisely, his wages. But, finding this double task tedious and complex, he simplified his Plan, by keeping his Journal in a more *explicit* Diary, in the following Manner.

M m m

MARCH

MARCH 1777. | MONDAY 24. | TUESDAY 25. | WEDNESDAY 26:

	dry	dry	dry	dr
The Weather,	Cloudy—very dry.	a Summer's day.		delightful!
The Wind,	S.	S.		S.
	Farm ^s .—dined at—	Farm ^s .—Farm ^s .		Farm ^s .—Writing.
• • •				
Ox-Team,	Doubling A 5.	f.(a) doubling A 5.		b.(b) doubling A 4.
Horse-Teams,	Harrowing B 3.	b. Reversing B 4.		Reversing B 4.
Odd Horses,	Carried Hay to —	Harrowing G 1.		Pulvering (c) G 1.
• • •				
Duffel (<i>Oxen</i>),				
Miles (<i>Horses</i>),				
Rivers (<i>odd Horses</i>),				
Boy Smith (<i>Oxen</i>),				
Boy Miles (<i>Horses</i>),				
Boy Smale (<i>Cows, Hogs</i>),		Cow n ^o . 3. calved.		
• • •				
Bades (<i>Buttler</i>),	Sow ^s . Oats in B 3.	Sow ^s . Oats in G 1.		
Caper,	Gapping.	(odd Horses)		(odd Horses, &c.)
Ratford,	Fenc ^s . B. R.--ll's (d)	Fencing B. R.--ll's.		Fencing B. R.--ll's.
King,	ditto.	ditto.		ditto.
Gregory,	Thrashing Oats.	Thrashing Oats.		Thrashing Oats.
Richardson,	ditto.	ditto.		ditto.
Kinnaby,	Trimm ^g . A 3. A 4.	Gapping.		Trim ^s . A 4.--A 5.

- (a) *Finished* throwing two Five-bout Beds into one: this being intended for a *Ley*.
 (b) *Began*.
 (c) Lightly Rolling, and Re-harrowing.
 (d) Making the Fence between the division B. and Farmer R--ll's Fields.

A C C O U N T I N G.

THURSDAY 27. | FRIDAY 28. | SATURDAY 29. | SUNDAY 30.

dry	colld	colld			
Quite fultry!	As bleak as Xmas!	Snow—cold.	cold and wind.		
S.	N. E.	N. E.	E.		
Farm ^s . Farm ^s .	Farm ^s . Writing.	Writ ^s . Mr—dined	Dined at —		
* * *					
Doubling A 4.	Doubling A 4.	Doubling A 4.			
Reverfing B 4.	Reverfing B 4.	f. Reverfing B 4.			
Carried Hay to—	Harrowing F 2.	Distrib ^s . Bushes.			
* * *		and Harrow ^s . A 5.			
			Week (e)	£.	s. d.
			Ditto.	10	6
			Ditto.	10	6
			Ditto.	10	6
			Ditto.	5	3
			Ditto.	4	3
	Sow, n ^o 1. farrowed.		In-door.		
* * *					
	f. tow ^s . tare-barley.	Sowing Oats in A	In-door.		
Binding Hay, &c.	(odd Horses)	Gapping.	Week.	10	
Fenc ^s . B. R--ll's.	Fenc ^s . B. R--ll's.	Fenc ^s . B. R--ll's.	10s. 6d.		
ditto.	ditto.	ditto.	os. 6d. (f)		
Thrashing Oats.	Thrashing Oats.	Making-up Oats.	See below.		
ditto.	ditto.	ditto.	ditto.		
Cutting Bushes.	Cutting Bushes.	Load ^s . Bushes, &c	Week.	10	
				3	1 0
Gregory and Pr.	for Thrashing.	11½ qrs. of Oats.	at 22d.	1	0 10½
			£. 1. 1s. od.	4	1 10½

(e) The Carters have 6d. extraordinary for their Sunday's attendance.
 (f) These Men work by the Rod, and have not finished their Job; they therefore each of them receive half a Guinea on Account. It is here written in short, that the whole may stand together when they are paid in full.

