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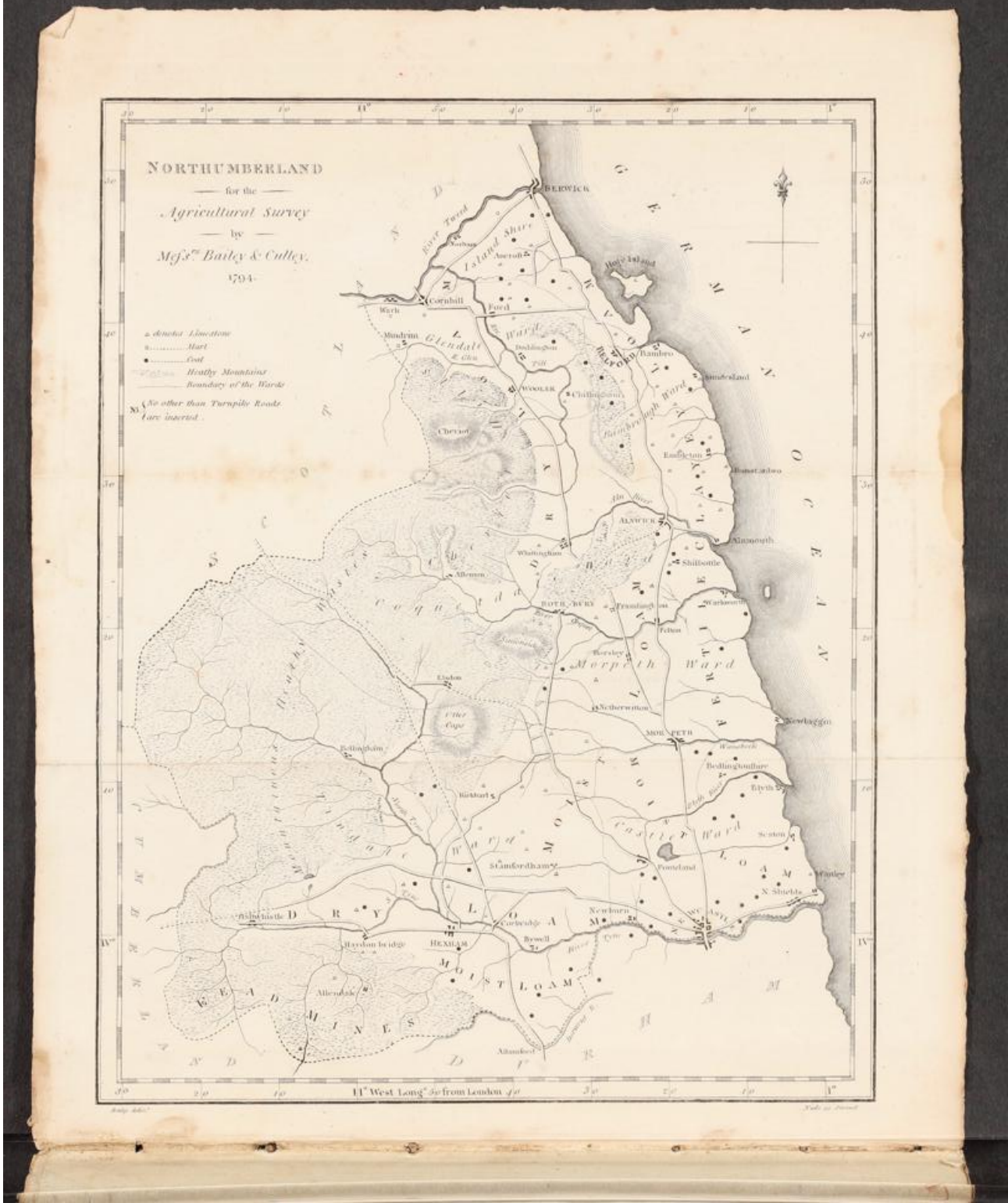
NORTHUMBERLAND
— for the —
Agricultural Survey
— by —
Mess.rs Bailey & Culley.
1794.
denotes Limestone
Hart
Goal
Heathy Mountains
Boundary of the Wards
No other than Turnpike Roads are inserted.
BERWICK
Holy Island
Cornhill
Ford
Wark
Mindrim
Glendale
Rambro
Sunderland
Chevior
Eglingham
Bamburgh Ward
Bamborough
Alnwick
Alnmouth
Whittingham
Shilbottle
Alnham
Warkworth
Felton
Morpeth Ward
Morpeth
Netherwitton
Newbiggin
Bedlingtonshire
Blyth
Coquet Ward
Scaton
Whitley
Tynemouth
Newburn
Corbridge
Hexham
Bywell
Allendale
Allenheads
Alnmouth
MOIST LOAM
WEAD MINES
11° West Long.e 30' from London 40'

