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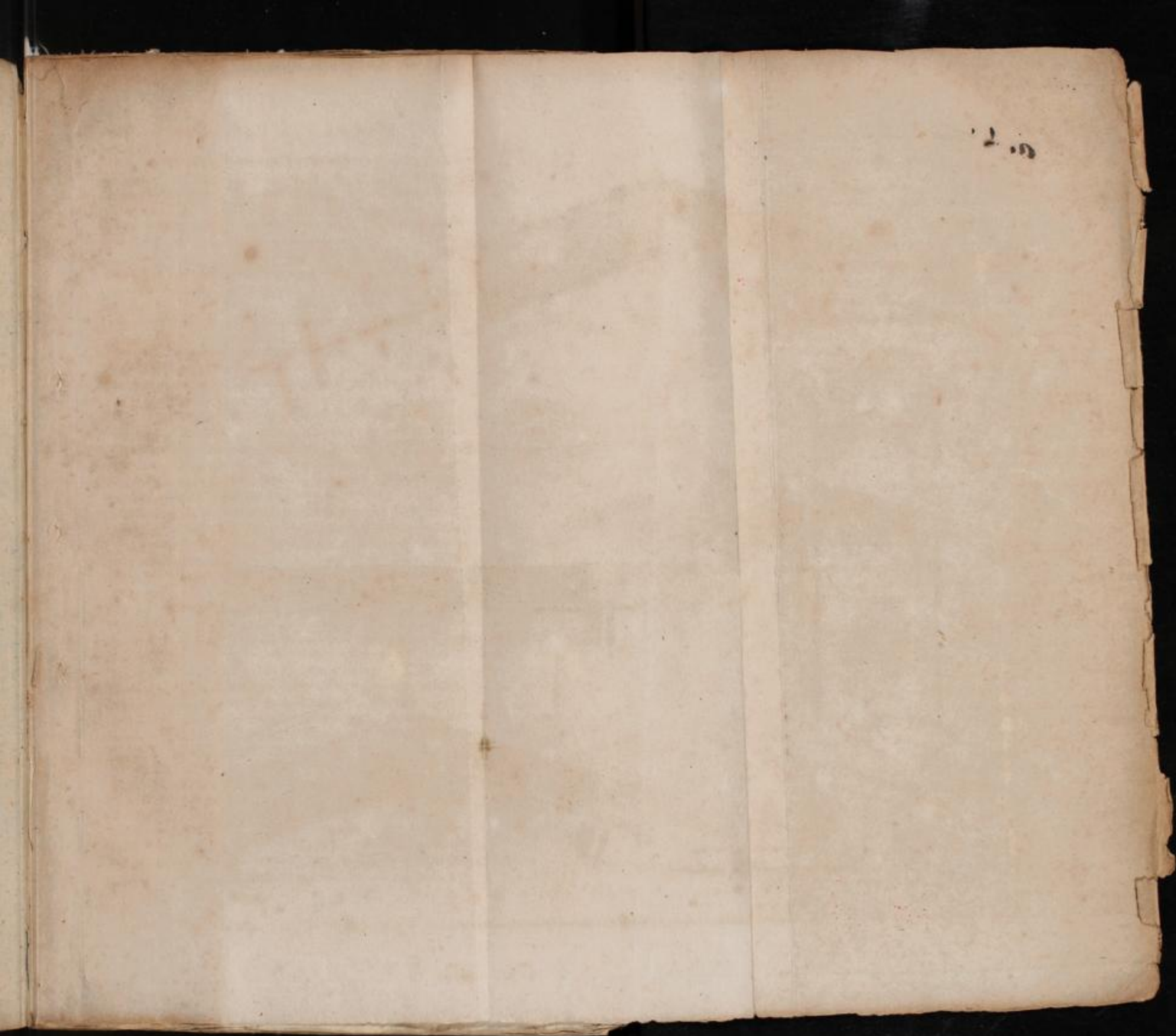
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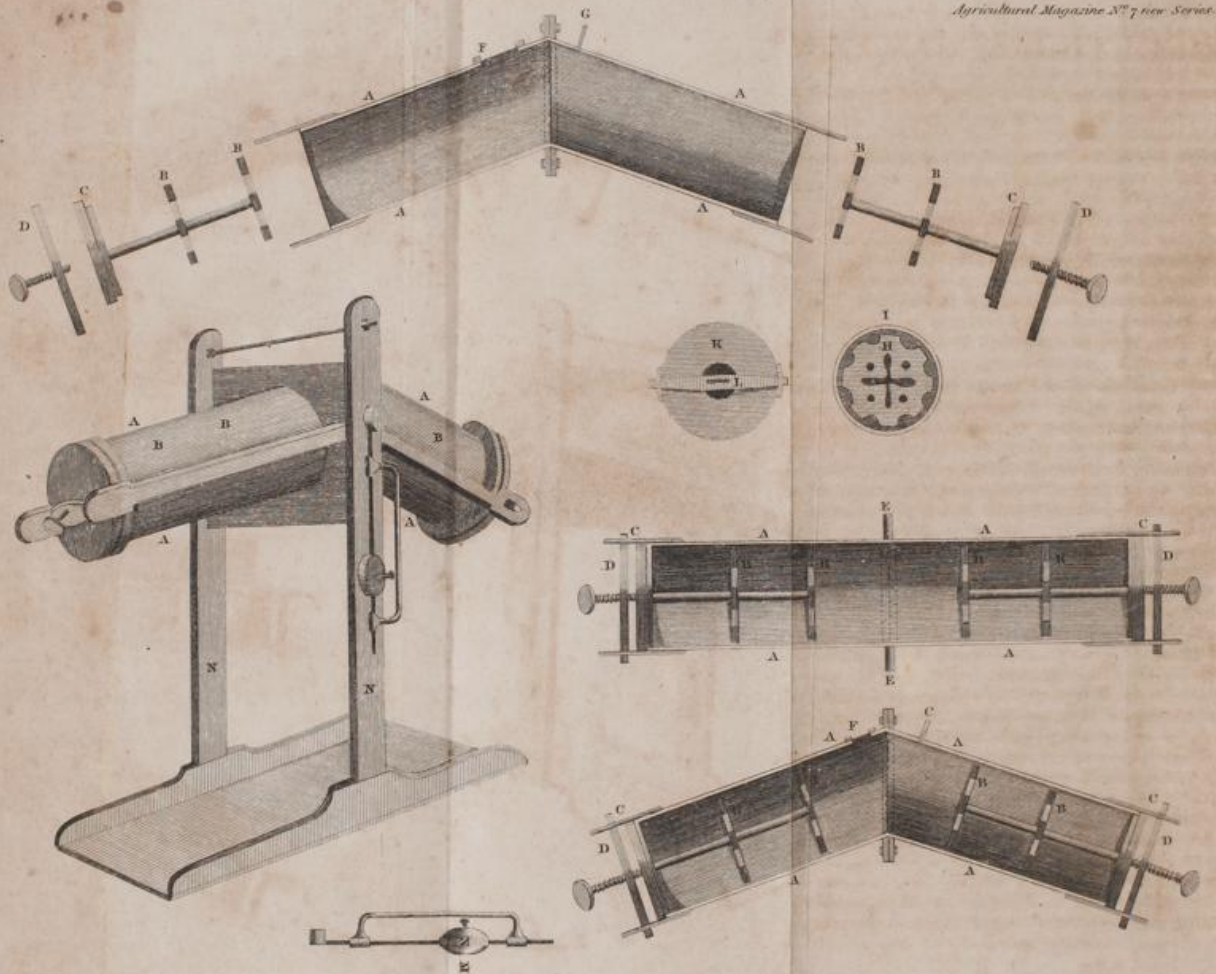
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THE
AGRICULTURAL MAGAZINE

No. VII.]

SECOND SERIES.

[Vol. II.

FOR JANUARY, 1807.

SPECIFICATION OF A PATENT GRANTED TO MR. THOMAS ROWNTREE, FOR A CHURN, OR MACHINE FOR AGITATING AND SEPARATING CERTAIN MIXTURES.

[*With a Plate annexed.*]

TO all to whom these Presents shall come, I, THOMAS ROWNTREE, of Great Surrey-Street, in the parish of Christ-Church, and county of Surrey, Engine-maker, send greeting:—

WHEREAS his most excellent Majesty, King George the Third, did, by his Letters Patent under the Great Seal of his United Kingdom of Great Britain and Ireland, bearing date at Westminster the twenty-third day of March, in the forty-fourth year of his reign, give and grant unto me, the said Thomas Rowntree, my executors, administrators and assigns, his especial licence that I, the said Thomas Rowntree, my executors, administrators and assigns, should and lawfully might make, use, exercise and vend, within England, Wales, and the town of Berwick-upon-Tweed, my Invention of a Machine, on an improved Construction, for agitating and separating certain Mixtures. In which said Letters Patent there is contained a Proviso, obliging me, the said Thomas Rowntree, by an Instrument in Writing, under my hand and seal, to cause a particular description of the nature of my said Invention, and in what manner the same is to be performed, to be enrolled in his Majesty's High Court of Chancery, within one calendar month after the date of the said recited Letters Patent, as in and by the same (relation being thereunto had) may more fully and at large appear. Now know ye, that, in compliance with the said proviso, I, the said Thomas Rowntree, do describe my improved Machine for agitating and separating certain Mixtures, or compound fluids, in manner following:—

Second Series, Vol. 2.

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It is well known that milk is a mixture or compound of oil, lymph, serum and salt; the separation of which produces butter, cheese, and whey. The serous and oleaginous parts separate after standing some time, and rise to the top in the form of cream. From this cream, put into a churn, butter is produced, by the agitation and separation of its parts. The Machine which I have invented for this purpose, and which I call my agitating and separating Machine for making butter, and for other purposes, where agitation or separation is required, is represented in the annexed Drawings. It consists of a tube, or tubes, either bent or straight, for the reception of the cream, but open at both ends; and, in which are inserted, breakers, with two caps at their outer extremities, made in such a manner as to fit closely to each end of the tube; or these caps may be loose, and fitted on or taken off at pleasure, as occasion may require.—Figure 1 represents an outside view of the Machine as fixed to its frame NN, and hanging on its axis or centres. Figure 2 represents a section of the Machine, in which AAAA is an open bent tube, with the breakers BBBB out of the tube. CC are the two Caps connected with the Breakers, and which are so contrived as to fit closely to the two ends of the tube. DD are two Cross-bars, placed on the outside of the Caps, and made to press against them by screws or wedges; or in any other manner so as to prevent the cream from running out during the time of working or agitating the machine. Figure 3 is a Section of the Machine, with the Breakers BBBB within-side. CC are the two Caps. DD are the Cross-bars, with their Screws, as fixed for work. Figure 4 represents a Section of a straight tube, with the same apparatus as before described in Figure 3, and shewing its axis or centres EE, on which the machine is suspended, and moved backwards and forwards. F is a small opening in the upper part of the tube. Figure 2 and 3, wherein to pour the cream; or, if it be thought preferable, the cream may be poured in at one end of the tube, while the other is closed. G is a Vent-peg. H is an End View of one of the Breakers. I is an End View of the tube, or cylinder, containing the Breakers. K is an End View of one of the Caps; and L is a Front View of the Cross-bar, with its Screw, pressing against the Cap. M is the Handle, Lever, or Pendulum, for giving motion to the Machine, such as is usual in other machinery; to which is affixed, a moveable sliding Weight, O, for the purpose of adjusting or balancing the weight of cream in the tube, so as to produce an equilibrium in the machine, whether the quantity of the cream be small or great.

The advantages peculiar to this new machine, for churning or making butter, will appear more striking by a comparison with the disadvantages inseparable from those heretofore made use of, whether they be Barrel Churns or Upright Churns. It has long been a complaint against Barrel Churns that, from the very nature of their construction, they are incapable of producing butter which shall be perfectly sweet; for, having only one small opening in them just sufficient to permit the hand and arm to enter them, it is impossible for the fresh air to penetrate to their bottom and sides, much less to sweeten them by a free circulation or current. Hence arises that sour or rancid smell which is always perceived in the Barrel Churn, even after it has been scalded and scoured, and cleansed with the greatest care; and which adheres to the inside of the vessel in the same manner as air does in a well that has been long closed. The Upright Churn is liable to the same objection, and retains the same rancid smell after use, though in a smaller degree; for, even in this churn, a free circulation of air cannot by any means be obtained, but the foul air constantly remains attached to the bottom and sides, and renders the churn unfit for the production of sweet butter. This complaint, however, is completely remedied in my improved Machine for making butter; for as the part which contains the cream consists of a tube or cylinder, as before described, open at both ends, and having a cap to each, which is fitted on and taken off at pleasure, it is evident that the whole of the inside, as well as the breakers and the cap at each end, may be as easily cleaned, and as perfectly sweetened by exposure to a current or circulation of fresh air, as any utensil belonging to the dairy. Another disadvantage peculiar to the barrel churn consists in this: That a considerable part of the cream, which is intended to be converted into butter, rolls smoothly along the bottom of the churn when put into a rotatory motion, without ever being obstructed by the breakers, and consequently without any chance of producing the desired effect; for, in order to procure the greatest possible quantity of butter from a given quantity of cream, it is absolutely necessary that every portion of the cream be violently agitated and dashed against the breakers. It is plain therefore, that in the common barrel churn, a less quantity of butter is procured than the cream is capable of yielding; and although the loss sustained, each time of churning, may be thought little of, yet, in large dairies, it will be found very considerable in the course of a year. The same disadvantages belongs to the upright churn; for in that

also the cream suffers only a partial agitation, by no means sufficient to produce the quantity of butter which might be expected. This imperfection, which all machines heretofore used for the purpose of making butter are alike subject to, finds no place in my new and improved churn, but the whole body of the cream is dashed with violence against the breakers, in every motion of the machine backwards and forwards; so that not the smallest portion of the fluid is suffered to glide along in an equable or uniform course, but each part is alike broken and driven in all possible directions: The consequence of which is, that more butter is procured with my churn, from a given quantity of cream, than with any other heretofore made public.

Besides the aforesaid advantages which are peculiar to my improved machine for making butter, the ease with which it may be worked, is an additional recommendation to it; more especially as it requires, in the person using it, neither judgment nor experience in the art of making butter, but may safely be intrusted to the management of a child. I therefore submit it to the public as a necessary and most valuable utensil in the dairy, not doubting but it will be found, on trial, an improvement of real utility, and well calculated not only to make butter in the greatest quantity, but, what is of much more importance, to produce it in its utmost purity and sweetness. In witness whereof I, the said Thomas Rowntree, have hereunto set my hand and seal, this twentieth day of April, in the year of our Lord one thousand eight hundred and four.

THOMAS ROWNTREE.

Taken and acknowledged by Thomas Rowntree, party hereto, at the Public Office, Southampton Buildings, Chancery Lane, this twentieth day of April, 1804,

Before me,

JOHN ORD.

HINTS ON THE USE OF BONE MANURE.

To the Editor of the Agricultural Magazine.

SIR,

THE use of bones as a manure has been long known, and practised in particular districts near large towns, where they are capable of being procured in sufficient quantities and upon reasonable terms; but it is in Hertfordshire, that they have been employed for the greatest length of time, and over the greatest extent of land: Their application has, however, lately been much on the decline, on account of the price being so much raised by the dealers in London, as from eight or nine shillings the chaldron, to from sixteen to twenty. And besides, they are in general somewhat inferior in quality, especially the boiled sorts, from the mucilaginous oily matter being more completely extracted. They are, therefore, without doubt, the most beneficial when made use of in their unboiled state. Before their application, they are prepared by being broken down and reduced into small pieces by different contrivances for the purpose, and are then either laid on in their simple state, or in composition with different sorts of earthy materials. They are found to produce the greatest effects, when they are the most broken down, but do not last so long. They should, of course, probably not be brought into too great a state of reduction. They are likewise used after being burnt; and in the above county, they are supposed by some to be most proper for pasture land in this state, but for that of the arable clayey kind when only boiled. This last condition being found, in practice, the most lasting in their effects of any of the modes in which they are employed. The burnt sorts cost, about Hatfield, eight-pence the bushel, at which price they are in considerable use by the farmers; but the boiled ones at the town of Hertford, are now usually about a guinea the chaldron. The former sort are found there to do the best on poor cold clayey lands, and on such as has been lately laid down to the state of sward. Some farmers lay them on in the proportion of six chaldrons to the acre, but others to a much greater extent, and in these proportions they last from four or five, to six or seven years. In other parts of this district, they are found the most beneficial on loams of the more heavy binding kind. They seem to be, in some measure, uncertain in their effects, as they have been found to produce the most striking improvement on one field, while in the adjoining one,

under exactly similar circumstances, they have afforded no perceptible effect whatever. And this has been the case, not merely in one, but several instances. This should, therefore, induce the cautious farmer to make small trials with them, to find whether they suit his land, before he enters largely into the business, as under other circumstances he may incur much loss.