M m m 2

This

This DIARY is the basis of the other accounts, and serves as an almost-infallible Remembrancer; for every team and every labourer passing under the eye *every evening*, their work of the day must necessarily occur. If a field has been finished plowing or sowing; if wheat has been carried into stack,—winnowed,—or sent to market, &c. &c. a mark or *tick* is *instantly* made over it; that, *at leisure*, it may be carried to its proper head in the CHECK: when it receives an additional mark, or *double tick*.

The CHECK is divided into a *Journal-Part* and a *Ledger-Part*: the former admits the deliveries; the latter, the labour, produce, field, &c. &c. &c. being both of them simplifiers of the JOURNAL and LEDGER, which are kept nearly in the ordinary method of Book-keeping.

The *Journal-Part* of the CHECK is kept thus:

Date.	To, or from whom.	Of what.	How discharged
1777.			
Mar. 24.	Thompson.	1 Load Clover-Hay, 8os.	C. B. 35. (a)
24.	B. 3.	21 Bushels of Oats of P. (b)	Jo. 126. (c)
25.	G. 1.	19½. Bushels of ditto ditto	Jo. 127.
27.	Dixon.	1 Load Meadow Hay, 85s.	Jo. 127.
28.	F. 2.	16 Bushels of Tare Barley	Jo. 128.
Apr. 2.	Jackson.	5 Qrs. of Oats at 2os. 6d.	C. B. 40.
4.	Johnson.	A Calf, 65s. - - -	Jo. 128.

(a) Paid, and entered in the CASH-BOOK, in Folio 35.

(b) Grown in the DIVISION P.

(c) Entered in the JOURNAL, Page 126.

Divisions.

The following is a literal Transcript of the INDEX of the *Ledger-Part of the CHECK.*

Divisions.	Field-Producc.	Yield and Vent.	Miscellaneous.
A.—21.	Wheat, 35.	Wheat, 56, 57.	Manure, 10, 11.
B.—13.	Barley, 41.	Barley, 58, 65.	Calves, 7.
C.—12.	Oats, 43.	Oats, 52.	Store Hogs, 9.
D.—16.	Beans, 38.	Beans, 54.	Fattig Hogs, 6.
F.—5, 40.	Pease, 38.	Pease, 51.	
G.—1.	Tares, 43.	Tares, 49.	
H.—8.	Pea-beans, 45.	Pea-beans, 55.	
I.—8.	Tare-barley, 42.	Tare Barley, 60.	
K.—15.	Meadow, 37.	Meadow Hay, 59.	
L.—11, 39.	Mix-grass, 36.	Mix Hay, 64.	
M.—14.	1st. Cut, 47.	1st Cut, 63.	
N.—19.	2d. Cut, 60.	2d Cut, 66.	
O.—6, 20.		Wheat Straw, 70.	
P.—25, 46.		Stack Wood, 48.	
R.		Bavins, 71.	
S.—18, 28.			
T.			

For the method of keeping the Labour-Account of each **DIVISION**, see a **MINUTE** of the 27. **APRIL 1775**; and for the mode of journalizing it, see the **DIGEST**, page 136.

The **FIELD-PRODUCE** is set-down under its respective head as it is carried, mentioning the *Date*—the *Division*—the *Repository*, and the number of *Field-jags*.

The **YIELD** and **DISPOSAL** are kept on opposite pages, and consequently the quantity of grain, &c. on hand may be readily ascertained.

The **MISCELLANEOUS ARTICLES** are kept as conveniency points out.

The

The ARRANGEMENT and PRODUCE are brought into one view, thus :

1776.