561

D. 34

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

NORTHUMBERLAND,

WITH OBSERVATIONS

ON THE MEANS OF ITS IMPROVEMENT;

Drawn up for the Conſideration of the

BOARD OF AGRICULTURE

AND

INTERNAL IMPROVEMENT,

BY

J. BAILEY AND G. CULLEY.

"Happy Northumbria!
"Grateful thy ſoil, and merciful thy clime,
"Thy ſtreams unfailing in the ſummer's drought;
"——————————— Thy vallies float
"With golden waves; and, on thy mountains, flocks
"Bleat numberleſs; while, roving round their ſides,
"Bellow the blackening herds in luſty droves."

BIBLIOTHEK
D. KÖNIGLICHEN
ACADEMIE
DES LANDBAUES
ZU MOEGLIN

NEWCASTLE:
PRINTED BY SOL. HODGSON;
AND
SOLD BY MESS. ROBINSON, PATERNOSTER-ROW, AND G. NICOL,
PALL-MALL, LONDON.

1797.

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PRELIMINARY OBSERVATIONS.

IN drawing up this Report, according to the plan laid down by the Board of Agriculture, we have endeavoured to be as concise as possible, except in those articles which are in a great measure peculiar to this district, some of which, we have reason to think, may be adopted with advantage in others.

It is scarcely possible, in an undertaking of this kind, to describe all the minutiæ of practice, or to notice every local improvement; but we hope that the most prominent features of the Agriculture of Northumberland, as existing in 1795, will be found faithfully recorded in the following sheets.

As weights and measures vary in different districts, we think it right to apprize our readers that, in the following Reports of Northumberland and Cumberland,

An Acre is the statute Acre of 4840 square yards.
A Bushel = 8 gallons Winchester.
A Rood = 7 yards in length.
A Fother = a two horse cart-load of lime, dung, &c.
A Stone of Wool = 24lb. Avoirdupoise.
A Stone of every other article = 14lb. ditto.

In

In the Report of Weſtmoreland the cuſtomary acre is generally meant, which contains 6760 ſquare yards, or 1 A. 1 R. 23½ P. ſtatute meaſure.

It may alſo be proper to explain the following provincial terms:

A Hog { *is a name given to young ſheep, from 6 months old till they are ſhorn.*

A Gimmer { *an Ewe ſheep, from the firſt to the ſecond ſhearing.*

A Dinmont { *a Wether ſheep, from the firſt to the ſecond ſhearing.*

A Quey—an Heifer.

A Steer—a three years old Ox.

Kyloes { *a ſmall breed of Cattle bred in the Highlands of Scotland.*

Byer—a Houſe for tying up Cattle in Winter.

Fog—aftermath.

Scaling—ſpreading abroad mole hills, dung, &c.

AGRICULTURAL SURVEY

OF

NORTHUMBERLAND.

CHAPTER I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECTION I.—*Situation and Extent.*

THE diſtrict included in this Survey is the whole of the county of Northumberland, and thoſe detached parts of the county of Durham called Norhamſhire, Iſlandſhire, and Bedlingtonſhire.

IT IS BOUNDED

On the Eaſt, by the German ocean,	-	60 miles
Weſt, by Roxburghſhire	-	50
Weſt, and Cumberland,	-	47
North, by Berwickſhire,	-	18
South, by the county of Durham,		50
Making the whole circumference	-	225 miles.

It is ſituated between the latitude of 54 deg. 51 min. and 55 deg. 48 min. north; and longitudes of 1 deg. 00 min. and 2 deg. 27 min. weſt from London; its greateſt length from north to ſouth is 64 miles, and breadth 48; and contains 1980 ſquare miles, which

		Acres.
may be divided into lands that are, or may be, cultivated by the plough -	-	817200
And mountainous diſtricts improper for tillage,		450000
Making in the whole		1267200

SECT. 2.—*Diviſion.*

The county of Northumberland is divided into ſix Wards.—viz. Tindale Ward, Coquetdale Ward, Glendale Ward, Bamborough Ward, Morpeth Ward, and Caſtle Ward.—The three firſt are ſituated in the weſtern part of the county, and include the whole of the mountainous diſtrict, with a conſiderable portion of incloſed cultivated country:—The three latter adjoin the ſea coaſt, and being exempt from mountainous diſtrict, have been long under cultivation; the vaſt reſources of coal, Caſtle Ward in particular poſſeſſes, and the increaſed population the coal trade occaſions, give them a decided preference in point of riches and population; tho' in point of magnitude, conſiderably the ſmalleſt, occupying leſs than one-fourth of the county.