It has been observed, that "raw bones are the most lasting of any manures," and that "three chaldrons are enough for an acre," but that four must be allowed to be a great abundance. They enrich the ground for many years; and then the mechanical effects in lightening it, will last almost for ever. They may be got at many great towns, where no manufacture of bones is carried on: the best method of using them is, to lay them in pretty large heaps, and cover them with long dung, whereby the sinews and flesh hanging about them will be rotted, and when the ground is ready to be ploughed, carry, spread, and plough in the bones immediately, otherwise they will be carried away by dogs, rooks, &c. &c."

These circumstances collected from the actual practice of farmers, in the district where these substances are the most extensively employed, may not be altogether uninteresting to some of your readers.

I am, Sir,

Your obedient servant,

W. W.

Herts, Jan. 7, 1807.

CIRCUMSTANCES RESPECTING THE CULTURE, USE AND APPLICATION OF THE RUTA BAGA, OR SWEDISH TURNIP.

To the Editor of the Agricultural Magazine.

SIR,

THIS, though a plant unquestionably of much advantage to the farmer, does not seem to have been so much cultivated as might on that account have been supposed. In those situations in which it has been grown in a proper manner, it has, however, been found of great benefit in various

applications as the food of animals. One cause of the little progress which has been made in the cultivation and use of this valuable root in some districts, is probably that of too closely following the methods that have been long in practice for the common turnip, as in such modes of culture it can obviously never be raised either with benefit to the cultivator, or in any very perfect manner, as from its more compact nature, it must evidently require a much greater length of time upon the ground to attain its full growth and state of maturity. It should of course be sown at a much earlier period, as in the latter end of April or the beginning of the following month; but not by any means later than May; as in all the numerous trials I have made in raising crops of this sort, I have never found that the roots attained any large size where the seed was put into the ground after that period.

Another circumstance which has materially retarded the cultivation of this useful crop, is that of the great difficulty of procuring such seed as can be fully depended upon. This inconvenience can probably, only be obviated in an effectual manner by the farmer providing his own seed, by transplanting a few of the best and most perfect roots, at the proper season, into a situation where they may not be in danger of being injured by other plants of a similar nature, during the period of their flowering. The best roots are those which have a toughish green thick cuticle or skin, with the internal fleshy parts firm, and of a yellowish colour.

The fly has been found to be very destructive of this crop, but which may, I have no doubt, be much prevented by the early sowing that has been advised above, as I have never found much injury from this cause, when the seed was put into the ground at an early period, while at a late season I have almost always experienced it to be the case. There is likewise attention necessary to the proportion of seed, as it should never be sown in too small a quantity for this sort of crop, a sufficient plant being always desirable.

The preparation of the ground should also be carefully attended, as well as that of keeping the plants clear, and the mould well broken about them, as upon these much likewise of the success of the crop depends afterwards.

I have seldom failed in having good crops where the business was performed in the manner stated below, in the drill method.

<i>Preparation of Land.</i>	<i>Expenses per Acre.</i>
	<i>L. s. d.</i>
§ Ploughings, at 10s.	1 10 0

			L.	s.	d.
Brought forward	-	:	-	1	10 0
3 Harrowings, at 5s.	-	-	-	0	15 0
Clearing by hand weeding	-	-	-	0	10 0
Making up drills	-	-	-	0	5 0
Putting in dung and labour	}	-	-	2	10 0
half dung allowed					
Covering up dung in drills	-	-	-	0	5 0
Seed	-	-	-	0	7 6
Sowing by drill	-	-	-	0	1 0
Horse hoeing twice	-	-	-	0	1 8
Hand hoeing twice	-	-	-	0	12 0
Moulding up rows	-	-	-	0	1 0
				<hr/>	
				£6	18 2
				<hr/>	

In this manner crops have been raised which would have sold for twelve pounds the acre, and which have afforded considerably more in the feeding of animals.

I have found them to be much better in the fattening of bullocks than the common turnip, and to go one third farther. With oil cake and a very little hay they answer admirably, being chopped in a box by a sharp spade as they are given, as they are found to suffer considerably by keeping, after they have been cut in pieces. And as a hard root, for standing through the winter, to succeed common turnips, their utility has never been disputed. In Norfolk, Mr. Walker, of Harpley, has cultivated them for many years with great success, to the extent of from twenty to thirty acres, feeding them off by sheep and bullocks. He finds that he can depend on them when common turnips are all rotten and destroyed. In Hertfordshire they have likewise been grown by many farmers with equal success, and made use of, in these and other modes of application, with the greatest advantage. There can therefore be no doubt but that farmers in other situations must find equal benefit from these crops, when once they become fully acquainted with their proper culture.

I am, yours,

T. T.

PROCEEDINGS OF THE SMITHFIELD CLUB,*
WEIGHTS OF PRIZE CATTLE, &c.

To the Editor of the Agricultural Magazine.

SIR,

A GREEABLY to my promise, I herewith transmit you comparative statements, of the particulars contained in the several Certificates, of feeding, &c. and of the dead-weight Returns of the prize Animals, which were publicly exhibited on the 12th, 13th, and 15th, of December 1806, in Mr. Sadler's Repository-yard, in Goswell Street, London: in divesting these papers of needless repetitions, and arranging their contents, I hope to have consulted your convenience, as well as that of your readers.

It has been a condition of the several Shews of cattle under the patronage of this Club, that no Animals should be admitted as candidates for their prizes, the owners of which do not engage to cause returns of the dead-weights of their animals to be made to the Secretary of the Club: it is, I apprehend, owing to my appointment to succeed Mr. Arthur Young, not being announced until the conclusion of the late shew, and when probably most of the animals were sold to different butchers, that I have yet, except of the prize animals, received but two returns, (viz. for Mr. Westcar's cow, and Mr. Plaskett's sheep,) or I would have included them herewith. I have written to the several gentlemen for whose animals no returns have yet been made, and, when they consider that the value and interest of their returns, are to the agricultural public, not inferior to those of the more fortunate competitors, and that, as recorded facts, they may one day prove of equal use, in an enlarged enquiry into the merits of different breeds of animals, and on the best mode of managing each, I am induced to hope that they will use their utmost endeavours, towards enabling me to make a further communication for your next Number. On future occasions it is hoped, that the arrangements to be adopted will obtain satisfactory returns, in time for the whole of those relating to the animals in each class to appear together, that comparisons may be the more readily made.

* See a particular account of the late Meetings of the Club, and of the shew of Cattle, in our last Number, pages 419 to 425. E.

CLASS I.

For beasts of 160 stone weight and upwards, that have been worked two years at the least, and fattened without corn of any kind.

FIRST PRIZE—Mr. John Westcar's dark red Hereford ox.

According to the certificate of Mr. *Westcar*, of Creslow, near Aylesbury, Bucks, and the attestations of *John Roads*, near Hardwick, and *Thomas Wells*, near Whitchurch, Bucks, this ox was bred by Mr. Samuel Tully, of Huntingdon, near Hereford, was regularly worked for more than two years, ending the 14th of January 1806, was then put to fatten, being in fair working condition; he ate neither corn or oil-cake until the 12th of April 1806; from the 1st of October to the 30th of November, he ate no other food but 1160 lb. of hay, and 400 linseed cakes.

According to the return from Mr. *Paul Giblett*, No. 138, New Bond Street, who killed this ox, it produced (in stones of 8 lb. avoirdupois) as follows, viz.

	st.	lb.
Carcass or quarters	229	3
Fat	28	5
Hide and horns	16	2
Head and tongue	7	0
Feet	4	5
Heart and Lights	2	4
Liver	2	5
Entrails (empty)	9	2
	<hr/>	<hr/>
	300	2
	<hr/>	<hr/>

CLASS II.

For beasts of 140 stone and upwards, fattened without eake or corn.

FIRST PRIZE—Mr. John Westcar's light red Hereford ox.

According to the certificate of Mr. *Westcar*, of Creslow, Bucks, and the attestations of *John Roads*, near Hardwick, and *Thomas Wells*, near Whitchurch, Bucks, this ox was bred by Mr. Williams, of Thinghill, near Hereford, was put to fatten on the 6th of January 1806, being then in fair working condition, since which he has eaten no other food but grass, hay, and turnips.

The return from Messrs. *Saunders and Draycott*, of Watford, and of Kings-Langley, Herts, who killed this ox, is as follows, viz.

	st.	lb.
Carcass	154	0
Fat	15	0
Hide and horns	16	5
Head and tongue	5	0
Feet	3	3
Heart and lights	2	2
Reed	2	1
	<hr/>	<hr/>
	198	3

SECOND PRIZE—Mr. John Edmonds's red Hereford ox.

According to the certificate of Mr. *Thomas Jeffries*, and the attestation of Mr. *Edward Jeffries, Jun.* this ox was bred by Mr. *Thomas Jeffries*, of Pembridge, Herefordshire, was regularly worked in harness more than two years, ending the 9th of January 1806, was in rather low condition when sold to Mr. *John Edmonds*, of Whelford, near Fairfax, in Gloucestershire, on the 13th of January, was then rising five years old. Mr. *Edmonds's* certificate states, that he was fattened on grass and hay only.

The return from Mr. *William Watkins*, No. 9, Market Street, Newport Market, who killed this ox, is as follows, viz.

	st.	lb.
Carcass	154	4
Fat	17	3
Hide and horns	11	0
Head and tongue	6	0
Feet	3	0
Heart and lights	2	0
Tripe and reed, &c.	5	0
Entrails 56lb. contents of ditto 48 lb. and blood 48 lb.	19	0
	<hr/>	<hr/>
	217	7

CLASS III.

For beasts of 100 to 140 stone, fattened without cake or corn.

FIRST PRIZE—Mr. Samuel Chandler's brown Devonshire ox.

According to the certificate of Mr. *Chandler*, of Moorton, near Ayiesbury, Bucks, and the attestations of *William Flowers*, of Hardwick, and *T. Woodman*, of Stone, Bucks, this ox was bought at Sampford Fair, in Devonshire, on the 28th of April 1806, (was then five year old); after a drift of 170 miles, he reached Moorton, on the 7th of May, in a lean

state, (having worked through the barley seeding,) and was fed on grass until the 27th of October, after which his food was hay and Swedish turnips only.

The return from Messrs. *Thomas Price and Son*, of Kingsgate Street, Red Lion Square, who killed this ox, is as follows, viz.

	st.	lb.
Carcass	119	6
Fat	17	3
Hide and horns	12	1
Head and tongue	4	5
Feet	2	7½
	<hr/>	<hr/>
	156	6½

SECOND PRIZE—Mr. John Westcar's yellow Hereford ox.

According to the certificate of Mr. *Westcar*, of Creslow, Bucks, and the attestations of *John Roads*, near Hardwick, and *Thomas Wells*, near Whitchurch, Bucks, this ox was bred by Mr. Williams, of Thinghill, near Hereford, was put to fatten on the 6th of January 1806, being then in fair working condition, since which he has eaten no other food but grass, hay, and turnips.

The return from Mr. *Robert Gudgin*, of Bushely, Herts, who killed this ox, is as follows, viz.

	st.	lb.
Carcass	138	5
Fat	21	0
Hide and horns	14	4
Head and tongue	5	4
Feet	3	0
Entrails, &c.	15	0
	<hr/>	<hr/>
	197	5

CLASS IV.

For steers under four years old.

PRIZE—Mr. Samuel Chandler's brindled half bred Devonshire steer.

According to the certificate of Mr. *Chandler*, of Moorton, near Aylesbury, Bucks, and the attestation of *William Flow-ers*, of Hardwick, and *T. Woodman*, of Stone, Bucks, this steer was bred by Mr. Chandler, came three year old on the 11th of May 1806; he went with Mr. C's breeding and store stock until the 10th of May, and being then in store condition, was put to fatten on grass, hay, and oil-cake.

The return from Messrs. *Thomas Price and Sons*, of Kingsgate Street, Red Lion Square, who killed this steer, is as follows, viz.

	st.	lb.
Carcase	129	0
Fat	16	6
Hide and horns	11	5
Head and tongue	4	3
Feet	3	0
	<hr/>	<hr/>
	164	6

CLASS V.

For cows which have borne three or more calves, and have been fattened without corn.

PRIZE—Mr. Joseph Lucas's red and white short-horned cow.

According to the certificate of Mr. *Lucas*, of Rowsham, Bucks, and the attestations of *Benjamin Aris* and *T. Pursell*, of Wingrave, Bucks, this cow bore two calves previous to 1805, and continued in milk until the 8th of June 1805, calved on the 18th of June, and was afterwards milked until the 5th of January 1806, being then in a very lean state; she was kept on hay until May, and on grass from then till the 18th of August, since which she was kept on hay and oil-cake.

The return from Messrs. *Philip and William Smith*, No. 3, Great Chapel Street, Westminster, who killed this cow, is as follows, viz.

	st.	lb.
Carcass 1374 lb. skirts 12 lb. -	173	2
Fat - - - - -	25	0
Hide and horns - - - - -	13	1
Head 33 lb. brains 1 lb. and tongue 13 lb. - - - - -	5	7
Feet - - - - -	4	0
Heart 9 lb. lights 8 lb. sweet-bread 2 lb. and bladder 1 lb. - - -	2	4
Tripe (without fat) 25 lb. feet 12 lb. reed 6 lb. and liver and gall 21 lb. -	8	0
Entrails 44 lb. contents of ditto 62 lb. and blood 64 lb. -	21	2
	<hr/>	<hr/>
	253	0

Mr. John Westcar's dun coloured short-horned cow.

According to the certificate of Mr. *B. Attenbrow*, of Stratton-Audley, Oxfordshire, this cow was bred by him; brought

forth a calf in December 1803, another in July 1804, and a third in March 1805, and was sold in March 1806, to Mr. Westcar. The certificate of Mr. *Westcar*, of Creslow, Bucks, attested by *John Roads*, near Hardwick, and *Thomas Wells*, near Whitchurch, Bucks, state, that this cow was purchased of Mr. B. Attenbrow, on the 7th of March 1806, being then in fair store condition, (and was since fed on grass, hay, and cakes.)

The return of Mr. *Draycott*, of Kings Langley, Herts, who killed this cow, is as follows, viz.

	st.	lb.
Carcass	179	2
Fat	18	0
Hide and horns	13	3
Head, and tongue, and heart	7	4
Feet	3	0
Entrails	9	4
	<hr/>	<hr/>
	230	5
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CLASS VI.

For one-year old long-woolled wether sheep, three of one man's breed, fed without corn or cake.

PRIZE—Mr. Anthony Lechmere's, Leicester and Ryeland wethers.

According to the Certificate of Mr. *Lechmere*, of Rydde, near Worcester, and the attestations of *John Roads*, near Hardwick, Bucks, and *John Terret*, near Upton, Worcestershire, these sheep were bred by Mr. Lechmere, were one-year old last lambing time; their food was grass only until November 1806, since which they have ate a few turnips.

The return of Mr. *Paul Giblett*, No. 138, New Bond Street, who killed these sheep, is as follows, viz.

	Sheep No. 1.		Sheep No. 2.		Sheep No. 3.	
	st.	lb.	st.	lb.	st.	lb.
Carcass, or quarters	14	3	14	7	15	1
Head	0	6	0	5½	0	6
Fat	1	6	1	3	1	4
Skin	1	6	2	0	2	5
Pluck (heart, liver, and lights)	0	4	0	4½	0	3½
Entrails and contents	1	5	1	4	1	6
Blood, and loss in killing	0	5½	0	5	0	4½
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Live weight (total of above)	21	3½	21	5	22	6½
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

Rev. Thomas Plaskett's, new Leicester wethers.

According to the certificate of Mr. *Plaskett*, of Weston-House, near Thame, Oxfordshire, these sheep were bred by

him, were one-year old last lambing time; they were grazed, with others of the same age, at the rate of seven sheep to the acre, in the same pasture, from the 1st of May to the 15th of November 1806, when they were removed to fresh grass, and have been allowed 112 lb. of hay, and three bushels of Norfolk-white turnips, sliced.

The return of Mr. *Henry King*, of Newgate Market, who killed these sheep, is as follows, viz.

	Sheep No. 1. st. lb.	Sheep No. 2. st. lb.	Sheep No. 3. st. lb.
Carcass and head on	14 1	13 2	12 6
Fat -	1 5	1 6	2 0
Skin -	1 7	2 0½	2 1
Pluck -	0 4¼	0 3¼	0 3½
Entrails, and contents	1 3½	1 5	1 1
Blood, and loss -	1 1¼	1 1¼	1 0¼
Live weight (total of above)	20 6	20 3	19 4

CLASS VII.

For two-year old long-woolled wether sheep, three of one man's breed, fed without corn or cake.

PRIZE—Mr. John Edmonds's new Leicester wethers.

According to the certificate of Mr. *Edmonds*, of Whelford, near Fairford, Gloucester, these sheep were bred by him, were two years old in March 1806, and were fattened on grass, hay, and turnips only.

The return from Mr. *George Fielding*, of Shoreditch, who killed these sheep, is as follows, viz.

	Sheep No. 1. st. lb.	Sheep No. 2. st. lb.	Sheep No. 3. st. lb.
Carcass, with head on	21 2	23 4	20 6
Fat -	2 6	2 0	2 1
Skin -	2 5	2 7	2 3
Pluck -	0 5	0 5	0 5
Entrails and contents	2 1	2 1	1 5
Blood, and loss -	0 7	0 7	0 5
Live weight (total of above)	30 2	32 0	28 1

CLASS IX.