THE ARRANGEMENT.		THE PRODUCE.			
Acres	Of	Field Jags.	Qrs. of Head.	Bs. of Tail.	Loads of Hay or Straw.
53	Wheat (a).	64	109 $\frac{3}{4}$	93	65 $\frac{10}{18}$
4 $\frac{1}{2}$	W. Tares, for Verdage.				
8 $\frac{2}{2}$	Ditto for Hay.	15			
2	Ditto for Seed.	6			
12	Beans (b).	11 $\frac{1}{2}$	28 $\frac{1}{2}$	25	
2 $\frac{1}{2}$	Pea-beans.	4			
1 $\frac{1}{2}$	Peafe.	2 $\frac{1}{2}$			
8	Tare-barley.	12			
24	Oats (c).	35	77 $\frac{1}{2}$	27	
21	Barley (d).	41	79 $\frac{1}{2}$	59	
2	Oat-Herbage.	2			
29	Clover (e) 1st. and 2d. Cuts).	36			
2	Rye-Grafs.	2			
24 $\frac{1}{2}$	Mix-grafs Ley (f).	23			22 $\frac{1}{16}$
21 $\frac{1}{2}$	Meadow (g).	17 $\frac{1}{2}$			18 $\frac{9}{18}$
1 $\frac{3}{4}$	Potatoes.				
1 $\frac{1}{4}$	Cabbages.				
1 $\frac{1}{2}$	Turnips.				
0 $\frac{1}{2}$	Buck-Wheat.	0 $\frac{1}{2}$			
22	Pasture.				
25 $\frac{1}{4}$	Summer-Fallow.				
22	Fences, Roads and Waste.				
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- (a) See the MINUTE of the 13. AUG. 1776.
 (b) After Oats on an old Ley: no dung.
 (c) A few Acres very indifferent.
 (d) Most of the land in good heart and fine tilth.
 (e) A burning foil, and a dry spring.
 (f) A clayey loam in tolerable heart.
 (g) Hay-crops in general short this year.

Although

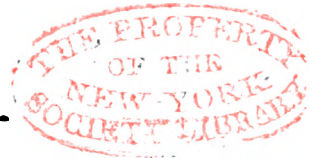
Although it may be difficult for a FARMER to ascertain the neat profit of a crop with that precision which a MERCHANT ascertains the neat proceeds of an Account Sales; yet the AGRICULTOR may come near enough the truth to direct him in the choice of his future plan of management. And, perhaps, generally, the more leisure-hours the SCIENTIST dedicates to ACCOUNTANTSHIP, the sooner he will become a JUDICIOUS AGRICULTURIST.

T H E E N D O F T H E D I G E S T :

T H E

T H E

R E T R O S P E C T .



WHEN a Man first ventures to offer his Sentiments to the PUBLIC, he has much to risk; and consequently every Man who is possessed of ordinary feelings, must be peculiarly anxious for the fate of a *first* Production. Every page and every passage becomes subject to RETROSPECTION: FRIENDS, too, are consulted, and their advice *sometimes* taken. After these precautions, a Man who steps not out of the *beaten Track*, may be ushered into the *presence* of the PUBLIC with some degree of confidence. But the situation of the Man who presumes to tread *his own Path*, travels thro' an inhospitable Region, without Friend or Finger-post to direct him.

Such, in some measure, is the situation of the Author of the preceding Sheets. It is true, he has consulted Friends; but (perhaps to his dispraise be it known) has seldom taken their advice; being determined to stand or fall before the Tribunal of the PUBLIC.

The proffers of Friendship, however, are too sacred to be treated with contempt: the Author will therefore here enumerate the principal objections which have been raised against his Book, and at the same time give his Reasons for disallowing their validity.

“ The

“ The Style is *florid*, the Sentiment *eccentric*, and the whole “manner *defultory* and *unclassical*.”

It is now upwards of seven years since the Author *studied* any other *Book* than the **BOOK OF NATURE**; and throughout that ample, that mind-enlarging Volume, he has rarely discovered a *straight Line*, or a *Circle*: every thing is *defultory*, every thing *eccentric*. *Flowers* and *Verdure*, the **LUXURIANT** Tendril and **FLOWING** Spray shoot promiscuously, and charm with **EPITHETICAL**, *unclassical* elegance. He presumes not to *rival* **NATURE**; but **NATURE** alone he will **IMITATE**. It would be needless therefore to add, that he is an admirer of **MODERN ENGLISH GARDENING**; not of *Trees inlopt*, and *Shrubs incropt*, and *Yew-hedges inclassicalated*.

“ The *new-coined Words*, too, are numerous and unwarrantable. “**NATURISION**, **ANIMALISION**, &c. might please and be passed “over in *Conversation*, as the effects of a vigorous *Fancy*, unchastised “by *Reflection*; but will be reprobated as **INNOVATIONS** in *Print*. “**SCIENCIST**, **CUSTOMIST**, and **AERIALIST**, too, may give offence “to the fastidious Reader.”