Norhamſhire and *Iſlandſhire* are ſituated at the northern extremity of the county of Northumberland, and comprehend a triangular ſpace, the two ſides of which are formed by the River Tweed and German Ocean, and the baſe the northern boundary of Glendale and Bambro' Ward; it contains about 72 ſquare miles of well-incloſed cultivated country.

Bedlingtonſhire is ſituated at the ſouth-eaſt corner of Caſtle Ward, bounded on the eaſt by the German Ocean, and on the north and ſouth by the rivers Wanſbeck and Blyth, and contains about 30 ſquare miles.

SECT. 3.—*Climate.*

The Climate—in regard to temperature, is ſubject to great variation; upon the mountains, ſnow will often continue for ſeveral months, (and may frequently be ſeen there of a conſiderable depth) when there is none in the lower diſtricts. The weather is very inconſtant, but moſt-

ly

ly runs in extremes. In the Spring months, the cold, piercing, eaſterly winds are moſt prevalent; and our longeſt droughts are always accompanied by them: in ſome places they have acquired the name of *ſea-pines*, from the ſlow progreſs vegetation makes whenever they continue for a few weeks. Rain is of little uſe while they prevail, from the great cold which always attends them.

The mild weſtern and ſouthern breezes rarely take place before June; they are certain harbingers of rain and vigorous vegetation, and are the moſt prevailing winds through the Summer and Autumn: In the latter ſeaſon, they often blow with tempeſtuous fury, daſh out the corn, and diſappoint the juſt hopes of the induſtrious farmer.

Our greateſt falls of ſnow, or rain, are from the ſouth, or ſouth-eaſt; and whenever we have a very high *weſt wind*, it is a certain ſign that a great quantity of rain is falling to the weſtward, in Cumberland and Roxburghſhire.

SECT. 4.—*Soil and Surface.*

A ſtrong fertile clayey loam—occupies the level tract of country along the coaſt, and reaches as far up in general as the great poſt road. It is well adapted to the culture of wheat, pulſe, clover, and grazing.

Sandy, gravelly, and dry loam—or what is here more generally underſtood by turnip ſoil, is found on the banks of the Tyne, from Newburn to Haltwhiſtle; on the Coquet, about and above Rothbury; on the Aln, from its mouth to Alnwick; and down Tweed-ſide: But the greateſt quantity of this kind of ſoil is found in the vales of Breamiſh, Till, and Beaumont. The hills ſurrounding the Cheviot mountains are moſtly a dry, channelly, ſharp-pointed, gravelly loam.

Moiſt Loams—on a wet, cold, clayey bottom, occupy a large portion of this county, being unſafe for ſheep, and unfit for turnips; they are principally employed in growing grain, rearing young cattle, and feeding ewes and lambs. This ſoil prevails moſt in the middle and ſouth-eaſt parts of the county.

Black Peat Earth—is the prevailing ſoil in moſt of the mountainous diſtricts, and is found in many places through the lower parts of the county.

The aſpect of this county, in reſpect to ſurface, is marked with great variety; along the ſea-coaſt, it is nearly level; towards the middle, the ſurface is more diverſified, and thrown into large ſwelling ridges, formed by the principal rivers:—Theſe parts are well incloſed; in ſome places enriched with wood and recent plantations, but the general appearance is deſtitute of thoſe ornaments:—The weſtern part (except a few intervening vales) is an extenſive ſcene of open, mountainous diſtrict, where the hand of Cultivation is rarely to be traced.

Of the mountainous diſtricts, thoſe around Cheviot are the moſt valuable; being in general fine green hills, thrown (by ſome of thoſe convulſive changes which this globe has at ſome time experienced) into numberleſs variety of forms; the verdant, ſwift-ſloping ſides of which, incloſe and ſhelter many deep, narrow glens: through the whole of this diſtrict no mineral or other kind of ſtone is found, except brown, red, and grey whinſtone:—they extend from the head of Coquet, down to Allenton; from thence northward to Prendwick, Branton, Ilderton, Wooler, Kirknewton, and Mindrim, and occupy at leaſt an area of 90000 acres.