For two-year old short-woolled wether sheep, three of one man's breed, fed without corn or cake.

PRIZE—Mr. Henry King, Junior's, South-down wethers.

According to the certificate of Mr. *King*, Jun. of Plaistow,

Essex, these sheep were purchased by him on the 9th of June 1806, being then in a store state, and were fattened on grass only.

The return from Mr. *Henry King*, of Newgate Market, who killed these sheep, is as follows, viz.

	Sheep No. 1. st. lb.	Sheep No. 2. st. lb.	Sheep No. 3. st. lb.
Carcass, with head on	11 7	12 5	11 6
Fat -	1 5½	1 6	1 5½
Skin -	1 4	1 7	1 6
Pluck -	0 4½	0 4	0 4½
Entrails, and contents	1 4½	1 4	1 2
Blood, and loss -	0 8½	0 8	0 8
Live weight (total of above)	18 2	19 2	18 0

CLASS X.

For fat pigs not exceeding two years old.

PRIZE—Mr. George Dodd's black and white spayed Suffolk sow.

According to the certificate of Mr. *Dodd*, of Chenies, Bucks, this sow was bred by him in January 1805, brought a litter of pigs in March 1806, near the end of April she was spayed; and in May, being then in low condition, was put to feed on barley and pea meal until the beginning of August, since which she has ate only barley meal.

The return of Mr. *Dodd*, (who had this pig killed for his own use) is as follows, viz.

	st. lb.
Carcass, with head on	52 4
Fat -	1 5
Feet -	0 2½
Pluck -	1 1½
Entrails, and contents	1 2
Blood 10 lb. hoofs, hair, and loss in killing 8½ lb.	2 2½
Live-weight (total of above)	59 1

N. B. Mr. *Dodd* adds, that this sow lost 38 lb. in weight, from the time of leaving home, until she returned and was weighed and killed, as above; that the circumference of its fore leg was no more than five inches and a half.

CLASS XI.

For fat pigs, not exceeding one year old.

PRIZE—His Royal Highness the Duke of York's, spotted Spanish and Chinese pig.

According to the certificate of the agent of His Royal Highness, Mr. *Samuel Kendal*, of Oatlands, Surrey, this pig was bred by His Royal Highness, from a Spanish boar and Chinese sow, in the beginning of February 1806, and was fed for the last three months on barley and pea meal.

The return of Mr. *Edmund Cotterill*, Jun. of Vine Street, Gray's Inn Lane, is as follows, viz.

	st.	lb.
Carcass 204 lb. flae 12 lb.	-	27 0
Head	-	1 6
Fat, viz. crow, caul, &c.	-	1 2
Feet	-	0 2
Pluck	-	0 4
Entrails, and contents	-	1 5
Blood 10lb. hoofs, hair, and loss 7lb.	2	1
		<hr/>
Live weight (total of above)	34	4

In the list of new Members of the club, which you have given at page 422, line 9, there is an omission of the name of *John Ellman, jun.* also, line 11, read, *William D. Ground*. It may not be generally known to your readers, that the number of Members comprising the Smithfield Club is now unlimited, the subscription is One Guinea per annum, and that the Meetings for business are open to every member.

I am your &c.

12, Upper Crown-street,
Westminster, January, 16, 1807.

JOHN FAREY.

ON PLOUGHS FOR ALL SOILS.

To the Editor of the Agricultural Magazine.

SIR,

I THINK I may, without hesitation, congratulate the farming world in general, and your numerous readers and correspondents particularly, on being placed at our ease at length, with regard to that most important of all implements, and that by which the soil is first subsued to the purpose of human life, THE PLOUGH. Even a few years since only, our uncertainty on this head was considerable, and the difficulty of obtaining a plough convenient for breaking up heavy and stubborn soils, universally acknowledged. Indeed in France, they were yet farther at a loss, and the communications on this subject from their principal Agricultural Societies, teemed with endless difficulties of choice, among the great variety of French and English ploughs. Moreover at the same period, a new plough Society started in London, the object of which

was, to obtain, by means of a considerable premium, a form of plough, unencumbered with the supposed defects of those in present use. Our very good and patriotic Lord, the Earl of Bridgewater, has been the means, through his late ploughing match, of bringing to light and introducing into use, in our's and the neighbouring counties, two of the best, the most efficient and the lightest tools for strong and rough work, that have hitherto appeared in any part of England. We have thus at a stroke, made two acquisitions; we have got a good new plough, and we have got rid of our prejudices in favour of a heavy, disadvantageous and cumbersome old one. I became convinced on the spot, without any kind of regard to the failure on the first day, the reason of which was very evident to me, and instantly ordered a plough of each kind, Wood's and Plenty's. The old Hertfordshire plough will soon, I have no doubt, be entirely laid aside; and if with it, we could also conquer our other great prejudice, and adopt good Hereford oxen instead of horses, with our new ploughs, I am fully convinced by my own experience, the country at large would be much benefited by the measure. We need no longer be at a loss now, in the choice of a plough adapted to all soils: the two already stated, are calculated to turn up old, bound ley-ground of the roughest texture. Small's Scotch plough, Lord Somerville's single one, and the Essex, Suffolk or Norfolk, will fully suffice all ordinary soils and occasions. Lord Somerville's two furrow plough, is adapted to make dispatch on middling and light soils, and the Cambridgeshire fen-plough has always answered expectation on that kind of soil.

I have no leisure just now to turn over your last volume, but doubtless some of your correspondents gave an account at the time of the Earl of Bridgewater's match at Askridge. Indeed I now recollect to have read it. The prize was withheld, from the improper management alone of Wood's plough, to which he very foolishly would put only two horses, on the absurd notion probably that some *writing ploughmen* entertain, of a pair being sufficient in all kinds of work; a sillier idea than which, no theorist ever conceived in his dormitory. The notion here however was most practically confuted, and the two horses being unable to drag the share along, fast wedged, as it was in hard baked clay and stones and roots, it fairly recoiled, yet without in the smallest degree quitting its hold! So truly is it calculated for the kind of work it has to perform; and yet it has all the appearance of a light gimcrack, fit only for exhibition in some Societies shew-rooms; at least to us who are accustomed to old mother Hertford. The land at Sir John Sebright's, at Beechwood, where the second trial was made on the following day, was

still harder to work than that at Lord Bridgewater's; and here the old plough was completely beaten by the two new ones, much to the satisfaction of Sir John, who like a man of real sense, rejoiced that we were all delivered from an ancient and injurious prejudice. He supposed, however, that Wood's plough was not so well calculated for bouting as the old plough, which, granted or not, the other new one answers that purpose perfectly; and with these two ploughs, namely of Mr. Wood's, Aldsworth, Westbourne, Suffex, and of Mr. Plenty, Mile-place, Southampton, both convenient parts also, for sending them to all quarters by sea; we are now sure of furnishing ourselves with ploughs perfectly adapted with four horses, to till our most stubborn and hilly soils.

About two months afterwards, the Earl of Bridgewater and Sir John Sebright had a private trial of the two new ploughs at Ashridge, on a three year old ley; when the noble Lord judged, that, of the two, Plenty's plough was superior, and of more general use; Sir John still retaining his opinion, that Wood's plough possessed superior powers of execution in proportion to its weight.

With respect to the calculations on the DYNAMOMETER—The width multiplied by the depth, and divided by the power, gives the effect.

The numbers in the column expressing the effect, are proportionate to the mechanical merits of the plough; so that the greater number will denote the plough with the greatest merit.

This instrument, a copy of that invented in France for measuring the force of animal powers, is generally exact, bating the uncertain vibration of about two hundred weight, when applied to a plough; an accuracy sufficient in the case of judging the merits of ploughs, which, however, may always be well enough determined in a few bouts, by the eye of an experienced ploughman; it not being possible that such a man can be at a loss to determine, whether two, three or four cattle are required; however, with the view of improving construction, by every possible and proper mode of facilitating draught, and in the necessary and exact comparison of deficient forms, such an instrument of measure, is of indubitable consequence.

I am, Sir, &c.

West Herts.

AN OLD FARMER.

AN ACCOUNT OF THE INCLINED PLANES ON THE SHROPSHIRE AND SHREWSBURY CANAL, AND THE APPLICATION OF THE FIRE ENGINE, AS CONTAINED IN THE DESCRIPTION OF THAT NAVIGATION

[With a Plate.]

To the Editor of the *Agricultural Magazine*.

SIR,

THE importance and utility of *Inclined Planes*, are so material to our internal navigation, as well as the agriculture and commerce of the country, that I am induced to send you the Plan, Elevation, and Description of those adopted on the above canal, as given by Mr. TELFORD, a well known, able, and intelligent Architect and Engineer, in the valuable Survey of the county, under the direction of the Board; and which I hope you will think deserving of a place in your very useful magazine.

I am your &c.

X. Z.

IN introducing the account of this canal, it is remarked, that "the county of Salop has not been among the first to adopt this valuable improvement, and that it is probable that this backwardness ought to be accounted for, from its enjoying the benefit of so fine a river; but the general consumption of the kingdom at large continuing to create a still greater demand for the products of the county, in mines and manufactures, as well as agriculture, these likewise extending in the natural progress of improvement, to a greater distance from the river, and the expence of conveyance being thus proportionally increased, it has of late become an object of importance to improve by some means, the mode of conveyance from the more distant works to the banks of the river.

"The superior utility of navigable canals had by this time been pretty generally ascertained, and they were found to be more especially advantageous in the removal of heavy articles, it therefore became evident, that a navigable canal was the means by which coal and iron could be sent from such distances as the *Oaken Gates* and *Ketley*, so as to reach the market on terms of competition with the same sort of articles which are procured nearer to the river.

"But how necessary soever a navigable canal might be for those purposes, it was for a long time deemed an impracticable project. The general summit over which it must pass lying on that range which is considered as nearly the highest ground in the kingdom; this ground being also very rugged, and consisting of ridges, which are insulated from the adjoining country, there was no prospect of procuring a suffi-

cient quantity of water for the purpose of lockage, the only mode of conveying boats from a higher to a lower canal, which had at that time been practised in Britain.

“ These seemed insuperable difficulties, and most probably might have proved so for ages to come, had not Mr. William Reynolds, of Ketley, discovered the means of effecting this desirable object: for he, about this time, having occasion to improve the mode of conveying iron-stone and coals, from the neighbourhood of the Oaken Gates to the iron-works at Ketley, these materials lying generally at the distance of about a mile and a half from the iron-works, and at seventy-three feet above their level; he made a navigable canal, and instead of descending in the usual way, by locks, continued to bring the canal forward to an abrupt part of the bank, the skirts of which terminated on a level with the iron-works. At the top of this bank he built a small lock, and from the bottom of the lock, and down the face of the bank, he constructed an *inclined plane*, with a double iron railway. He then erected an upright frame of timber, in which, across the lock, was fixed a large wooden barrel; round this barrel a rope was passed, and was fixed to a moveable frame; this last frame was formed of a size sufficient to receive a canal boat, and the bottom upon which the boat rested, was preserved in nearly an horizontal position, by having two large wheels before, and two small ones behind, varying as much in the diameters as the inclined plane varied from an horizontal plane. This frame was placed in the lock, the loaded boat was also brought from the upper canal into the lock, the lock-gates were shut, and on the water being drawn from the lock into a side pond, the boat settled upon the horizontal wooden frame, and as the bottom of the lock was formed with nearly the same declivity as the inclined plane, upon the lower gates being opened, the frame with the boat passed down the iron railway, on the inclined plane, into the lower canal, which had been formed on a level with the Ketley iron-works, being a fall of seventy-three feet. Very little water was required, to perform this operation, because the lock was formed of no greater depth than the upper canal, except the addition of such a declivity as was sufficient for the loaded boat to move out of the lock; and in dry seasons, by the assistance of a small steam engine, the whole of the water drawn off from the lock, was returned into the upper canal by means of a short pump.

“ A double railway having been laid upon the inclined plane, the loaded boat in passing down, brought up another boat containing a load nearly equal to one-third part of that which passed down. The velocities of the boats were regu-

lated by a brake acting upon a large wheel placed upon the axis on which the ropes connected with the carriage, were coiled.

“ It is proper to observe, that Mr. Reynolds reduced the size of his canal boats, for instead of making use of boats of seventy feet in length, each carrying from twenty-five to thirty tons, he made them only twenty feet in length, six feet four inches in width, and three feet ten inches deep; each capable of carrying eight tons. This inclined plane was completed in the year 1788.

“ As soon as the plan of ascending and descending by means of an inclined plane was fairly understood, every person was convinced that its principle was very applicable to the situation of the ground which lay between the Oaken Gates and the river Severn, and that this invention alone would obviate the difficulties which before had been considered as insurmountable. Under this impression, a subscription was entered into, and an act of parliament was obtained for the Shropshire canal.

“ The general direction of this canal is nearly from North to South: it commences on the north side of the London road from Shrewsbury, at a place called Donnington Wood, and proceeds about one hundred yards on a level; it then ascends 120 feet by an inclined plane of 320 yards in length. From the top of this inclined plane (which is the summit level of the canal) it passes on through the Wrockardine and Snedshill coal and iron-stone works, and near the Oaken Gates is joined by the Ketley canal, from thence it goes on by the Holingswood iron-works, and having passed near to the Old Park iron-works, proceeds to Southall-bank, where a branch striking off to the right, passes near to the Lightmore and Horsebay iron-works, and terminates at Brierly-hill, near to Colebrook-dale. The main line of the canal, turning to the left at Southall-bank, goes on to the Windmill farm, where it descends 126 feet, by an inclined plane 600 yards in length: from the bottom of this inclined plane it passes on to the east of Madeley, until it reaches the banks of the Severn, at about two miles below the iron bridge; here it descends 207 feet, by an inclined plane which is 350 yards in length. From the bottom of this inclined plane, and on a level above the reach of the floods, it passes on parallel with the river, to Coalport, where it terminates.”

The following is the “ Statement of the distances, rise and fall.

STATIONS.	Distances.			Rise.	Fall.
	Miles.	Qu.	Yds.	Feet.	Feet.
From Donnington Wood to the bottom of the Wrockardine Wood inclined plane			100		
Inclined plane			320	120	
From the top of the inclined plane to the junction with the Ketley Canal	1	1			
From the junction with the Ketley Canal to Southall-bank	3				
From Southall-bank to Brierly-hill	2	3			
From Southall-bank to the Windmill inclined plane		3			
Inclined plane			600		126
From the bottom of this inclined plane to the top of the Hay inclined plane	1	1			
Inclined plane			350		207
From the bottom of the inclined plane to Coal-port		3			
Total	10	2	50	120	333

“The inclined planes which were adopted on the Shropshire canal, were upon the same principle with that which Mr. Reynolds had erected on the Ketley canal; and the only variations from it were, that in place of the upper canal ending in a lock, it was terminated by a small inclined plane, which commenced at the bottom level of the canal, and was brought up above top water level of the canal, and a steam engine was so placed as to work the axis of the wooden barrel of the upright frame formerly described. By means of this engine, not only the loaded boats are raised out of the upper canal, up the small inclined plane, without loss of water, but there is brought from the lower level, up the inclined plane, a boat with a load equal to that which passes downwards at the same time. The form of this machine, and the manner in which the steam engine is connected with it, will be readily comprehended by referring to the annexed engravings marked No. 1 and 2, which have been carefully copied from those made out by Mr. Henry Williams, the resident engineer, under whose directions the machines were erected, and on whose accuracy and veracity the public may with confidence rely: the distances, rise and fall of the canal having likewise been furnished by him, may be considered as equally correct.

“The branch which turns off to the right at Southall-bank, and which terminates at Brierly-hill, near Coalbrook-dale, is principally for the purpose of sending down coal and iron for

exportation, and for the use of the works at Coalbrook-dale, and for bringing up lime-stone for the use of various iron-works on the summit-level of the canal, and about Ketley and the Oaken Gates. At Brierly-hill this canal terminates at a very abrupt bank, the skirts of which are on a level with the iron-works of Coalbrook-dale. The communication between the canal and this lower level, was for several years carried on by a method different from the inclined plane. A tunnel on the lower level, was carried into the bank, until it was brought just under the termination of the canal; here two perpendicular pits were sunk from the upper surface downwards, until they reached the tunnel; a large barrel, with a brake wheel upon it (similar to that described for the inclined planes) was placed between the two pits; a frame was erected for the support of a pulley, over which the rope passed, which was connected with the great barrel: adjoining to each of these frames a crane was erected, whose arm reached over the canal, in one direction, and when turned round, it reached to the centre of the pit. For the convenience of this mode of conveyance, all the materials were loaded in crates made of iron, four of which filled a boat. When one of the boats, so loaded, was brought within the reach of the arm of the crane, another boat (but empty) was placed near to the opposite pit, and within reach of the arm of another crane. Upon a signal made by the person at the bottom of that pit, that a crate of limestone was attached to the rope hanging therein, the man at the crane, which had by this time raised a crate from the loaded boat in the canal, and carried it over the pit, by lowering it upon the hook fastened to the rope now coiled upon the barrel, gave it such a preponderancy as to draw the crate with limestone up to the top of the pit, which, upon its arrival there, was taken off the hook with the crane and placed in the boat: while this was doing, the crate which had descended was fixed upon a carriage on the level railway below; and this operation was constantly repeated, ascending and descending alternately.