ANIMALISION, **VEGETISION**, &c. are not *fanciful flashes*, but elaborately-raised *Technical Terms*, as necessary to a **SYSTEM** of **Agriculture**, as **PROBLEM** and **COROLLARY** are to the **Mathematicks**. The preceding *Work*, however, not being intended as a *System*, they might there have been substituted by apposite *Phrases*: But to take away **SCIENCIST**, **CUSTOMIST**, and **AERIALIST**, would be beating down a range of simple **Columns**, to prop up the **Superstructure** with **Spars** and **Brick-bats**.

The Author, throughout the preceding Volume, has considered **Agriculture** as an **INFANT SCIENCE**, destitute of **SYSTEM**, and in some measure destitute of **SCIENTIFIC TERMS**. An impropriety and ambiguity of **Terms** have ever been the bane of **Science**, as a

perspicuity and propriety have ever aided in its advancement. In what state would the MATHEMATICS, PHILOLOGY, PHILOSOPHY, and ASTRONOMY have now been, had there not existed INNOVATORS OF TERMS? If the Writer has introduced a redundancy or an impropriety of Terms, he is ready to retrench or alter them*.

“NATURE has always been drawn and described by Painters and Poets as a *Female*; but you, we know not why, have *unsexed* her, and represented her as one of us.”

How! Because the ANCIENTS, perhaps, while yet in a state of Barbarism, *happened*, “they knew not why,” to make NATURE *feminine*; are the MODERNS, in their present enlightened state, *still* to ape ancient absurdities? Shall it be hereafter said by a Race yet more enlightened, whether they tread the Banks of the Delaware or Ohio, that ENGLISHMEN, in the wane of the Eighteenth Century, were so profoundly ignorant, or so strangely deluded, as to imagine that OMNISCIENCE trusted the Agency of his earthly affairs to an *Old-woman* †! Seriously—if the SUPREME be Masculine, his REPRESENTATIVE ought to be so likewise.

* That he could not be prompted by wantonness, may be seen by a Note under the 13th of MAY 1775;—when, being aware of impending censure, yet wishing earnestly for a word, the want of which had frequently embarrassed him, he sat himself down with a determination to register *every idea* (whether it might happen to be good or indifferent, great or little, serious or ludicrous) which might pass over his mind during the *Process* of *Coining a Word*; in order to obviate, equally, the censure and the envy of such of his Readers as have never aspired at being drawn on a *Classical Hurdle*.

† It has, indeed, been argued, that NATURE is a *Female*, because she *brings forth*. With the same propriety, is not NATURE a *Male*, because he *begets*? For the two operations are *equally* under the immediate superintendance of NATURE: except, indeed, by *bringing-forth* be meant the *matronic* art of Midwifery; but even in this light the idea is antiquated, for times are altered, and *Male Obstetrists* are now all the Fashion.

“ In

“In short, the Novelties and Liberties are so abundant, no Mercy must be expected from the professional Critics.”

This gives him but little concern: He does not mean by complimenting the REVIEWERS to deprecate their vengeance; but he believes that some of them are Gentlemen, and many of them Men of Sense; who dare to think for themselves; and with such Men he is ever ready to enter the list. He likes not to be *buffeted* with his faults, but wishes to be *told* of them; and the more REAL OBJECTIONS any Man, or set of Men will start, the more gratitude the Author engages to render; for he wishes not to deceive himself, nor to misguide others. As to the HYPERCRITIC and the CRITICASTER, he gives these full power to snarl with impunity; for *false* and *fine-spun* Criticism will ever add strength to the subject criticised.

Generally—the Author declares himself at open war with *Custom*; excepting the CUSTOM founded in NATURE, or at least supported by REASON: And he holds the LITERATURE, as well as the AGRICULTURE, whose only foundation is *chance-produced Custom*, derogatory to Beings whose boast is RATIONALITY. His ambition is to be *stigmatized* with INNOVATOR: Nay, he would even risk his being thought an AUKWARD MEDDLER, rather than add to the Crowd of—DECENT COPYISTS.

The Writer is by no means conscious that the Cause of NATURE and REASON needs a warmth of expression; but he is convinced, that even NATURE and REASON have their opponents: and he cannot suppress his disapprobation of those LISPERS OF GREEK AND LATIN; —those POMPOUS DISPLAYERS OF LEARNED TRIFLES; NOR of those EVANESCENT ECHOES of SCHOOL-PHILOSOPHY, faint-warbling through the Grove of Letters, to the injury of NATURAL and SCIENTIFIC KNOWLEDGE, and the annoyance of ENGLISH LITERATURE.