The other mountainous diſtricts lie chiefly on the weſtern part of the county, ſome of which adjoin the county of Durham; but the largeſt portion extends from the Roman Wall to the river Coquet (with a few intervening incloſed

incloſed vales) and to the moors north of Rothbury.—They are not marked by any ſtriking irregularities of ſurface, being in general extenſive, open, ſolitary waſtes, growing little elſe but heath, and affording a hard ſubſiſtence to the flocks that depaſture them.

SECT. 5 — *Minerals.*

Coal—is found in abundance thro' the greateſt part of this county, particularly in the lower diſtrict; in the ſouth-eaſt quarter it is of the beſt quality,* and the moſt numerous and thickeſt ſeams, from whence thoſe vaſt quantities are exported which ſupply the great conſumption of the London market, as well as the coaſting and foreign trade.—This coal trade is the foundation of the commerce of the county, and the principal ſource of its wealth, as well as a never-failing nurſery for ſome of the beſt ſeamen in the Britiſh Navy.—Of the quantity of coals raiſed in this county, we have not been able to form a probable conjecture, for want of ſufficient data to eſtimate the quantity uſed at home; but have obtained what are exported from the River Tyne, in which a conſiderable portion raiſed in the county of Durham is included, and which may probably come near a balance for thoſe conſumed in this county.—Some idea of the magnitude of this trade may be formed by the following ſtatement of.

The Exports of Coals from Newcaſtle.

In 1772	351890	Newcaſtle chaldrons
1776	380000	
1791	444909	
1792	490682	

* The coals found in this diſtrict are of the variety called "*caking coals,*" which melt in the fire, burn to a ſtrong cinder in the open air, and the beſt kinds produce very few aſhes.

1793	486133
1794	426384*
1795	505650

From hence it appears that this trade is increasing at an amazing rate, there being not less than one-third more coals exported now than were exported 20 years since: From Hartley and Blyth there are exported yearly between 30000 and 40000 chaldrons; if these be added to the average export from Newcastle for the last three or four years, the quantity exported from this county may be fairly estimated at 510000 Newcastle chaldrons, or 956250 London chaldrons; the Newcastle chaldron being to the London chaldron in the ratio of 8 to 15:—The value of the above quantity to the various parties concerned will appear by the following

Calculation of the cost and charges upon a ship load of coals containing 20 *keels*,† *or* 160 *Newcastle chaldrons, delivered in the port of London.*

Paid at Newcastle,	£	s.	d.
To the coal owner (fittage included‡) for 160 chaldrons, at 15s. per chald.	120	0	0

* This is the only year in which we find the quantities raised in Northumberland and Durham are kept distinct, and which are

in the county of Northumberland,	-	257462 chaldrons
in Durham,	- - -	168922
	In all	426384

† A keel of coals is 21 ton 4 cwt. and contains 8 *Newcastle chaldrons*, so that each chaldron is 53 cwt.—*A London chaldron* contains 36 heaped Winchester bushels, and weighs on an average near 28½ cwt. (according to the quality of the coals) which weights being nearly in the ratio of 8 to 15, it is always reckoned, that 8 Newcastle chaldrons make 15 London chaldrons.

‡ The price paid for coals at Newcastle varies from 13s. to 17s. 6d. per chald. according to the goodness; but in the above calculation the average is taken at 15s. out of which the coal-fitters deduct for fitters fees; for all above Bladon Burn mouth 1s. 5½d. —Lemington 1s. 4½d.—Denton 1s. 4d. and all under Denton 1s. 3½d. per Newcastle chald.—So that the coal owner for a chald. of Denton coals (provided the price be 15s.) receives only 13s. 8d.