“ These pits were each ten feet diameter, and 120 feet deep.

“ But this method not having been found to answer so well as the inclined planes, it has been left off some time ago, and there is now a small inclined plane erected in its place. On this inclined plane (there being no steam-engine attached to it) the descending crate does not bring up a crate with so large a quantity as when the perpendicular machine was employed, but there is more business done in the same time, by means of the inclined plane, and with a smaller proportion of manual labour.

“Boats pass these inclined planes with considerable expedition. Mr. Williams informs the writer he has known six boats passed down, and six taken up the Windmill inclined plane, which is 600 yards long, and 126 feet of fall, in the course of an hour; and in the performing this, the steam-engine and three men only were employed. The plan, elevation, and application of the steam-engine is shewn in the annexed plate. The boats used on this canal are of the same size as those which convey eight tons, except in the depth, which is so much less, that these carry only five tons.

“This canal being finished in 1792, was filled with water, and has since been kept up by means of the fire-engines which drain the mines in the neighbourhood, and two reservoirs, one of which lies below the level of the canal, and from this last the water is lifted by a fire-engine. Two small reservoirs have since been formed above the level of the canal.

“This canal, carried over high and rugged ground, along banks of slipping loam, over old coal-mines and over where coal-mines and iron-stone are now actually worked under it, is a satisfactory proof, that there is scarcely any ground so difficult, but where, with proper exertions and care, a convenient water conveyance may always be obtained. For this canal, with all its obstacles and difficulties, and being nearly eleven miles in length, cost only 47,500*l.* It has already paid at the rate of six per cent. upon this capital; and if the navigation of the Severn was improved, and the other connexions were completed, there is reason to expect that this percentage would be considerably increased; so that, independent of every other consideration, there is a prospect of its becoming a valuable object, even as a distinct speculation.”

It is observed by the writer, that “the benefits which have already arisen from this canal are very considerable. The numerous coal-mines and iron-works in its neighbourhood, have found a ready communication with the Severn; and the country has thereby enjoyed the benefit of an extensive supply, and a competition, which could not otherwise have been produced. At its northern extremity Messrs. Reynolds have erected a glass-house, and are preparing to carry on other works in that neighbourhood. On the banks of the Severn, *Coal-port*, also established by the genius and laudable exertions of Mr. William Reynolds, bids fair to rival Stourport, and become a station for such articles as are brought up the Severn, not only for the consumption of the adjoining country, but for most of the eastern parts of the county of Salop, and also for a portion of Staffordshire.”

And it is stated that “scarcely had the Shropshire canal
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been completed, before another canal of considerably greater extent was projected. The town of Shrewsbury, and the country immediately around it, are supplied with coal principally from the neighbourhood of the Oaken Gates, and which has hitherto been conveyed by land-carriage, about fourteen miles along the London road; and this part of the road, from the constant succession of heavy coal carriages, had become almost impassable, notwithstanding that large sums of money were annually laid out upon the repairs of it. The price of coals at Shrewsbury continued to rise year after year, and there was no prospect of being able to put a stop to the progress of this growing evil, unless by the means of a navigable canal, which would not only reduce the expense of carriage, but would likewise, by passing through, or near to a greater number of collieries, enable more proprietors to send their coals to this market; and these considerations, joined to the prospect of the agricultural improvements, which promised to follow from the cheaper and more expeditious conveyance of lime and other manures, led to the foundation of the company, which entered into a subscription, and obtained an act of parliament for making of the Shrewsbury canal.

“ From the Shropshire canal, at the bottom of Wrockwardine Wood inclined plane, Mr. William Reynolds had carried a short canal on a level, along the face of the hill towards Ketley, for the purpose of conveying the produce of the mines there to Dodington iron-works.

“ The Shrewsbury Canal Company purchased about a mile in length of the north end of this canal: at the termination of this purchase, the Shrewsbury Canal Company erected an inclined plane of 223 yards in length, and seventy-five feet of fall: from the bottom of this inclined plane, the canal passes on by Eyton-mill to Long-lane, being a distance of about four miles and a quarter, and in which there is a lockage of seventy-nine feet; from thence it passes on to Long, where it crosses a valley of considerable length, and over the river Tern, at the height of sixteen feet above the level of the surface of the meadow, by means of an aqueduct and embankment; near to this place it crosses the turnpike road, which leads from Wellington to High Ercall, Shrewsbury, and Wem; from this road it goes on to Rodington, where it crosses the river Roden, on an embankment and aqueduct at the height of twenty-one feet above the surface of the river there; from this place it passes on through Withington to near Atcham, where it crosses a turnpike road, and at half a mile to the north of the road enters a tunnel of 970 yards in length; from the north end of the tunnel it passes

on under Haughmond-hill to Pimley, where it crosses a valley on a small aqueduct and embankment: from thence it passes along the banks of the river Severn, and terminates in a large bason and coal-yard at that entrance to the town of Shrewsbury called the Castle Foregate.

“ There are several circumstances which are peculiar to this canal—one is, that the communication between the higher and lower levels is partly by means of an inclined plane, and partly by locks: a second is, that as small boats are used upon this canal, the locks are so formed as to admit of either one, three, or four boats passing at a time, without the loss of any more water than what is just necessary to regulate the ascent or descent of the boat or boats that are then in the locks. This is accomplished by having gates that are drawn up and let down perpendicularly, instead of being worked horizontally; and each lock has three gates, one of which divides the body of the lock, so as to admit of one, three, or four boats at a time. A third, and perhaps the most striking circumstance is, that the canal passes over the valley of the Tern at Long, for a distance of sixty-two yards, upon an aqueduct made all of cast-iron, excepting only the nuts and screws, which are of wrought-iron; and the writer believes this to be the first aqueduct, for the purposes of a navigable canal, which has ever been composed with this metal, but which has been found to answer in the completest manner.

“ And another circumstance (which he believes to be peculiar to this canal) deserves to be mentioned, as it may prove serviceable to those who may be concerned in the forming of other canals. What he means to refer to, is the mode of constructing the towing-path which passes through the tunnel. This towing-path is three feet wide, from the wall to the outside of the railing; it is not a solid body, like to the towing-paths which are formed under canal bridges, but consists of standards of wood, which are fixed in stones placed in the inverted arch at the bottom of the canal, and is tyed into the side wall by bearers which are framed into the uprights; upon the bearers the planking is laid, which forms the road of the towing-path; a railing is placed along the top of the uprights, and a piece of wood is framed between them, at a little way below the top water-level, to prevent the boats from striking the uprights obliquely. By this towing-path being hollow below, there is a water-way in the tunnel, of ten feet, instead of seven feet, which would have been the case if the towing-path had been formed solid. This is an useful contrivance, because it preserves the water-way,

and affords a towing-path, without going to the expense of enlarging the width of the tunnel; but it would, he says, still be an improvement, if the whole of the towing-path was constructed with stone or iron, instead of timber, and if it was made three feet six inches in width."

ON COMMON MEADOWS, AND SOME OF THE ADVANTAGES OF THOSE OF THE WATERED KIND.

To the Editor of the Agricultural Magazine.

SIR,

THE importance of having a sufficient extent of meadow land on a farm, is now well known, by those farmers who are accustomed to the support of a great cattle and sheep stock, as without it, it is only under particular circumstances, that they can be provided for in a manner so as to be supported and brought well forward. The following observations by Mr. Powis, may therefore deserve attention.

"It should be considered as a great object of every landlord or steward, to procure watered or flooded meadows. The best means of doing this, is to place the farm-yard on such an eminence of the farm, that a stream can be procured to run through it, and afterwards over the greatest quantity of meadow land.

Common meadows ought to be well manured once in three years, and will then produce one ton and a half of hay per acre, and a pasture from the middle of September till Christmas.

Good watered meadows, will bear to be grazed from the beginning or middle of August, till May following, and will between that time and hay harvest, produce one fourth more of hay than the other.

The difference of the profit of watered meadows over common, I think, is annually as underneath:

" One third of 5l. (the expense of manuring an acre of land)	L. s. d.
One half ton of hay additional	1 13 4
Difference of the value of grazing	1 5 0
	0 11 8
	<hr/>
	3 10 0
	<hr/>

"But besides the produce and profit, there are two other very great advantages in watered meadows. The one, saving manure for arable land; the other, keeping the pastures free from stock the beginning of spring. But though he has hi-

therto only noticed a stream that runs through a farm-yard, he has frequently observed very great advantages from nothing but clear spring water being turned over grass-land.

“If a farmer has a greater command of water than he wants for his meadows and pasture land, he may occasionally till some of them for two or three years, and they will produce great crops without manure. He saw this practised with great success at Dishley, Leicestershire.”

In many situations in different districts of the kingdom, the watering of land with clear river, and even spring, water, has been found to produce the most beneficial consequences.

Wishing success to your useful Magazine,

I am, yours,

T. T.

ON THE CULTURE AND APPLICATION OF CABBAGE CROPS.

To the Editor of the Agricultural Magazine.

SIR,

THIS is a plant which has been long grown in particular districts with much utility and advantage, as a winter and spring food for cattle and sheep; but the benefits that may be derived from it are still probably far from being generally known to farmers, as it may be cultivated on other soils besides those of the stiff and heavy kinds, and perhaps with superior advantages, in many cases, to that of the turnip. This at least seems to be rendered extremely probable by the experience of different cultivators, as detailed in the Agricultural Survey of the County of Norfolk, as well as some other tillage districts. It is stated that in the Rev. Mr. Forbys's trials with it, he was extremely successful.

“Two acres produced 28 tons per acre carried off the land, a strong wet loam on clay, two adjoining acres of turnips were fed off with sheep, the whole sown after three earths, with oats, to the eye perfectly equal, and the whole produce 90 coombs, 12 quarters per acre. Seeds took well after them, and he cut nine tons of hay. No manure for either cabbage or turnip. In his practice he never exhausted his land, which always worked better for barley or oats after them than his turnip land. No cattle could do better than his cows when fed on cabbages, and the cream & butter free from any disagreeable taste. The seed was always sown as early in the spring as possible on land well sheltered, dang-

ed and dug. The moment he perceived the fly on the young plants he sowed the seeds with wood ashes, which instantly destroyed the fly, and so far from hurting the plants, that it was astonishing to see how they were invigorated by it. They were planted out the third or fourth week in May. He always mucked the land intended for the crop soon after Michaelmas, which he found far preferable to doing it just before planting. In a very severe frost which destroyed all the turnips his cabbage escaped, and were of immense use. And on further experience of them he has never seen any piece of land, there planted, part with cabbages and part with turnips, where the former did not exceed the latter fourfold at least. Upon doubts having been started whether they did not impoverish the land, he formed an experiment upon a course of crops to ascertain that point by a rotation which would prove it, if the fact were so. The land middling, let at 12s. an acre. He spread 14 loads per acre of dung on a wheat stubble, and ploughed it in soon after Michaelmas. Three ploughings more were given, and cabbages planted in June, then oats, then wheat. No person in the parish had clearer oats or wheat, nor any such large crops; 15 coombs an acre of oats, and 6 coombs, 9 bushels, of wheat; and, two years in five, 19 coombs an acre of oats, and 9 coombs, 1 bushel of wheat. No sheep nor cattle fed on the land at any time, nor other dressing given, except the third year as above, for the cabbages."

In these attempts he "tried the red garden cabbage, and found them very hardy, and to come to 14 lbs. but they demanded more time for growing than the green sorts, of which those streaked with red veins are best and most durable. He hung those up for seed for two months after Christmas. Did not approve of cutting the stalk only as the side branches were apt to break off; each good plant yielded one pound of seed; he dried it on a hurdle raised on stokes, and if the ground was fine under them and dunged, it became a seed bed." It has likewise been the practice of Mr. Coke "to cultivate the large cattle cabbage for 13 or 14 years, and he has got very fine crops which yielded more food than turnips on good lands; he has had up to 20 acres per annum. He sowed the seed in February, and transplanted as soon as the plants were large enough, continuing till the beginning of July, manured as for turnips, 10 loads per acre. The expense the same as that of turnips. And Mr. Reeve, of Wighton, has every year a few acres to use in frosty weather, finding a load of great use for his cows in the morning: he sows the seed in February, and plants in June; the rows three feet by two and a half; he is clear that an acre produces double

food of an acre of contiguous turnips, and does not observe any defect in the barley that follows the culture of this plant.

“ Mr. Richton has known as good barley after them though carted off, as after turnips fed late on the land. This method of culture was to sow the seed the first week in February, once to remove the plants and let them out by the 4th of June, handhoed them earthing up, then run the double earth board plough between the rows, and the handhoes after, to draw the earth still higher up. He planted by a marking rake, with three feet asunder, drawn along and across, and set the plants at the intersections.”

In Hertfordshire “ Mr. Chapman, of Hitchin, cultivated the great Scotch sort on a loamy soil for sheep; he got great crops, and is clear that his sheep improved as much in one week on cabbages as they did in two on turnips. He did not continue it because the depredations of the poor people were so great; in any other situation he would never be without them: and Mr. Hale, of the same district, has for many years cultivated the large cow cabbage. He fallows and manures as for turnips; sows the seed in the spring; plants in June and July, according to the season, in rows a yard square every way. They are kept clean by handhoeing. He begins to use them when the cows are taken into the yard, and they are given night and morning with hay to the cattle, and are much more productive than turnips, and answer far better for cows. Some have been given to ewes and lambs which do exceedingly well, and the hogs have always run very eager to eat whatever is left. In regard to expense it does not exceed that of turnips. The quantity grown is usually from two to four acres and a half.”

Mr. Curwen found the use of cabbages very considerable in the feeding of cows under the milking system, but they are troublesome and expensive in clearing from decayed leaves, which is necessary to the sweetness of the milk. He advises early planting, but thinks that a hardier sort than that of the drumhead would answer better for standing the winter, and suggests a trial of some of the Scotch coles, which by proper care, might, he imagines, be increased to a large size.

It is also remarked in the above Report on Agriculture, that “ Mr. Fowel cultivated Scotch kale in 1801. The seed was sown in a bed in April, and transplanted the middle of June in rows at three feet, and the same distance from plant to plant on three acres. They were kept clear by handhoeing and fed off by sheep. They yielded abundance of food

but he thought the sheep did not take kindly to them: the use however was very great as his turnips rotted. This year he intended a crop, but the seed was bad and failed. The barley was as good as after turnips."

I am,

Yours, &c.

D. W.

ON THE CULTURE OF SANDY LANDS.

To the Editor of the Agricultural Magazine.

SIR,

THE soil in this case was of the poor sandy forest kind, which, where the season admits, should be cleared by ploughing immediately after harvest, or at the latest as soon as the Michaelmas seed is finished, taking care to turn over every part of the mould, leaving it as open as possible; and as soon in the spring as the land will work, it should be well harrowed over, or broken down by scarifying; but the latter is probably the better practice.

"The scarifier made use of is worked by two horses which will do eight acres in one day, and after the first ploughing will answer equal, if not better, than a ploughing: it is best to be drawn across the fallow, after which the use of the harrows are necessary to get off the twitch, then to scarify again, drawing it the contrary way from what was done before, when it will soon get rid of the twitch. The scarifier has only one row of teeth, and if the land is very foul only four teeth should be put in at first, but after it has got to be tolerably clear, put in the remainder which will collect all the short twitch. This implement has one very excellent qualification above all the cultivators I have seen, which is, that it does not break or cut the twitch, and by performing so much in one day gives a longer time between the times of stirring the land, so that the weeds vegetate and are in consequence more effectually destroyed by the succeeding operation, and by this mode the land will be much earlier prepared than by the plough and harrow only, which will give an opportunity of manuring early, and incorporating the dung well with the soil, by giving the land two after ploughings, and by such incorporation of the dung and soil, there will be a greater certainty of succeeding in the turnip crop. It is found that malt combs are a very excellent manure for turnips; twelve quarters per acre is a very good dress-

sing, and will more than equal twelve loads of manure produced from the farm yard: after turnips barley is put in, with which grass seeds are sown, such as white clover 15 lbs. trefoil 5 lbs. and rye grass one bushel, per acre, all of the best quality: in the succeeding course things are varied by sowing red clover with trefoil and rye grass, which are found a complete change from the other; by this method there will be a certainty of having good seeds in the spring. By avoiding as much as possible pasturing the young seeds after harvest, they will be much earlier and more abundant at spring. This is pastured for two years if not wanted for fodder; when eating, the second year is better, on account of the trefoil, which will be totally destroyed by mowing, after which it should be ploughed at Michaelmas, and sown with wheat or rye, according to the strength of the soil. It is a most excellent method of fallowing from the sward, but when there is manure for the whole of the land, it will be the most profitable way to take a crop of wheat or rye first: another thing is, it will fallow much easier after a crop than from the sward, except your land is quite clear of twitch, which is seldom the case in sandy land; and which is scarcely ever mown for fodder, as it is very injurious to such soils, and it is very possible to keep horses, winter and summer, without mowing any seeds, which is done by cutting the unthreshed oats or wheat straw, or beans, in the winter months; in summer they are kept in the fold upon green fodder. A certain quantity of land kept in a garden style, for such successions of green fodder is an excellent method. To let land lay three years in seeds is not a good practice, particularly in light sandy land, for the third year's seeds will bear very little stock in proportion to the first and second years, of course the land cannot benefit by the stock, and if it only benefit by rest, it follows that it should be ploughed up at the end of the second year, and to get it into a state of fresh seeds again as soon as possible."