I N D E X

If in 40 years he gained 15,000l. he cleared (setting aside the ideas of interest, and original capital which was but small) 375l. a-year; besides paying his Rent and Taxes:

800 Acres at 7 s. amount to	£. 280 00 00
Suppose the Tenants Taxes at 3 s. in the Pound,	42 00 00
	£. 322 00 00

His Farms, therefore, produced, independant of *Labour, Manure, Seed, Tithe*, PERSONAL EXPENCES, &c. 697l. a-year.

Suppose he had paid 14 s. an Acre:

800 Acres at 14 s.	£. 560 00 00
Taxes on 560l. at 3 s.	84 00 00
	£. 644 00 00

which taken from 697l. leaves 53l. his yearly saving; which in 40 years amounts to 2,120l. the Fortune he would, at 14s. an acre, have left his Son.

Suppose he had paid 28 s. an Acre:

800 Acres, at 28 s.	£. 1120 00 00
Taxes on 1120l. at 3 s.	168 00 00
	£. 1288 00 00

which cannot be deducted from 697l. This, however, may be easily taken from 1288l. and leave a *loss* of 591l. a-year! Consequently, had this *industrious* Man, *skilful* as he was, begun with a Capital of even Fifteen or Twenty Thousand Pounds, he must, before the expiration of 40 years, have been reduced to beggary! And yet the Author can assert, from *very* good authority, that a principal part of these 800 Acres is lett at, or *nearly* at, this ruinous Rate of 28 s. an acre! Time alone can shew whether the present Lessors (they are not yet Possessors) will be raised to Riches, or reduced to Beggary*.

* It is true, the Prices of Produce are higher *now* than they were *forty years* ago; but they are not so high *now* as they were *ten years* ago; and the advance on a par bears no proportion to the excessive Rise of Rent.

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The Wind,	S.	S.		S.
	Farm ^s .—dined at—	Farm ^s .—Farm ^s .		Farm ^s .—Writing.
* * *				
Ox-Team,	Doubling A 5.	f.(a) doubling A 5.		b.(b) doubling A 4.
Horse-Teams,	Harrowing B 3.	b. Reversing B 4.		Reversing B 4.
Odd Horses,	Carried Hay to —	Harrowing G 1.		Pulvering (c) G 1.
* * *				
Duffel (<i>Oxen</i>),				
Miles (<i>Horses</i>),				
Rivers (<i>odd Horses</i>),				
Boy Smith (<i>Oxen</i>),				
Boy Miles (<i>Horses</i>),				
Boy Smale (<i>Cows, Hogs</i>),		Cow n ^o . 3. calved.		
* * *				
Bades (<i>Buller</i>),	Sow ^s . Oats in B 3.	Sow ^s . Oats in G 1.		
Caper,	Gapping.	(odd Horses)		(odd Horses, &c.)
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Kinnaby,	Trim ^g . A 3. A 4.	Gapping.		Trim ^s . A 4.--A 5.

(a) *Finished* throwing two Five-bout Beds into one: this being intended for a *Ley*:

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(c) Lightly Rolling, and Re-harrowing.

(d) Making the Fence between the division B. and Farmer R--ll's Fields.

A C C O U N T I N G .

143

THURSDAY 27. | FRIDAY 28. | SATURDAY 29. | SUNDAY 30.

y	dry	cold	cold
Quite fultry!	As bleak as Xmas!	Snow—cold.	cold and wind.
S.	N. E.	N. E.	E.
Farm ^s . Farm ^s .	Farm ^s . Writing.	Writ ^s . Mr—dined	Dined at —
* * *			
Doubling A 4.	Doubling A 4.	Doubling A 4.	
Reverfing B 4.	Reverfing B 4.	f. Reverfing B 4.	
Carried Hay to—	Harrowing F 2.	Diftrib ^s . Bushes.	
* * *		and Harrow ^s . A 5.	
			Week (e)
			Ditto.
			Ditto.
			Ditto.
			Ditto.
	Sow, n ^o 1. farrowed.		In-door.
* * *			
	f. low ^s . tare-barley.	Sowing Oats in A	In-door.
Binding Hay, &c.	(odd Horfes)	Gapping.	Week.
Fenc ^s . B. R--ll's.	Fenc ^s . B. R--ll's.	Fenc ^s . B. R--ll's.	10s. 6d.
ditto.	ditto.	ditto.	os. 6d. (f)
Thrashing Oats.	Thrashing Oats.	Making-up Oats.	See below.
ditto.	ditto.	ditto.	ditto.
Cutting Bushes.	Cutting Bushes.	Load ^s . Bushes, &c	Week.
			10
Gregory and Pr.	for Thrashing.	11½ qrs. of Oats.	at 22d.
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The *Journal-Part* of the CHECK is kept thus:

Date.	To, or from whom.	Of what.	How discharged
1777.			
Mar. 24.	Thompson.	1 Load Clover-Hay, 80s.	C. B. 35. (a)
24.	B. 3.	21 Bushels of Oats of P. (b)	Jo. 126. (c)
25.	G. 1.	19½. Bushels of ditto ditto	Jo. 127.
27.	Dixon.	1 Load Meadow Hay, 85s.	Jo. 127.
28.	F. 2.	16 Bushels of Tare Barley	Jo. 128.
Apr. 2.	Jackson.	5 Qrs. of Oats at 20s. 6d.	C. B. 40.
4.	Johnson.	A Calf, 65s. - - -	Jo. 128.

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(b) Grown in the DIVISION P.

(c) Entered in the JOURNAL, Page 126.

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The following is a literal Transcript of the INDEX of the *Ledger-Part* of the CHECK.

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B.—13.	Barley, 41.	Barley, 58, 65.	Calves, 7.
C.—12.	Oats, 43.	Oats, 52.	Store Hogs, 9.
D.—16.	Beans, 38.	Beans, 54.	Fatting Hogs, 6.
F.—5, 40.	Pease, 38.	Pease, 51.	
G.—1.	Tares, 43.	Tares, 49.	
H.—8.	Pea-beans, 45.	Pea-beans, 55.	
I.—8.	Tare-barley, 42.	Tare Barley, 60.	
K.—15.	Meadow, 37.	Meadow Hay, 59.	
L.—11, 39.	Mix-grafs, 36.	Mix Hay, 64.	
M.—14.	1st. Cut, 47.	1st Cut, 63.	
N.—19.	2d. Cut, 60.	2d Cut, 66.	
O.—6, 20.		Wheat Straw, 70.	
P.—25, 46.		Stack Wood, 48.	
R.		Bavins, 71.	
S.—18, 28.			
T.			

For the method of keeping the Labour-Account of each Division, see a MINUTE of the 27. APRIL 1775; and for the mode of journalizing it, see the DIGEST, page 136.

The FIELD-PRODUCE is set-down under its respective head as it is carried, mentioning the *Date*—the *Division*—the *Repository*, and the number of *Field-jags*.

The YIELD and DISPOSAL are kept on opposite pages, and consequently the quantity of grain, &c. on hand may be readily ascertained.

The MISCELLANEOUS ARTICLES are kept as conveniency points out.

The

The ARRANGEMENT and PRODUCE are brought into one view,
thus :

1776.

THE ARRANGEMENT.		THE PRODUCE.			
Acres	Of	Field Jags.	Qrs. of Head.	Bs. of Tail.	Loads of Hay or Straw.
53	Wheat (<i>a</i>).	64	109 $\frac{3}{4}$	93	65 $\frac{19}{16}$
4 $\frac{1}{2}$	W. Tares, for Verdage.				
8 $\frac{1}{2}$	Ditto for Hay.	15			
2	Ditto for Seed.	6			
12	Beans (<i>b</i>).	11 $\frac{1}{2}$	28 $\frac{1}{2}$	25	
2 $\frac{1}{2}$	Pea-beans.	4			
1 $\frac{1}{2}$	Pease.	2 $\frac{1}{2}$			
8	Tare-barley.	12			
24	Oats (<i>c</i>).	35	77 $\frac{1}{2}$	27	
21	Barley (<i>d</i>).	41	79 $\frac{1}{2}$	59	
2	Oat-Herbage.	2			
29	Clover (<i>e</i>) 1st. and 2d. Cuts).	36			
2	Rye-Grass.	2			
24 $\frac{1}{2}$	Mix-grass Ley (<i>f</i>).	23			
21 $\frac{1}{2}$	Meadow (<i>g</i>).	17 $\frac{1}{2}$			22 $\frac{1}{16}$
1 $\frac{3}{4}$	Potatoes.				18 $\frac{9}{16}$
1 $\frac{1}{4}$	Cabbages.				
1 $\frac{1}{4}$	Turnips.				
0 $\frac{1}{2}$	Buck-Wheat.	0 $\frac{1}{2}$			
22	Pasture.				
25 $\frac{1}{4}$	Summer-Fallow.				
22	Fences, Roads and Waste.				
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- (*a*) See the MINUTE of the 13. AUG. 1776.
(*b*) After Oats on an old Ley: no dung.
(*c*) A few Acres very indifferent.
(*d*) Most of the land in good heart and fine tilth.
(*e*) A burning soil, and a dry spring.
(*f*) A clayey loam in tolerable heart.
(*g*) Hay-crops in general short this year.