The following method was practised in a better sort of land, a sandy loam, by Mr. Legard, in which he had the old swarth broken up for wheat, after which turnips, barley seeds two years (the first year summer eaten and the second mown) and then again wheat. By adopting this course the land can never, he thinks, be exhausted, and in a tolerable season is certain of producing a good crop. He has always found it best to manure well for the turnips, and has laid on between fifteen and twenty loads of old fold yard dung per acre; but upon such soil marle is the best of all manures, and if it can be had at a moderate distance, it ought to be used, because it strengthens a weak, restores an exhausted, soil, and is a per-

manent advantage to the land. Upon a blowing sand he has laid on two hundred loads per acre. We must here observe that in lands on which turnips will grow, he never risks the taking of two white corn crops in succession; after marling, however, he adopts the following method: He lays the marle upon weeds of two years growth, which are ploughed out in the spring for oats, and on the oat stubble, in the autumn, he sows wheat after once ploughing. If the season has been tolerable, he has never failed of having a good crop of each. After the wheat he sows turnips, barley, red clover, and wheat again. In this mode four corn crops are obtained in six years, and the soil is not exhausted, but, on the contrary, made better for any succeeding crops than it was before it was marled, which has always till this year, been completed for less than four pounds per acre. It will in this year, owing to the increased expense of keeping horses, and the price of labour, perhaps, cost five pounds. When he speaks of loads, he means not quite a ton, and two hundred of these loads will form a stratum of two circles in thickness. The first ploughing for oats should be as thin as possible—there should not be above an inch and a half of the swarth turned up. In this case the oats will grow freely, and when the stubble is ploughed for wheat, care should be taken to go deeper, that more of the original soil be turned upon the marle. The seed will then be harrowed into the old soil, and the roots will strike through that into the marle, which will be of sufficient strength to carry a great crop.”

Yours,

F. R.

Herts, July 10th, 1807.

ON THE ADVANTAGES OF DIFFERENT METHODS OF DAIRYING.

To the Editor of the Agricultural Magazine.

SIR,

THE rapid increase in the price of the various products of the dairy, have in many instances induced the farmers engaged in this department of rural business, to bestow much more attention than formerly in conducting the different processes, as well as in preparing the several articles which are the result of them; and to compare with greater minuteness, the advantages of different methods of management. And some useful hints in this way have been lately

given by the author of the Clydesdale Agricultural Survey, who states that "A pound of butter made on the high pastures, is supposed to yield a little less oil than one made on the low, but the taste and flavour is equally good, and the former is less apt to become rancid in keeping. The produce, too, is less in proportion on the former than on the latter. The dairy business is conducted three ways in that country:—either the whole milk is made into cheese, or butter is made of the cream, and cheese of the skimmed milk; or, in the most populous parts of the county where there is a great demand for butter-milk as an article of food to the poor, the whole milk is churned. People are induced to adopt any one of these ways, either from situation or from some circumstances of supposed conveniency. There are some pastures from which the milk yields proportionally more butter, others more cheese; but there are very few instances in which this variation in the nature of the pasture has been found considerable, and there is no sure rule of judging but experience. It is mostly fancy which determines the choice, the profit from the different ways being nearly equal in general. By averages made up from the reports of the owners of dairies in different parts of the county, eight Scotch pints of new milk, or the cream taken off it, will produce a pound (or 22 ounces avoirdupois) of butter; 80 pints will therefore produce 10 pounds, and after the cream is taken off for butter, 70 pints will remain for cheese, and this will make twenty-two pounds avoirdupoise, of cheese, saleably dry; about 53 pints of new milk will make a stone of cheese. The state of the different practices then will stand thus.

" 80 pints churned.

	s.	d.
10 lb. of butter, at 8d. - - -	6	8
70 pints of milk, at $\frac{1}{2}$ per pint - -	4	9
	<hr/>	<hr/>
	11	5

" New milk, cheese from 80 pints.

	s.	d.
24 lb. at 5d. - - - - -	10	0
60 pints of whey worth 2d. per gallon -	1	3
	<hr/>	<hr/>
	11	3

“ *Butter and skimmed cheese from 80 pints.*

	s.	d.
10 lb. of butter, at 8d.	6	8
1 stone of cheese	4	8
6 pints butter-milk at $\frac{1}{4}$ per pint	0	$4\frac{1}{2}$
50 pints weak whey, at 1d. per gallon	0	$6\frac{1}{4}$
	<hr/>	<hr/>
	12	$2\frac{1}{4}$

“ And two or three pigs are frequently reared on the whey at a dairy.

“ Of two cows of the same size, and perhaps from the same parents, one often gives a good deal more milk than another, but cows in general give more or less milk, and better or worse, in proportion to the quantity and quality of their food, the regularity with which it is administered to them, and to the ease they enjoy. It has been always observed that two or three cows kept by themselves, are more productive in proportion than greater herds, though the few should enjoy no visible advantage over the many, but perhaps the contrary, which seems to shew that undisturbed quiet and minute attention are of great importance. Particular instances might be given of cows giving a great deal of milk, but it is not from uncommon instances, but general averages, that a just idea can be formed. It is reckoned a moderately good milch cow that gives eight Scotch pints a-day, and supposing her whole milk through the season to be equal to 150 days at that rate, it will make 150 gallons, which valuing every ten gallons at 11s. 3d. the lowest of the above statements, it will make the annual produce of a milch cow, exclusive of the calf, 8l. 8s. 9d. This however is far above the average produce of the dairies, which runs from six to four pounds per cow, according to the situation, and about one third more may be added to this and the other money articles, on account of the rise of price in the commodities of the dairy.

It is the custom with “ those who keep milch cows to give them the best pasture in summer. When the grass fails wherever turnips are raised, these are given, in order to protract the milk season; but full feeding with turnips renders the milk nauseous, and none of the recipes which have been recommended can cure its rankness. When cows get plenty of good fodder, and are only partially fed with turnips, the purpose of continuing milk is in a great measure answered, and the effects on the flavour of the milk little perceptible. If turnips be washed, or if the weather be rainy when they are taken up, the flavour of the milk is the stronger. In

some places potatoes are used in place of turnips for the same purpose, and are much preferable, producing not only plenty of milk, but of a rich quality and of a good flavour. Though the profits of the dairy are moderate, it seems to be very doubtful if a farmer can make as much of his pasture by any other management. It was a late subject of debate proposed for the consideration of a respectable society of practical farmers in this county, whether keeping milch cows, fattening cattle, or fattening sheep, was the most advantageous?—and it was decided in favour of milch cows, by a great majority of votes. The principal arguments on this side were that the produce of the dairy was never equal to the demand, and therefore the market less fluctuating, that the farmer who keeps milch cows has little occasion to go around the country to market, and consequently has leisure to attend to his farm, that by keeping milch cows properly fed, attended and littered, the greatest quantity of manure for the improvement of the land could be made.

I am,

Your humble servant,

D. W.

ON THE CULTIVATION OF WASTE LAND.

To the Editor of the Agricultural Magazine.

SIR,

AS under the present circumstances of the country, the bringing of the cultivatable waste lands in different parts of the Island into a state of culture and productiveness, cannot but be an object that must seriously engage the attention and consideration of every person who is the least interested in its welfare and independance; as being, perhaps, in conjunction with a more extended cultivation and use of green crops, in the feeding of different sorts of domestic animals, the only *efficient* and lasting measure by which a sufficient supply of *bread-corn* can be raised within the kingdom, for the support of its numerous and increasing population. The effects and advantages of having this almost useless description of land, brought into a proper state of husbandry, is so forcibly shewn, by the intelligent writer of the Agricultural Survey of a northern district, the county of Argyle, that the following extract may not be unacceptable to some of your numerous readers.

I am, your most obedient,

Glasgow, Jan. 1, 1807.

R. R.

“ IN this county there is a vast quantity of waste land which is capable of cultivation. Much of this land, if improved, would be of more value than a great part of what we have now in tillage. Our forefathers, ignorant of the art or advantage of draining, pitched not upon the best, but upon the driest fields. If the plain was too wet to admit the plough, they passed by it, and tore up the face of the bleak and barren hill, where there was neither soil nor shelter. Hence a great deal of our best soil still remains in a state of nature.

“ The quantity of waste land capable of cultivation, that may be in the continental part of this county, may probably, at a low calculation, be stated on an average, at 2000 acres to each parish, or about 50,000 in all*. What a vast source of riches to landlords, of employment to the poor, and of benefit to the public, is here, if duly attended to! What wretched policy was it, to drive such numbers of our people to cultivate the wilds of America, when we had such extensive wastes to be improved at home? Nor is it much wiser to make them migrate to manufacturing towns and large cities, which is their only resource at present. There, indeed, they are not lost to the state, but they are lost to the country; and a very serious loss it is. Besides, neither their own health, nor morals, nor the general interest of the state, is promoted, by their being employed in any other line, so much as by their being employed in agriculture. Had landlords, by some liberal plan, encouraged them for thirty or forty years past, to improve those waste lands, thousands of acres not worth one shilling now, might have been worth fifteen or twenty shillings; the food, and consequently the number of men and beasts, might have been greatly increased, and the value of estates greatly raised above what it is at present.

“ The Highlanders, secluded from the rest of the world, by customs, manners, dress, and language, are so strongly attached to their country, that they would seldom roam for bread if they could get it at home. If this were not the case, one half of those who remain had been away ere now. Should not landlords then avail themselves of this attachment of their

“ * This may be far under the mark. In the county of Radnor (thirty miles by twenty-five), which is little more than a third of the extent of the continent of Argyleshire, it is computed that there are 50,000 acres of waste ground capable of being cultivated, and of giving food and employment to 10,000 people (Agricul. Rep.). Calculating at this rate, which we might fairly do, as this county is less improved than that of Radnor, what a vast accession to our numbers, both of men and cattle, and consequently to our wealth and power, would arise from the cultivation of our waste grounds!

people to the soil, and promote their own interest and that of the public, in the most essential manner, by encouraging population, and the improvement of waste lands?

“As there is reason to believe that many landlords do not advert to the gain of improving waste lands, it may be proper to state it, and to shew that in no other way can money be laid out to such advantage. Whenever it is laid out with judgment (as it always may), the risk is less, and the gain greater, than in manufacture or in commerce. When the manufacturer or the merchant disposes of his goods at six or twelve months credit, he risks the stock altogether; and his gain, when he gets it, is generally but ten per cent. whereas the improver of land is, in the first place, free of all hazard; and, in the next place, may be supposed, in general, to gain at least from twelve to twenty per cent. upon his outlays.

“The average expense of draining or improving waste ground, is commonly estimated to be under three pounds per acre*. Now, if by these three pounds, land worth only from one to three shillings is raised to fifteen or twenty shillings, the improver has, at the lowest rate, twelve per cent. for his money. Or, in other words, by laying out three pounds, he adds fifteen pounds to his stock, as every shilling per annum which the acre is improved, is worth at least twenty-five years purchase.

“Enclosing and manuring are not reckoned, as lands already in tillage need these meliorations as well as those that are yet uncultivated†. The only expense peculiar to the improvement of waste lands, is that of draining, and reducing the surface to an arable state; and this, it is believed, was stated fully high, as the value of the improvement is probably stated too low. At least this is generally estimated higher wherever it has taken place, as might be shewn in num-

* In the Account of the most Improved Methods of Draining (p. 164) it is said, “The under-draining one acre (the drains at one rood apart), including wood, straw, and all other incidental charges, amounts to an expense of from forty to forty-five shillings an acre.”

† In improving waste lands, the open drains or ditches may also be made to serve for fences; so that the expense of enclosing may be saved. The converting of waste lands, whether into tillage, plantations, or meadows, must depend on their peculiar circumstances. But, in portioning out the land, the conveniency of draining and watering should be considered in the first planting of it, as this will save future expense and trouble. Few instances will occur, in which the ditches for the necessary fences may not be made useful drains, and often the only ones necessary; and there can be few large tracts allotted for meadows or pasture, of which at least a part may not admit of being watered.

berless instances throughout the kingdom.* The few instances of such improvement with ourselves, may serve sufficiently to shew, that what could not feed a sheep may be made to feed a cow; and the expense is allowed to have been moderate, although the improvers have not been at pains to ascertain it, as such things are done by servants or labourers occasionally, and not by the piece.

“ It is often said, that the soil and climate of this county are more adapted for producing grass than corn. The truth is, the soil and climate of the greater part of it are well adapted for either; and wherever toil and skill are exerted in raising either, they are sure of being well rewarded. But, supposing grass should be our great object, ought we not then to put more of our land in a capacity of raising it?— Our meadows are bad, but we may mend them; they are few, but we may add to them; and, almost to any degree we please, create both pasture for the summer, and provender for the winter. By such improvement of our waste lands, and by the introduction of green crops, it is possible enough that, in half a century, some parts of this county might rear more than double the black cattle or sheep that are reared at present. In the last century the Isle of Anglesey (not a third larger than the district of Kintyre) was only beginning to be improved, as we are now; and its annual export of black cattle was but about 3000. But such was the progress of its improvement, that before the middle of this century its exports rose to 15,000 cattle (and other articles in proportion), reserving still a stock of 30,000 at home †. It is impossible to say what our quantity of waste land, if improved, might one day be made to produce. It is certain, that much of it would be found to be more productive than a great part of what is in tillage at present.

* Mr. Mackenzie, of Allangrange, has improved 70 or 80 acres of a perfect morass, which let for less than 1s. the acre, so as to be worth now from 15 to 20s. Stat. Acc. XII. 268.

A spirited farmer, who, not many years ago, took in lease a tract of 1400 acres of waste ground, says, that some of the worst of these acres are now very cheap at 40s. each in pasture; that 100 of them are worth more than the whole farm when he took it; and that, though formerly covered with heath, and in a high and unsheltered situation, the parts improved were brought, in one or two years, at a moderate expense, to produce as abundant pastures as any near the banks of the Clyde. Appendix to Agric. Rep. of North. Count. p. 2, and 12.

† CAMPBELL'S POLIT. SURVEY, I. 498. Since that period (little more than 20 years), the flock is increased to 40,000. AGR. REP.

“ Profitable, however, as this business would certainly turn out, both to the individual and to the public, it is to be regretted, that they who are able, are not often disposed to attempt it. Instead of this, they choose to buy more, and to enlarge their quantity of wilderness, rather than to improve what they already have. If they would duly weigh these two plans, they would probably make a different choice †. To improve one acre of waste ground, may perhaps cost as much as would buy two in the same state: but then it will afterwards yield the rent of six: and a compact estate is more desirable than a larger one that is but equally productive. It is more, for the saving of seed, labour, and fencing, may render one acre that is worth 10s. a more profitable concern than three that may be worth 5s. each. Land cannot be bought under 25 or 30 years purchase; while the profit on improving it may be generally obtained for less than a fifth of this price, and give a revenue equally certain; and a revenue, too, which is not, like the purchase of land, subject to any taxes §.

† It is indeed a common observation in this county, that proprietors seldom make much of farming or improving land. If the remark has any foundation, the reason of it may be, that proprietors must do many things at a greater expense than ordinary farmers, as advantage is often taken of their inexperience, and they cannot so narrowly look after their servants; and, if they want skill, or will not give attention, they would as little succeed in any other business as in this. The fault is in them, and not in the subject.

§ N.B. The income, or property tax, was not then laid on.

The following extract from the Agricultural Report of Montgomeryshire (in North Wales) will show that the advantage of improving waste lands is much greater than is here stated.

“ Mr. Corbet now draws 50 per cent. per annum for the money laid out in improving his mossy or turbary lands; which is the same as buying an estate at two years purchase. The soil is generally of a mossy nature. The main drains are very deep and wide, and constitute a part of the fence. The smaller or covered drains, are four feet deep, and two wide at top, sloping to three inches at bottom. The turf inverted, is laid eight or nine inches from the bottom, leaving a vacuity for the water. Within these twelve years, Mr. Corbet has thus improved 261 acres, the average rent of which was formerly only 9d. per acre,

“ Present value 144 acres and a half, at 30s. per acre, and	
116 and a half, at 40s. per acre,	£9 15 9
“ Additional rent gained,	£440 6 9

Expense of the Improvement.

“ Embanking 1980 yards, at 2s. 6d. and 2310	
yards, at 1s. 3d.	£418 17 6

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“ In every view, therefore, the improvement of waste lands is a gainful business to the owner. It is found to be so even in England, though the improvement upon an acre of land is often taxed with from 5s. to 10s. a year of tithes and poor rates. This of itself, would be no small gain; but we have it over and above that of our neighbours. It is evident, therefore, that he who is able should lose no time in improving his waste lands; and that he who cannot do it otherwise, would find it his interest rather to sell the one half, in order to improve the other, than that the work should be left undone. —When a proprietor is not disposed to improve his waste grounds himself, he ought to give the most liberal encouragement to tenants and labouring poor to do it for him. What this encouragement should be, must depend so much on the varying circumstances of soil, situation, evenness of surface, depth, declivity, and access to natural manure, as lime, water, sea-ware, &c. that no general rule will apply to all cases. Every proprietor might employ some skilful and judicious person to ascertain the value and extent of his waste improvable lands. and to draw regular plans and estimates of the proposed improvement; after which he could judge of the terms on which they should be given to be cultivated. The foundation of the encouragement, however, ought certainly to be a long lease, to poor, honest and industrious labourers; with a small matter to build a house, and to help them to live till they can raise food to support themselves; after which they should pay interest for the money, and a small rent for the ground. Proprietors should give any encouragement, short of their own loss, rather than allow these lands to lie any longer as they are*.

	L.	s.	d.
“ Draining 12,452 yards, at 7½d.	389	2	6
“ Sundry other Improvements, - -	40	6	3
	£.821 6 3		

“ Mr. Corbet has still a great quantity of waste land to improve, which can be done at a still smaller expense, as no embankment is necessary. The peat, or mossy land, by frequent ploughing, application of lime, and flooding, is now almost converted to a rich loam. I should think it worth almost double the highest value put upon it, as it is flooded. He pastures it till the beginning of June, and cuts hay the beginning of August.”

It is obvious, that the greater part of the above expense arises from the embanking, for which there will rarely be any occasion. Were it not for this, the profit, which, as it is, exceeds 50, would be above 100 per cent. per annum.

* The encouragement given to a colony of 126 Highland families, who have set themselves down on the great mosses of Kincardine and Flanders (near Stirling), is commonly 36 years' lease, 3l. or 4l. to build a house,

“The lands capable of cultivation in this county, are of various kinds; some of which will infer more, and some less expense to improve them. There is, *first*, a great deal of moorish land, covered sometimes with heath, and sometimes with benty grass and sprots. As this kind of land has commonly a good descent, and rests upon gravel, at no great distance from the surface, which is generally a black peat earth, it may be cultivated with the plough at no great expense. It should first be ploughed in summer, in narrow ridges; and soon after either cross-ploughed, or well broken with spades. —It should then be covered with lime§, or some other manure, receive a gentle harrowing, and lie in that state till it get the seed-furrow in spring. The summer’s drought, the winter’s frost, and the fermentation caused by the manure, will, in most cases, make it mellow and manageable enough by that time. If, in any case, it should not, it is best to let it have another summer ploughing, and to let it lie till next year, when the crop will be so much the better as to pay for the delay. After the ground is sowed and harrowed, the plough should be run lightly through all the furrows, in order to carry off superfluous moisture, and keep the ridges dry. With the second crop, it should be laid down with grasses for pasture, and the furrows well cleaned. If the ground be of a good staple, three crops may be taken, provided the middle one be turnips, with dung‡. This, after the lime given to the first crop, will leave the land in better heart, than if only two white crops were taken, with the lime only.

and no rent exacted for the first seven years. After that, a small rent (a merk Scotch per acre) is laid on, and gradually raised. In the latter end of the lease 2s. 6d. rent is exacted for every acre taken, and not improved, though not worth 3d. This is intended as a spur to diligence. But the more liberal and wiser proprietors, instead of imposing this penalty, give a premium for every acre that is improved (greater or less in proportion to the expense incurred), and add the interest of the premium to the rent. This gives the tenant strength and spirit to go on; while the proprietor has immediately five per cent. for his money, and the prospect of perhaps ten or fifteen for it at the end of the lease, when the improvement is all his own. —See Stat. Acc. Vol. VI. 496.

If landlords were to pay their tenants one half the estimated value of any improvements they made, in bringing in and enclosing waste or mossy land, at the end of a 19 years’ lease, it would probably conduce much to the improvement of the country. By this means the tenant, who would improve in the early part of his lease, would be more than reimbursed, and the landlord would be 50 per cent. a gainer.

§ Lime is peculiarly suited to heathy, mossy, and new land; as, by its caustic quality, it converts these and other vegetable substances into fine mould. The effect of lime upon new land is much greater than upon old.

‡ Thus Mr. Barclay, of Ury, has improved 300 acres of barren land. —Stat. Acc. Vol. XII. 599.

“ The improvement of lands of the above description is so cheap a purchase, that even tenants upon a 19 years lease, having access to lime, might pursue it to great advantage. A few of them do so, and more it is hoped will follow their example. Some of the Duke of Argyle’s tenants, in the parish of Southend, have of late years done much in this way, by which their farms and their profits are enlarged, and the face of the country beautified. But the greatest improvement of this kind, that has yet taken place in the county, was by the late Sheriff Campbell, of Stonefield, who rescued, mostly from the barren heath, a large farm of many hundred acres; which now of itself would be no small estate. And yet it may be said this vast improvement cost him nothing; for he used to tell, that the work always defrayed its own expence. He had, besides, the pleasure of giving employment to a number of labouring poor, and of doing much good to all around him, by furnishing them with seed corn; which is found to answer best when taken from new lands: a consideration which ought to recommend the improvement.

“ A *second* kind of land capable of cultivation, and of which we have a great deal, is soft bog, or morass. This is more difficult to improve than moor; but then it will better pay for the expence. It is a collection of rich mud and sediment, washed from the higher grounds, and now mixed with so much stagnant water, that neither man nor beast can tread on it with safety. This kind of soil, when well drained, is the richest of any. Nor is the draining of it so difficult as may be at first apprehended. Sometimes the water which poisons it comes from higher grounds, so that it can easily be intercepted, and afterwards made to serve it, in the way of irrigation, as an excellent manure. Sometimes the water is supplied by springs within itself; which will easily be discovered, after the bog has got an outlet at the lower side, to which the springs may be conducted by open drains as the mud subsides; after which it may be regularly drained, and converted into valuable pasture or arable land, as the owner chooses. A considerable tract of ground in the neighbourhood of Campbelton, partly a lake and partly a morass, was thus brought to be excellent arable land, by the late Colonel Charles Campbell. Besides the advantage to the owner, the draining of such marshy grounds conduces to the healthiness of the neighbourhood, by removing their putrid exhalations.

“ A *third* kind of waste ground, and that in which we most abound, is moss; of which there are in every parish large tracts, useless in their present state, but capable of cultivation. They are of different depths, from two or three to

eight or ten feet, and of different dimensions; so that some of them may be reckoned, not by the number of acres, but of square miles which they contain. One of these immense mosses lies in the neighbourhood of Campbelton, to which it must, some time or other, be of infinite service. At present, its thousands of acres are almost good for nothing, except furnishing a few peats; which (as is the case in most mosses) have been so irregularly cut, as to add much to the difficulty of improving it. Still however it may, and soon ought to be improved. It has every advantage from its situation; near manure, and near market. Mountains of lime-stone lie near it on one side, and mountains of sand and sea-ware on the other. A large water runs through the middle of it. Master-drains, or large ditches, at such distances as to serve also for enclosures and divisions of fields, might be made to fall into this water; and lesser lateral drains or ditches might be conducted to those larger ones. The water, by deepening a few fords, might perhaps be made to run two or three feet lower than its present level, which would greatly facilitate the draining. As the water runs on a bed of sand or gravel, it is probable that the moss is no where deeper than the level of this stratum; so that the master-drains could easily be made to reach the gravel, and give vent to the under-water in every quarter. The lesser drains or ditches might also be bored or tapped to that depth, at small distances, and the weight of the moss would soon press up the superfluous water, and force it to take its departure. As for the extraneous water from the higher grounds, it could not only be kept off by a ditch (which would serve also for an enclosure), but made subservient to the valuable use of watering and manuring the moss, as soon as it would be in condition to receive it.

“ Wherever clay, sand, or gravel, may be found within two or three feet of the surface, a coat of it ought to be thrown over the moss, as it will greatly improve it. This may be easily done, by forming the ground into the shape of broad ridges, and throwing first the mossy stratum of the furrow-ditch to fill up hollows on either side; and then, after the surface is levelled, the clay or sand over all §. When these

§ “ One method of reclaiming the moss (in Kincardine), is to dig ditches, or goats, as they are called, at such distances, and of such depths, that the clay dug from them is sufficient to cover the intermediate spaces of moss to the depth required. This makes the most substantial improvement, especially if any considerable quantity of clay was raised; as, in that case, it formed a new soil, which, compressing the moss by its weight, its sponginess produced no bad effect. Moss improved in this manner, after producing some crops of grain, has continued for forty years to be good pasture.” Stat. Acc. (of Kincardine), VI. 494.

ditches, or square drains, stand open for two or three years, it is probable the ground will be so far dried, as to allow them to be nearly filled up, by slanting down their edges; if not, they may, where necessary, be easily formed into hollow drains. In the first instance, it is probable the most, if not all of the ground, must be dressed with the spade, as it may be too soft to bear the plough, as well as in need of levelling. But the difference is not considerable, where labourers may easily be got, as here, in the intervals between the fishing seasons. After the ground is levelled and dug, and has had some time to dry, it should be well limed; after which it cannot fail of giving two good crops. Grasses should be sown with the second crop; and no cattle, except sheep, should for a year or two be allowed to tread it. These sheep, feeding on one part, might by folding, be made to manure and improve another, till all should be brought in at no great expense. The straw too, raised on one acre, would create dung for another; so that the work wants only a beginning, which it is hoped some of the proprietors, or some spirited farmers, will soon give it. A small farmer on the Duke of Argyle's property, bordering on this moss, has already made several little purchases from the skirts of it, by which he has made his own circumstances easy, and given proof to others, that they may do the like, and have larger profits, by working on a larger scale.

α No part of the improvement here proposed is very difficult, much less impracticable. Similar undertakings have been executed to advantage in many places, and are just now going on in others, with every prospect of success and profit. Not long ago, a moss in the Isle of Man, six miles long, three broad, and from ten to twenty feet deep, was drained and improved, and is now the most profitable land in the island*. In the neighbourhood of Paisley, of Carnwath, and of Stirling, the like great improvements are rapidly going forward.

“From what improvements have been made in this same county, on moss or peat-bog, by the Duke of Argyle, and several other proprietors, near their houses, it may be seen that this species of ground, though useless in its present state, may yet be turned to great account. There is reason to hope, that the advantage of improving it is now beginning to be more generally attended to. The proprietor of the great moss of Crinan (Mr. Malcom) proposes to begin immediately to improve it; and there is no doubt of his doing it with ease, and to great advantage †. Such a subject, capable of being

* Political Survey of Great Britain, I. 535.

† This improvement is since begun, and considerably advanced.

made of itself a great estate. Many such are in the county, especially in the upper parts of it, and some of them of still greater extent. A sheet of moss on only one farm there, is computed to be no less than ten or twelve miles square. One can hardly indulge the hope that such a subject, and so situated, will ever be improved. But surely in the highest habitable situations in the county, some portion at least of this kind of ground might be profitably cultivated. There arable and meadow lands are scarce. Moss might be made to supply the deficiency, and yield, what is much wanted, a sufficient quantity of hay. Even with a view to pasture, one acre might thus be made to produce more than twenty or thirty in their natural state. The situation does not forbid such improvement. It is believed that no habitation in this county is much higher than the Lead-hills, and yet there, one acre of waste ground, originally not worth one shilling, has been brought to feed two cows. "This shows what culture will effect, even in a wilderness*.

The great obstacle to improvements of this kind in the upper part of the county is, that the land is generally under the sheep system, and in too few hands. A man who holds a tract of many miles will never improve many acres. If the land were in more hands, and, partly, at least, stocked with a breed of sheep that could bear to be folded, in order to manure it, much agricultural improvement might reasonably be expected, now when the spirit and knowledge of it is so much diffused. One argument, however, should weigh much with our store-masters, and induce them to improve some part of their waste grounds; and that is, that the *braxy*, a disease so fatal to their flocks, may be effectually prevented, by having a plentiful supply of soft artificial grasses for their hogs soon after they are weaned.

"Mossy land is best adapted to the raising of grass; and for that purpose, more than for raising corn, ought it to be improved. Clover will grow in it, if it is sufficiently dry; and rye-grass better, as it is less delicate. But the kind of grass that suits it best, is the meadow soft grass † (*holcus lanatus*). This grows close and quickly, keeps the ground well, and is equally fit for pasture or for hay.

"In most of the farms occupied by small tenants and cottagers, considerable parcels of new and mossy ground is brought into cultivation, by planting potatoes in the lazy-bed way. Wherever dung can be easily applied to such land, this is certainly the easiest and cheapest way of improving it. But by their usual mode of managing, the principal benefit

* Stat. Acc. IV, 511.

† Called by some, Yorkshire hay-seed.

that should be derived from this improvement is lost, and the ground left in a worse state than it was before. Two, if not three crops of oats are taken after the potatoes, and then the ground is left to Nature, to make what she likes of it. Instead of this the ground, before it is broke up, ought first to be sufficiently enclosed; generally by a ditch, which would keep off foreign water, and help to drain it of its own. Whether this should be done by the tenants or landlord, or both, must depend on circumstances. As soon as the potatoes are dug, every two ridges (or every three, if the lazy-beds are narrow, and the ground pretty dry) should be made into one. This is easily done, by slanting off the outer edges of the intended ridge, and throwing back the stuff into the intermediate furrow or furrows, taking care that the new ridge be sufficiently raised in the middle, to let the water fall off into the furrow that is left, which ought to be well cleaned, and, if necessary, deepened. In this state it should lie till the beginning of April, when it should be stirred a little with the spade, and sown with oats and soft grass-seed. A second crop of oats may be taken; but the grass, by getting the ground in better heart, if it be sufficiently reduced and pulverized, will more than make up for the want of it. Next year the grass should have a slight top-dressing of lime, if none was harrowed in with the crop the year before; or, if that is not convenient, the ashes of the peats burnt in the house might be kept dry in a small shed, and used in place of it. No cattle heavier than sheep should be allowed to pasture the ground for a few years, till the sward is sufficiently strong to bear them. By this management, the improvement would be great and permanent: for, though moss will bear the same rotation of cropping with other lands, yet it will make a better return by putting it early and in good heart under grass. Corn upon moss lands is apt to lodge, which would prevent its filling, and make it less fit for meal than for seed."

ON HORSES COMPARED WITH OXEN FOR THE
PURPOSES OF HUSBANDRY.

To the Editor of the Agricultural Magazine.

SIR,

AS you have requested information on this difficult and controverted subject, have sent you the opinion of an intelligent and extensive Herefordshire farmer upon it; and

a statement, which shews the different comparative values of each, as given in the Survey of that district lately published.

I am, your constant reader,

X. Z.

“Whether oxen or horses ought to be preferred by the husbandman to till his glebe, and perform the necessary labours on his estate, is of greater importance in my opinion, than people in general are disposed to admit.

“I believe most persons will allow that population has increased, and that the necessaries of life have been advanced to very exorbitant rates: the public benefit, therefore, requires, that every method should be taken to encourage the use of those animals in agriculture, which consume the least valuable food, and which afterwards supply the markets, in preference to those which have not such qualities. But as the public good unfortunately is not always so strong a stimulus as private interest, it appears advisable to form an estimate of the comparative profits of the horse and the ox, in order that they, who are not too much prejudiced in favour of the former, may be induced from a prospect of gain to adopt the use of the latter, as much as their situations will admit. I am fully aware, that horses are a most valuable and useful race of animals, and that their services in agriculture are indispensable; but I am of opinion, that on dry and sound land their number may, and ought to be, reduced, in the proportion of one half, or even more.

“I used oxen several years, but thinking that they could not be managed without a man and a boy, I adopted horses to save the expense of a second attendant, placing three to a plough, and engaging one person only to turn it, and drive. Experience soon convinced me, that four oxen in harness, with one man, or able boy, could execute as much work as three horses with the same attendance; but I prefer four oxen in the yoke, thinking that they lie more immediately under the arm and eye of the driver, and that they make a more steady purchase.

“In the East Indies, their oxen draw the heaviest artillery; and in the West Indies, they cultivate the sugar plantations: which affords sufficient evidence of their capability of bearing extreme heat and hard labour: although it could not be expected, that the improved English breeds would be found equally patient.

“The purport of these observations is therefore to point out, that oxen are less exceptionable than generally believed to be; that they will perform a great deal of work, during four years; and when at maturity, afford a large supply to

the market, and a considerable sum to their owner: that horses, on the contrary, will consume a very large proportion of the produce of their labour, and sink in annual value, until they are worthless, and inapplicable to any useful purpose.

"The following Dr. and Cr. account I believe to be correct; but, if it should be deemed by some, that oxen are represented in a too favourable light, they are welcome to subtract one half of the balance in favour of oxen; not because I deem them too highly rated, but because the inference will still prove a strong recommendation to their use.