Although

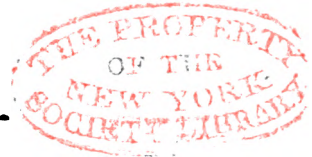
Although it may be difficult for a FARMER to ascertain the neat profit of a crop with that precision which a MERCHANT ascertains the neat proceeds of an Account Sales ; yet the AGRICULTOR may come near enough the truth to direct him in the choice of his future plan of management. And, perhaps, generally, the more leisure-hours the SCIENTIST dedicates to ACCOUNTANTSHIP, the sooner he will become a JUDICIOUS AGRICULTURIST.

T H E E N D O F T H E D I G E S T .

T H E

T H E

R E T R O S P E C T .



WHEN a Man first ventures to offer his Sentiments to the PUBLIC, he has much to risk; and consequently every Man who is possessed of ordinary feelings, must be peculiarly anxious for the fate of a *first* Production. Every page and every passage becomes subject to RETROSPECTION: FRIENDS, too, are consulted, and their advice *sometimes* taken. After these precautions, a Man who steps not out of the *beaten Track*, may be ushered into the *presence* of the PUBLIC with some degree of confidence. But the situation of the Man who presumes to tread *his own Path*, travels thro' an inhospitable Region, without Friend or Finger-post to direct him.

Such, in some measure, is the situation of the Author of the preceding Sheets. It is true, he has consulted Friends; but (perhaps to his dispraise be it known) has seldom taken their advice; being determined to stand or fall before the Tribunal of the PUBLIC.

The proffers of Friendship, however, are too sacred to be treated with contempt: the Author will therefore here enumerate the principal objections which have been raised against his Book, and at the same time give his Reasons for disallowing their validity.

“ The

“ The Style is *florid*, the Sentiment *eccentric*, and the whole “ manner *defultory* and *unclassical*.”

It is now upwards of seven years since the Author *studied* any other *Book* than the *BOOK OF NATURE*; and throughout that ample, that mind-enlarging Volume; he has rarely discovered a *straight Line*, or a *Circle*: every thing is *defultory*, every thing *eccentric*. *Flowers* and *Verdure*, the *LUXURIANT* Tendril and *FLOWING* Spray shoot promiscuously, and charm with *EPITHETICAL*, *unclassical* elegance. He presumes not to *rival* *NATURE*; but *NATURE* alone he will *IMITATE*. It would be needless therefore to add, that he is an admirer of *MODERN ENGLISH GARDENING*; not of *Trees inlopt*, and *Shrubs incropt*, and *Yew-hedges inclassicalated*.

“ The *new-coined Words*, too, are numerous and unwarrantable. “ *NATURISION*, *ANIMALISION*, &c. might please and be passed “ over in *Conversation*, as the effects of a vigorous *Fancy*, unchastised “ by *Reflection*; but will be reprobated as *INNOVATIONS* in *Print*. “ *SCIENCIST*, *CUSTOMIST*, and *AERIALIST*, too, may give offence “ to the fastidious Reader.”

ANIMALISION, *VEGETISION*, &c: are not *fanciful flashes*, but elaborately-raised *Technical Terms*, as necessary to a *SYSTEM* of *Agriculture*, as *PROBLEM* and *COROLLARY* are to the *Mathematicks*. The preceding *Work*, however, not being intended as a *System*, they might there have been substituted by apposite *Phrases*: But to take away *SCIENCIST*, *CUSTOMIST*, and *AERIALIST*, would be beating down a range of simple *Columns*, to prop up the *Superstructure* with *Spars* and *Brick-bats*.