SOME OBSERVATIONS ON THE SIZE OF FARMS, TAKEN
FROM THE ARGYLESHIRE AGRICULTURAL SURVEY.

IT is stated by the writer, that “some have maintained that great farmers bring more to market than small ones, from the same quantity of land, without considering that the small ones maintain so many families at home, as will make up for the difference to the public (if indeed there is a difference), and that these families are employed more innocently and more usefully to the public than those who are supplied from the market. It is irrational to suppose, that one family can improve any space of ground so well as 10 or 20, having that space divided among them, in shares proportioned to their strength and capital. Even if the one should employ as many hands as the 10 or 20, they will not nearly work as much; for one man working for himself will perform almost as much as two when hired by another: and their hard labour, frugal living, and close attention, will enable them to pay more rent than one man, living in a higher style, and employing many servants, can afford.

“The same will hold with respect to grazing farms, or sheep possessions. The space of 2, 10, or 20 square miles, would certainly be of more account to the public and to the landlord, in the hands of 2, 10, or 20 families, than in the hands of one. For, in the *first* place, He who makes the grass to spring, cannot be supposed to be more partial to the rich than to the poor, to the one than to the many; so that the land, if left to itself, would be no less productive by being thus divided, and therefore of equal advantage to the public. But, in the *second* place, the many would cultivate and improve the ground; and without going, like the storemaster, to market, would not only bring their own frugal living out of it, but also a surplus of food for their cattle, by which the ground could maintain a greater number. All this would be so much gain to the public, and so much advantage to the landlord: for it may be laid down as an indisputable maxim, that the plan which most improves the land, will always prove the most beneficial to the landlords.

“Proprietors are no doubt excusable for adopting any method by which they think to bring their lands, in the speediest manner, to their highest value. But it may be confidently affirmed, that the way to do this is not by giving large possessions to one, and banishing many. By this means, all competition is in a great measure excluded, and a sort of monopoly, extremely adverse to their own interest, is encouraged by the landlords. Their lands in this manner can

never be improved; and if the lands are not improved, the rents must soon be at a stand. It is certain that, from comparing the past and present rents of both, such lands in this county as have been lett in small possessions, are more advanced in their rent, and, from their greater improvement, more likely to advance still, than those lands which are lett in large possessions.

“It is, however, necessary to observe, that possessions may be too small, as well as too large; and there are too many instances in the county, of their being carried to the one extreme as well as to the other; especially when the lands are lett in *run-rig*. A small possession under this system, and perhaps held without a lease, could hardly support a family without paying any rent at all. Every tenant who has no other business, should have as much land as to give himself and his family constant and regular employment. But how much this should be, must depend upon such a variety of circumstances, that no general rule can be given with regard to it. The nature of the soil, wet or dry, cultivated or wild, enclosed or open, whether it is most adapted for corn, cattle, or sheep, and a variety of other circumstances, must tend to vary the size of farms. The general state of the skill and industry, and the ordinary run of capital possessed by farmers in the country, must also be considered; and much regard must be had to the boundaries marked out by nature, by which the old divisions of farms were generally regulated. All these circumstances considered, there must be in every district some larger and some smaller farms; but extremes on either side should be avoided, and a middle course should as much as possible be observed.

“Of sheep farms, on lands consisting almost altogether of pasturage, perhaps the most common size should be as much as one person could well manage, which is generally supposed to be as much as would maintain 600 sheep. In determining the proper size of arable farms, that which seems to promise best for the improvement of the country and the increase of population, is, that the farm should be as much as a farmer with one servant and one plough, can easily manage and properly cultivate. This cannot be much, where (as with us) the lands are in such bad order, and the fields small, detached, and distant. It may be, in general, from 30 to 45 acres of arable land, with whatever pasture may happen to be connected with it. This pasture may be sometimes more and sometimes less; but, taking the average proportion of the county (of 1-13th being arable), it will allow from 400 to 600, or at an average, 500 acres to a farm. In most parts, this much may be managed by the farmer and his family;

or, if he should find it necessary to hire the one man whom he needs, yet, as he must be with him almost always himself, he can turn his service to more account than the master of many servants, who does not share in the labour. When any family is large enough to manage more, every farm has abundance of waste or improvable land, to keep them sufficiently occupied. A small possession, by superior cultivation, may be more advantageous to the tenant than a larger one, which could not be so well cultivated, and will certainly tend more to the improvement of the landlord's property.

“ Large farms, wherever they are held by a number of tenants in *run-rig* (which is nearly the same as in common), ought to be divided into separate possessions, without which the farms can neither be improved, nor the tenants prosper. The beneficial effects of dividing such farms, and removing the houses of each tenant to the centre of his own possession, have been found so great on the Duke of Argyle's estate in Kintyre, that some others are now following his Grace's example. When each has his own lot, the lands are better improved, and the tenants in easier circumstances. Formerly, none would work till all were assembled; but now every man is late and early at his work, and performs twice as much as when the work was in common.

“ In no part of the country are possessions more uniformly moderate than in the parish of Southend, where each tenant has commonly less than a *mark land* cut out for himself. In consequence of this, more waste ground has been of late years improved in this parish than in any other in the county. The yellow corn now waves on the region lately occupied by the heath and moss.

“ The advocates for large farms are fond of maintaining, that small tenants were starving on those farms on which great tenants have made rich. But this is owing to the change of times, and not to the change of system. In such times as we have had, small as well as great tenants could not fail to thrive, and have thriven where they had equal advantages; though neither the one nor the other could thrive, if the former times had still continued. Moderate as the possessions are in the parish just now mentioned, the tenants have prospered, in proportion to their advantages, as much perhaps as any in the county.

“ As evidence of this, it may be mentioned, that about eight-and-twenty of them, who lately formed themselves into a congregation of relief, have built a neat church, and are about to build a manse and to employ a pastor; from which they would seem, at the least, to be much at their ease.

“ In every district, a few farms in central situations, convenient for fuel, and capable of great improvement, should be lett out, or rather feued, for villages, in which tradesmen and labourers might be accommodated with small possessions. This would draw more rent from such farms than they could possibly yield in any other way, and help to raise the value of other lands in their neighbourhood. It would attach useful and industrious people to the soil, by giving them a property and existence in the country; and be the means of introducing trade, commerce, and manufactures. These have been the uniform consequences of feuing grounds, and encouraging villages on judicious and liberal plans throughout the kingdom.

“ Such as may be averse to feuing, or forming villages, would still find their interest in giving small possessions, in whatever way. Small possessions, being within the reach of many, will produce many competitors; and the most barren spot, by the constant labour of the many, will be soon improved, and raised in its value. If some large farms, here and there, were thus divided among a number of industrious families, wastes would be cultivated, rents augmented, and population promoted. Small possessions are absolutely necessary for the encouragement of population; without which, no country can prosper. All rests on this; for, without abundance of labourers, no important improvement can ever be effected.

“ It is with great difficulty that a country, once depopulated, can be fully replenished again with people. A small possession will induce the native to stay, when only a large one will induce a stranger to come; so that, in place of the many, it will be difficult, perhaps for ages, to substitute more than a few. Besides, no inhabitants can be got so well adapted to the country as the natives. They are, in general, a sober, active, frugal, and industrious race of men; and were their industry and ingenuity properly directed and assisted by all who have an interest in doing this, the riches and improvement of every estate would be in exact proportion to the number of its people. Every landlord should consider the migration of every labouring man from his estate as the loss of an active servant, who improved his land for only a bare subsistence: for, in general, they never had any more for their pains; and, in general, they would still be contented to live on the same terms, under their ancient masters.

“ It is an important observation of Pliny, that large farms had ruined Italy, and were in his time ruining the provinces. Large farms will ruin any country, by discouraging population, the source of all riches and improvement.”

CRITICAL CATALOGUE.

Communications to the Board of Agriculture, on Subjects relative to the Husbandry and internal Improvement of the Country, vol. 5, part 1, 4^{to}. 12s. Nichols.

[Continued from our last, and concluded.]

MR. C. here properly suggests, that the light thrown upon the subject in its late discussion in parliament, should have shewn the necessity of efficient means being adopted for the encouragement of the internal growth of grain. "However unbounded our capital, can, says he, the country be esteemed really flourishing or secure, whilst it is not possessed of the means of feeding its inhabitants? The temporary loss of our superiority at sea, hostile influence, or a combination on the continent, might, continues he, effect by famine, what their attempts by open war, he trusts, can never accomplish. Is there wisdom or policy, he asks, in suffering the empire to remain dependant on circumstances, distinct from its courage and love of liberty." And after noticing the absurd speculation formerly broached, of its being more for the advantage of the country to purchase than to raise its own grain, he suggests, that much merit was deserved by those who assisted in the establishment of that venerable code of laws, which for so great a length of time, became so great a source of wealth and internal happiness to the nation, and contends that the late alterations on them had no influence in raising the price of corn; but that they encouraged a more extended growth of it, and by that means contributed to keep down the price, and of course diminish the effects of a failing crop. He therefore asks, what reason there can be to doubt, "that a recurrence to the same measures, would be productive of the same effects?" It is stated, that during the seventeenth century, and at almost every period, (previous to the establishment of the system of bounties on exportation) the prices of wheat were liable to great variation, and the average extremely high. He says, that for forty years previous to 1700, the average price of wheat was 3l. 0s. 11d. per quarter; prior to 1650, 6l. 8s. 10d. But that "from the time the corn laws were finally settled in 1700 or 1706, the prices became steady. And that for forty years prior to 1750, wheat was at 1l. 16s. per quarter; in the next forty years to 1790, the average was 2l. 9s. 5d. and for the last ten years, 3l. 6s. exclusive of bounties."

Thus he contends, that "in the course of the last forty years the balance between the agricultural and commercial systems has been destroyed. The latter now clearly preponderates, and its excess is likely to become ruinous. The increase of wealth operating upon a decreasing supply of corn has greatly tended to aid in raising the price of labour to the injury of agriculture. The reduction of the price of labour cannot be effected, without a general abatement of all the objects which have been affected by it. The only means to

prevent the ruin of our agriculture is to advance the price of grain. The same causes have not yet operated in the North of Europe and America; and they are besides exempted from our heavy taxation, which exacts so much from each individual; and appears an almost invincible barrier to our receding. These combined causes enable the North of Europe and America to furnish grain cheaper than we can grow it extensively. There are indeed many millions of acres in Great Britain that would produce wheat, was the price sufficient; but on which it will never be grown whilst foreign grain can be imported as heretofore. And I still doubt the average is taken too low to produce any considerable change.

“ The situation to which the country is reduced, demands efficient measures to be taken, to rescue it from the distressed state into which it has been thrown by the predominance of commerce over agriculture. Every step we advance the difficulty will be greater. Remedies are never pleasant: when necessary, however, they should be enforced.

“ Grain, the prime necessary of life, must be had; and, if it cannot be grown at the prices hitherto paid, it is sound policy to advance them to what will stimulate the production of a quantity equal to our wants.

“ To accomplish this object (should it even be the means of a diminution in our manufactures), the nation would be no loser by it. Our supplying foreign countries with manufactured articles depends upon a variety of circumstances. Our demand and consumption of grain is certain. One may cease, the other cannot be dispensed with but by a diminution of our population. Could a more serious misfortune befall the country than to be driven to such an alternative?

“ Allowing the prices of grain were such as to make it the interest of the farmer to grow corn extensively, in preference to grazing, or fully on a par with it; can it be doubted that we should shortly be enabled to raise a sufficiency for our consumption? The profits of tillage, once fully established, would speedily effect a total revolution in the existing system of agriculture. When no longer the interest of the farmer to make use of every possible means of expeditiously turning his lands into grass, expedients would be as assiduously devised for continuing the lands in a fit state for cropping. And I conceive this to be practicable, without injury to the land or reduction of crops; for which we have not only the example of China, but the partial practice of different places in this kingdom. There are lands in the neighbourhood of London which have been cropped with potatoes for forty years without interruption. The alternate culture of wheat and beans is practised in many districts without variation.

“ I would not be considered as an advocate for the advance of grain beyond what would afford the grower a full, fair, and adequate return for his capital and exertions: which I do contend has not been the case in the last ten years, with the exception of those of scarcity.

“ The necessity of measures to create an advance may appear an evil, when grain for the present might be had from foreign countries at a cheaper rate. But the miseries which must and would ultimately result from an increasing dependance on foreign nations, would infinitely outweigh any present advantage. And besides, it admits of considerable doubt, (taking the average of a few years back), whether it would not have been cheaper both to the nation and individuals, had measures, like the present, been taken some years ago, to advance and encourage the growth of grain at home.

“ Years of failure of crops must, in the course of events, be expected; a demand for importation beyond the usual supply, has an immediate effect on the foreign markets, and subjects us to whatever demands speculators may think proper to exact. Considering the few hands in which the foreign trade is placed, the means of combination are not very difficult. Widely different is the case with our home supply; when there are half a million of manufacturers of grain, the public has little to fear from monopoly;—by which system are we likely to be most cheaply supplied?

“ The price paid in our markets for foreign grain was not the price it cost the consumers; a most material addition must be made for the bounty, which did not enter into the contemplation of many of them.

“ However much the late high prices of corn are to be lamented, it must be granted some good resulted from it, by producing an activity, and accelerating improvements in agriculture in every part of the empire; which, in the ordinary course of proceeding, would have required many years to have accomplished. It has also created a spirit of enterprise, which may be turned to good account, and, from what we have seen done, we may justly entertain the most sanguine expectations of the further improvements which may be still effected. Without profits would the manufacturer continue to prosecute trade? can, or ought, the farmer be expected to do it? The alarming disparity which has taken place in the course of the present reign, between the growth of grain and our consumption, is a subject worthy of our most serious consideration. They who are inclined to attribute it solely to our increased population, look, I conceive, but partially at the question. Was this the fundamental cause, its effects would have been of a slow and progressive nature. The population of Great Britain is supposed to have gained in the last century an addition of nearly three millions, which would give an increase of thirty thousand annually. Whether this may, or may not, have been the proportion, or that the increase may have been more rapid at one period than another, I shall not contend; but I think it will be acceded to me, that the checks on population have been greater, since the year 1760, than they were for fifty years preceding it. That the improvements in agriculture in the last fifty years, are more than double what they were in the former. And in addition to this we must add the inclosures of nearly 900 wastes and common fields.

“ The consequences resulting from all these circumstances must be a prodigious increase of victual, tending to form a countrepoise to

our increase of population in the present reign. Besides, up to 1761, we had a surplus of 925,119 quarters of wheat, which alone would have fed 925,000 persons. Five years after this period, in 1766, we had barley sufficient for our consumption; and from that period we have been obliged, with little exception, to make great annual importations. Such a change is too great and too sudden to be attributed to a progressive cause, or annual increase of population, but must, I conceive, be looked for from other causes. And I think we shall find a most important change taking place about this period in the habits and modes of living of a considerable number of the people, and producing an alteration in the system of agriculture. That other causes have also contributed, I have no doubt."

The changes that have operated in producing these effects are next examined, and the able writer here deploras, that "there are, unfortunately, no means of investigating, by positive proof, the alterations, which must have taken place in the system of agriculture. It would, in my humble opinion, be productive of essential benefit to the empire at large, should an accurate survey be taken of the whole kingdom, and a register kept in every parish, of the appropriation of each acre of ground. By thus ascertaining the various crops, and the quantity being known of each kind of grain, Government would be enabled to take timely steps to provide against deficiencies, and to enforce economy, which contributed largely in the late years of scarcity to the prevention of evils infinitely more grievous than those of price.

"That a great and most material change in agriculture must have happened, I strongly suspect, within the last fifty years. The exportation in common years, up to 1761, was nearly equal to the growth of three hundred thousand acres. The largest year of importation since 1790, was adequate to the produce of nine hundred thousand acres, very little short of a third of the whole growth of the kingdom. Estimating ten millions of people in England and Wales, and our colonies, to be fed with wheaten bread, one million supposed to subsist on barley and oats, and allowing a quarter for the support of each person; three millions three hundred thousand acres must be annually cropped to answer their consumption. Beyond this estimate must be added whatever is made use of in manufactures, which may extend to the produce of eighty or a hundred thousand acres. A twelfth part of this quantity is calculated to be deficient, and annually imported. In average years, this would require the growth of near two hundred and eighty-five thousand acres.

"It cannot be doubted, that the increased population of the country has had its share in creating the deficiency; but I consider the great and principal cause to arise from the increase of commerce, and the decrease of tillage. The wealth acquired by our various branches of manufactures, has been the means of advancing wages, by which numbers of hands have been drawn from the country into towns. The consequence of which has been the entire change in their habits and modes of life; their former frugal manner of living is abandoned; they are no longer fed upon milk, cheese, and vege-

tables, with little or no animal food. *Less than two acres and a half* was then amply sufficient for the support of a labourer.