The Author, throughout the preceding Volume, has considered *Agriculture* as an *INFANT SCIENCE*, destitute of *SYSTEM*, and in some measure destitute of *SCIENTIFIC TERMS*. An impropriety and ambiguity of *Terms* have ever been the bane of *Science*, as a

perspicuity and propriety have ever aided in its advancement. In what state would the MATHEMATICS, PHILOLOGY, PHILOSOPHY, and ASTRONOMY have now been, had there not existed INNOVATORS OF TERMS? If the Writer has introduced a redundancy or an impropriety of Terms, he is ready to retrench or alter them*.

“NATURE has always been drawn and described by Painters and Poets as a *Female*; but you, we know not why, have *unsexed* her, and represented her as one of us.”

How! Because the ANCIENTS, perhaps, while yet in a state of Barbarism, *happened*, “they knew not why,” to make NATURE *feminine*; are the MODERNS, in their present enlightened state, *still* to ape ancient absurdities? Shall it be hereafter said by a Race yet more enlightened, whether they tread the Banks of the Delaware or Ohio, that ENGLISHMEN, in the wane of the Eighteenth Century, were so profoundly ignorant, or so strangely deluded, as to imagine that OMNISCIENCE trusted the Agency of his earthly affairs to an *Old-woman* †! Seriously—if the SUPREME be Masculine, his REPRESENTATIVE ought to be so likewise.

* That he could not be prompted by wantonness, may be seen by a Note under the 13th of MAY 1775;—when, being aware of impending censure, yet wishing earnestly for a word, the want of which had frequently embarrassed him, he sat himself down with a determination to register *every idea* (whether it might happen to be good or indifferent, great or little, serious or ludicrous) which might pass over his mind during the *Process of Coining a Word*; in order to obviate, equally, the censure and the envy of such of his Readers as have never aspired at being drawn on a *Classical Hurdle*.

† It has, indeed, been argued, that NATURE is a *Female*, because she *brings forth*. With the same propriety, is not NATURE a *Male*, because he *begets*? For the two operations are *equally* under the immediate superintendance of NATURE: except, indeed, by *bringing-forth* be meant the *matronic* art of Midwifery; but even in this light the idea is antiquated, for times are altered, and *Male Obstetrists* are now all the Fashion.

“ In

“In short, the Novelties and Liberties are so abundant, no Mercy must be expected from the professional Critics.”

This gives him but little concern: He does not mean by complimenting the REVIEWERS to deprecate their vengeance; but he believes that some of them are Gentlemen, and many of them Men of Sense; who dare to think for themselves; and with such Men he is ever ready to enter the list. He likes not to be *buffeted* with his faults, but wishes to be *told* of them; and the more REAL OBJECTIONS any Man, or set of Men will start, the more gratitude the Author engages to render; for he wishes not to deceive himself, nor to misguide others. As to the HYPERCRITIC and the CRITICASTER, he gives these full power to snarl with impunity; for *false* and *fine-spun* Criticism will ever add strength to the subject criticised.

Generally—the Author declares himself at open war with *Custom*; excepting the CUSTOM founded in NATURE, or at least supported by REASON: And he holds the LITERATURE, as well as the AGRICULTURE, whose only foundation is *chance-produced Custom*, derogatory to Beings whose boast is RATIONALITY. His ambition is to be *stigmatized* with INNOVATOR: Nay, he would even risk his being thought an AUKWARD MEDDLER, rather than add to the Crowd of—DECENT COPYISTS.

The Writer is by no means conscious that the Cause of NATURE and REASON needs a warmth of expression; but he is convinced, that even NATURE and REASON have their opponents: and he cannot suppress his disapprobation of those LISPERS OF GREEK AND LATIN; —those POMPOUS DISPLAYERS OF LEARNED TRIFLES; NOR of those EVANESCENT ECHOES of SCHOOL-PHILOSOPHY, faint-warbling through the Grove of Letters, to the injury of NATURAL and SCIENTIFIC KNOWLEDGE, and the annoyance of ENGLISH LITERATURE.

I N D E X

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