“ The whole body of manufacturers (as well as most of those employed in great towns), are since that period subsisted upon butcher’s meat, with the constant use of malt liquor, and, I fear, the pernicious habit of using spirits is but too common amongst them. Five and a half acres of land will barely suffice to furnish them with the various articles of food and liquor. Supposing the number of manufacturers and others connected in trade to amount to three millions, to support them in the manner they now live, would require an increase of land, which would (according to their former mode of life) have supported an additional population of four millions. We must also add, as further causes of the deficiency, the great increase of our naval and military force; the waste of every article of prime necessity in the families of the opulent, multiplied, out of number, by our commerce. These combined causes have all contributed to increase the demand for animal food, and consequently to operate, with other causes, in lessening the growth of grain. The increase of butcher’s meat in country markets within fifty years is prodigious. Meat, that was provided only at particular seasons, is now weekly, if not daily, offered for sale.”

After noticing many other points and bearings of this interesting subject, and suggesting various modes by which the quantity of pasture land may be diminished and that of tillage increased; he concludes, by detailing the improved management, which, he afterwards adopted in his winter dairy, in which it appears that much saving was made, by the use of chaff and ground oil cake in the feeding of the animals.

The sixth Paper, contains “ an account of the improvement of more than ninety acres of lands lying waste,” by Mr. Phillips, of Tyn-y-rhos, near Oswestry. The writer, has here fully shewn, that by proper attention and perseverance, much may be effected in the inclosing and bringing waste lands into a state of cultivation and improvement, even in the most unpromising situations and circumstances. Those about to engage in such like improvements may read his paper with pleasure and advantage.

The fourteenth Paper, is on the Cultivation of Potatoes, by the Rev. E. Cartwright.

The general culture of potatoes is sufficiently well understood, but Mr. C. has here presented the reader with a circumstance or two in respect to them, which may not be so well known.

On the advantages of transplanting them, his observations are these.

“ Potatoes have a great advantage over most other crops in the latitude they admit of in the article of planting them. From the middle of February till the beginning of June, a period of nearly four months, the farmer may chuse the time most suited to his convenience for putting them into the ground. But this is not all; there is no plant which admits of being transplanted with greater success.

“ On May 11th, 1804, I planted six rows of the American hundred eyes. On the 7th of June three of the rows were taken up and transplanted. The transplanted rows produced 375 lbs. after the rate of 1 lb. 9 oz. from each root. Those which were not removed produced 360 lbs. after the rate of 1 lb. 8 oz. from each root. The soil in each instance was the same. That part where the potatoes were originally planted was manured at the time of planting; where they were transplanted, a top dressing only was given.

“ On the 4th of June, I planted three rows of a smallish round white potatoe, and at the same time some of the same kind were planted in a nursery bed. The latter were transplanted on the 11th day of July. The produce not inferior to those which had never been removed.

“ On the 8th of June, I planted three rows of the early Scotch kidney (a very good sort, which Sir John Sinclair procured out of Scotland for the Board of Agriculture, at the time he was President), and on the same day some of the same kind were planted in a nursery bed. Those in the nursery bed were transplanted on the 11th of July. The potatoes, which were not removed, produced a fair crop; the transplanted ones were very small. They ripened, however, at the same time when the others did. I attribute their failure not so much to their having been transplanted at a late season, as I do to the operation having taken place in uncommonly dry weather. And yet, though they were transplanted under every disadvantage, in a hot dry sand, and at a time that was both preceded and followed by great drought, not two plants out of the whole number died. The potatoe, indeed, is a plant more tenacious of life, if possible, than couch-grass. I have no doubt, had the season been favourable, the crop would have equalled that which had not been transplanted.

“ Potatoes may also be propagated from cuttings of the haulm, which very freely take root, especially if the season be favourable.

“ When thus propagated, the same room should be allowed as in any other way of raising them; for though they are not quite so prolific (at least I do not find them so) as transplanted plants, yet their tops are equally as luxuriant.

“ My experiments on transplanting were tried on a piece of ground which had produced a crop of winter tares. As soon as the potatoes were off, it was sown with winter tares as before; and as soon as the tares are mown in the ensuing summer, it is my intention to fill it with transplanted potatoe plants again.

“ This practice, besides suggesting hints to the farmer, may furnish valuable information to the small cottager. It will teach him, that after his little garden has produced him a crop of spring and early summer vegetables, he may obtain from it, by being provided with a nursery bed of potatoe plants, a valuable stock of food for his winter consumption.”

Also on their application he thus observes: “ The practice which I recommend is to give them raw, and in moderation, giving ac

the same time dry food, particularly such as will most powerfully counteract their purgative tendency.

“ They are found to agree with animals of all kinds best when in a growing state; for when they begin to vegetate, the saccharine matter is developed, and the juices undergo a decomposition, which in a great measure, if not altogether, disarms them of their deleterious quality:

“ Let a calculation be made of the expense of fuel, attendance, buildings, apparatus, &c. then let an equal sum be expended in corn and oil-cake to be given with potatoes; and at the same time let an estimate be made of the value of the increased quantity and quality of the dung, in consequence of such addition of corn or cake. When this is done, see on which side will be the balance.

“ The most valuable purpose to which the farmer can apply his potatoes, when he has no longer a market for them, is to give them to his sheep at those times when they are prevented by frost or snow from getting at the turnips. In this way they are applied with great advantage. Late in the season also they are an admirable resource to fly to, at that distressing period when the winter food is consumed, and before the spring-grass has made its appearance.

“ Potatoes are particularly serviceable for ewes and lambs. To these I give them after the rate of two, three, and sometimes four pounds, per head per day. But whether they are given to ewes and lambs, fattening, or other sheep, neglect not to supply the flock with plenty of dry food at the same time.

“ It is said that in Lancashire, and some other parts, it has of late years been customary to give potatoes bruised or ground, mixed with meal of some kind, or pollard, to cows and hogs. There can be no objection to this method, except the trouble of executing it. But where there are proper conveniences for the purpose, I should prefer it to any other mode, for cows especially, as there would then be no risk of their being choked, as sometimes happens when potatoes are given to them whole.”

The fifteenth Paper, is on weeding, and the improvements to be effected by the extirpation of weeds, by Mr. W. Pitt, of Wolverhampton. It is a very useful practical Paper, in which the able writer considers them as affecting different situations, and describes them with much accuracy. It may be consulted by the practical farmer with advantage.

The sixteenth, is “ on the production and consumption of corn in Great Britain, its population at different periods; the means of increasing human subsistence; and of preventing future scarcities, by Mr. W. Pitt, of Wolverhampton.

In this very interesting and valuable Paper, the writer has traced the different circumstances and bearings of the several objects of his different inquiry with much ability and success. And though the narrowness of our limits prevents us from following him in his various calculations, reasoning, and conclusions, we cannot but recommend them to the serious attention of those extensive land-owners and cautious legislatures, whose duty directs them to prevent the

dangers of future scarcity and want in the primary article of grain, by a timely regard to the state of our agriculture.

The author sums up the means by which this is to be accomplished in the following manner.

“ 1. The culture of the waste lands. The necessity of resorting to this resource will constantly press itself more and more into notice, and more particularly in unproductive seasons, when the necessity of increasing our extent of cultivated land will be most apparent.

“ 2. The improvement of land already in cultivation. This is now, doubtless, progressively going forward, and will accelerate as the demand for its produce increases; and would be further accelerated by more attention from land proprietors and persons of fortune, who, possessing capital for the purpose, and having the advantages of education, would, by directing their talents to this purpose, be capable of making the greatest and most successful efforts in such improvements.

“ 3. Improved agricultural and grazing systems. The introduction of green crops upon strong land fallows, the keeping of all heavy live stock in stables, stalls, or sheds, and feeding them with cultivated herbage, or mown grass, would greatly increase our resources, by supporting a greater live stock with less grass land; and thus affording both more manure and more room for an extended cultivation for corn.

“ As the culture of wheat, at any price it has yet taken, for an average of seven years, has paid much less than grazing live stock, its growth ought to be encouraged; bounties upon exportation at a liberal price has this tendency, by forcing a market abroad when not wanted at home; and as such bounties have always been attended with a good effect, by promoting the growth, and thus increasing the quantity; the export price should be raised, which experience has proved not to cause an advance of price in the home market.

“ The introduction of oxen instead of horses, as far as it can be done, might increase the quantity of beef in the market; a commutation of tithes would both increase the quantity and lower the price of grain; and the granting of leases upon liberal principles, by increasing confidence, would promote improvements, and be a means of plenty.

“ 4. Increased attention to agriculture, from persons of education and fortune; who, by employing their talents and capital in general improvements, such as drainage, irrigation, inclosing and improving waste land, and manuring with marl and lime, might secure interest for their money so expended, and accelerate the improvement of their estates; as no tenant would object to pay interest for money thus laid out and judiciously applied; and it often happens that the occupier has not sufficient capital of his own for these purposes.

“ 5. Vegetable diet promoted, fisheries encouraged, and beverage from fruit increased.

“ 6. A more operose and extended cultivation for labourers; gardens, potatoe and cow ground annexed to their dwellings, and an emulation or spirit of industry amongst them promoted; by which

means a part of their subsistence would depend upon their extra industry; they would be less affected by scarcities, as having their supplies more within themselves; and this part of our population drawing less from the markets, would leave a greater plenty for the other parts of the community.

“ 7. By an improved and extended cultivation, upon principles herein proposed; by an improved economy in the management and subsistence of live stock upon such principles; by increasing the capitals and strength employed in agriculture; by a more operose and attentive cultivation, by lessening fallows and increasing crops, and by various other methods herein suggested, the probable supplies of human food may be increased to double, or even quadruple, of what is produced at present; but as the population has always a tendency to equal the supply of food, and unproductive seasons may, from all past experience, be naturally expected to occur at times, as matters of course, whenever such happen with respect to corn, substitutes should be immediately resorted to.

“ Mr. Malthus observes, “ that the price of corn in a scarcity will depend much more upon the obstinacy with which the same degree of consumption is preserved in, than on the degree of the actual deficiency; a deficiency of one half of a crop, if the people would immediately consent to consume only one half of what they did before, would produce little or no effect on the price of corn; a deficiency of one twelfth, if exactly the same consumption were to continue for ten or twelve months, might raise the price of corn to almost any height.” Additional parish assistance should therefore, in such cases, be given, not in bread but in substitutes; and every proper means should, on such occasions, be used to lessen the consumption of corn.”

LONDON PRICES OF GRAIN for Jan. 1806.

MARK LANE, Monday, Jan. 5, 1806.

The influx of Wheat last week being large, we had some left over for this day's market, and which with the fresh arrivals, rendered the supply a tolerable good one; some briskness prevailed in the sales early in the morning, but upon the whole prices were nearly the same as last Monday.—Barley has arrived in great plenty, and, from a ready demand, fully maintains last quoted prices.—The same may likewise be remarked of Oats; they, also, of good quality, are full as dear as last week.—Malt and New Tick Beans are heavy sale, and rather cheaper; but in White Pease there was a farther advance.—Beans (with the exception of New Ticks) remain nearly as last currency.

Price of Grain, on board Ship, as under.

Wheat	56s 6s 70s	White Peas	46s to 66s od	Beans, Old	—s to 50s
Fine	75s to 80s	Boilers	75s to 88s	Ticks, new	30s to 36s
Superfine	82s to 86s	Suffolks	90s	Ditto Old	—s to 44s
Rye	40s to 46s	Grey Peas	34s to 47s	Oats	23s 27s to 32s
Barley	30s to 43s od	New, ditto	50s	Polands	—s to 35s od
Malt	65s to 75s	Beans, new	39s to 44s od		

Monday, Jan. 12.

We had a middling supply of Wheat from Essex and Kent this morning, but mostly of second and inferior quality. The few fine Samples that were produced, fetched nearly as much money as last week; but all others were dull, and rather drooping in price.—Barley comes to Market in abundance, and prices are declining. Malt is likewise heavy, and a trifle lower.—White Pease, (Boilers) though still dear, have given way two shillings per quarter.—Small and Tick Beans are heavy Sale, but have varied little from our last Report.—We have no fresh Oats up, but a tolerable quantity on hand. This article, with most others, wear a declining aspect, though little variation can be made in the subjoined currency, from that of Monday last.

Wheat	50s 60s to 65s	White Pease	45s to 60s	Old	49s
Fine	—s 70s to 78s	Boilers	70s to 84s	Ticks new	30s to 38s
Superfine	80s to 84s	Suffolks	—s to 88s	Old	43s
Rye	38s to 45s	Grey Pease	32s to 46s	Oats	23s 26s 32s
Barley	30s to 40s	Fine new	48s	Polands	34s
Malt	64s to 74s	Beans new	34 to 44s		

Monday, Jan. 19.

Our supply of Wheat was very considerable from Kent, &c. this morning, and the Mealing trade heavy, with declining prices of 3s. and 4s. per quarter, and this particularly in the sales of second and inferior quality.—The same remark will apply to Barley, which has arrived in abundance, and is 2s. per quarter cheaper.—Malt, of course, is lower.—White Pease (Boilers) are still scarce and dearer.—Beans and Grey Pease have experienced no amendment since our last; and Oats, of which we have large arrivals, are rather cheaper.

Wheat	50s 60s to 65s	White Pease	45s to 65s	Ditto, old,	48s
Fine	—s 68s to 74s	Boilers	78s to 88s	Ticks, new	30s to 36s
Superfines,	76s to 82s	Suffolks,	—s to 90s	Ditto, old,	42s
Rye	36s to 45s	Grey Peas	34s to 44s	Oats	22s 27s to 31s
Barley	28s to 38s	New ditto	48s	Polands	—s to 33s 6d
Malt	64s to 73s	Beans, new	32s to 42s		

Monday, Jan. 26.

We have farther considerable supplies of Wheat for this day's market; fine samples have given way in price, but not in any degree with the second and ordinary, which are down 3s and 4s. per quarter.—Fine Flour has likewise fallen 5s. per Sack.—Barley still arrives in great plenty, prime samples of which only retain last prices, the other sorts, with Malt, are cheaper.—In the two descriptions of Beans and Oats, we have no material alteration.—White Pease continue dear, with but few at market. Grey Pease, on the contrary, are lower.

Wheat	50s 55s to 60s	White Pease	48s to 66s	Old	47s
Fine	65s to 72s	Boilers	77s to 87s	Ticks, new	30s to 36s
Superfine	75s to 80s	Suffolks	91s	Old	41s
Rye, new	34s to 45s	Grey Pease	33s to 45s	Oats	22s 27s 31s
Barley	28s to 37s	New, ditto	47s	Polands	—s to 33s
Malt	64s to 73s	Beans, new	32s to 41s		

Prices of Raw Hides, Hay and Straw, &c. for Jan. 1807.

<i>Raw Hides.</i>	1st Week		2d Week		3d Week		4th Week		5th Week	
	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>	<i>s.d.</i>
Best Heifers & Steers, pr ft.	3 0	to 3 2			3 2	to 3 4	3 2	to 3 4	3 0	to 3 4
Middling — —	2 8	to 2 10			2 4	to 2 6	2 4	to 2 8	2 4	to 2 6
Ordinary — —	2 0	to 2 6			1 10	to 2 0	1 10	to 2 0	1 10	to 2 6
Market Calf — —	12 6	each			12 6	each	12 6	each	12 6	each
Eng. Horse — —	15s	to 17s			14s	to 17s	14s	to 16s	14s	to 17s
Lamb Skins — —										
Sheep Skins — —	3 6	to 6 0			3 0	to 5 6	4 0	to 6 0	4 0	to 6 0
<i>Price of Hay and Straw.</i>	<i>l. s. d.</i>		<i>l. s. d.</i>		<i>l. s. d.</i>		<i>l. s. d.</i>		<i>l. s. d.</i>	
St. James's—Hay — —	3 19	6	4 0	0	4 0	6	4 0	0	4 3	0
Straw — —	2 8	9	2 9	6	3 6	0	2 12	6	2 8	6
Whitech.—Hay — —	4 4	0	4 3	0	4 2	0	4 7	0	4 4	0
New — —	0	— 0	0	— 0	0	— 0	0	— 0	0	— 0
Clover — —	4 17	0	4 14	6	5 0	0	5 0	0	5 0	0
Straw — —	2 5	0	2 6	0	2 19	6	3 2	0	2 16	6
<i>Newbury.</i>										
Wheat — — —	68s	to 93s	68s	to 93s						
Barley — — —	37s	to 41s	37s	to 41s						
Oats — — —	27s	to 32s	27s	to 32s						
Beans — — —	—s	to —s	—s	to —s						
New ditto — — —	—s	to —s	—s	to —s						
Peas — — —	—s	to —s	—s	to —s						
<i>Salisbury.</i>										
Wheat — — —	72s	to 80s	72s	to 80s						
New ditto — — —	—s	to —s	—s	to —s						
Barley — — —	38s	to 41s	38s	to 42s						
Beans — — —	—s	to —s	—s	to —s						
Oats — — —	30s	to 36s	30s	to 36s						
Peas — — —	—s	to —s	—s	to —s						

TO CORRESPONDENTS.

WE are under the necessity of informing X. Z. and indeed all our Readers, that our Engraver could not do justice to the Copper-plate of the Inclined Planes, in time for Publication in this Number, but it shall appear in our next.

We are highly flattered by the favourable opinion of the ESSEX FARMER, and will attend to his hints.

The communications of X. Y. and others, are under consideration.

If the favour of V. V. had reached us sooner, it should have had a place in the present Number.