Brought

	£.	s.	d.
Brought forward	120	0	0
20 keel dues at 13s. 4d. - - -	13	6	8
Trimming 2s. 6d. keelman's beer 1s. 4d. per chaldron - - -	3	16	8
Duke of Richmond's duty 1s. per chald. and ticket 6d. - - -	8	0	6
Cocket and bond at Cuſtom-houſe -	0	3	8
Town's dues 2d.* per chaldron and 1s. for ticket - - -	1	7	8
Fee (or 'Foy') to fitter's clerk -	0	5	0
Inſurance (ſuppoſe) - -	1	10	0
Bridlington Pier - - -	0	4	6
Spurn Light - - -	0	13	4
Well, Winterton, Foulneſs, Caſter, Loweſtoff, and Harwich lights; and Scarborough and Whitby Piers	4	13	5

Paid at London—

Entry fee at Meter's office - -	0	3	6
Cocket fee 2s. 6d. return 1s. 6d. - -	0	4	0
Lord Mayor's dues a farthing per London chaldron - - -	0	6	0
Ditto for groundage - -	0	0	6
Trinity Houſe dues 3 farthings per Newcaſtle chaldron - -	0	10	0
Nore light 3s. market dues 3s. -	0	6	0
Carried over	155	11	5

* The Corporation of Newcaſtle formerly charged 5d. per chaldron for town's dues, which they had continued to do for a long ſeries of years; but in 1794 Wm Leighton, Eſq; of London, brought an action againſt them for over-charge of dues, and on its being tried at York aſſizes, a verdict was given for Mr Leighton, by which the dues were reduced to 2d. per chaldron.

	£.	s.	d.
Brought over	155	11	5
King's duty* 8s. 10d. { 10s. per London chald. on 300†			
Mettage 0 8 { chaldrons	150	0	0
Orphan's duty 6 {			
King's duty on Meter's ſack -	0	1	6
Bond - - -	0	13	6
Diſcount 2 per cent. on two-thirds of the amount (ſuppoſing the coals to ſell for 35‡ pounds per ſcore of 21 chaldrons to the ſcore; the amount of the cargo will be 500 pounds) which with ſome other expences will be about -	7	16	6
Commiſſion ½ per cent on the whole amount - - -	2	10	0
Total expences of the cargo	316	12	5

Which deducted from 500l. (the amount of the cargo as above) leaves 183l. 7s. 7d. for the freight of the ſhip.

As

* The duties on coals in the port of London, are—

	£.	s.	d.	
By 8th Ann ch. 4 -	0	3	0	per London chald.
9 do. ch. 6 -	0	2	0	
9 do. ch. 22, to build churches -	0	3	0	
Impoſt in 1779 of 5 per cent	0	0	$4\frac{4}{9}$	
Ditto in 1782 of 5 per cent	0	0	$4\frac{4}{5}$	
added to raiſe the fraction to an integer	0	0	$0\frac{2}{5}$	
Total	0	8	10	

Duties on coals carried coaſtways into the out ports, are—

	£.	s.	d.
By 8th Ann ch. 4 -	0	3	0
9 do. ch. 6 -	0	2	0
Import in 1779 of 5 per cent	0	0	3
Ditto in 1782 of 5 per cent	0	0	3
	0	5	6

† 160 Newcaſtle chaldrons are equal to 300 London chaldrons —viz. as 8 : 15 : : 160 : 300.

‡ The price of coals at London is very fluctuating; but we have

As we are not able to procure ſufficient information of the number of people in the coal trade, we ſhall take the liberty of extracting from Mr M'Nab's Letter to Mr Pitt, that the number of perſons employed and dependent on the coal trade, in the year 1792, were,

On the river Tyne	-	38475
On the river Wear	-	26250
Total		64725

To the coal-owners the winning and working theſe collieries are very expenſive, and frequently attended with conſiderable riſque; for tho' very large fortunes have been made in the buſineſs, yet many have been loſt; the unexpected alteration of the ſtrata, from dykes and other troubles; the frequent and dreadful exploſions from inflammable air; the great depth of the ſhafts, and increaſing quantities of water to be raiſed from them, baffle the moſt experienced artiſts, and overcome the amazing powers of the fire-engine, which of late years has received many improvements, and been made to perform what was thought abſolutely impoſſible at its firſt introduction.*

Theſe powerful machines are now applied to the purpoſes of drawing coals, which buſineſs was formerly univerſally performed by horſes; frequently 8 to a ſhaft, where great quantities were drawn and diſpatch was neceſſary; but by the invention and application of the drawing machines, a great many horſes were diſmiſſed from

have taken it at 35s. per chaldron, as the average price for good coals, when there is no interruption to the trade and navigation; but in March, 1795, coals ſold in London at the amazing price of 70s. per London chaldron, on account of the ſcarcity occaſioned by the long froſt.

* We were informed that there was only one fire-engine in the neighbourhood of Newcaſtle, about 50 years ſince,—that it raiſed the water only 40 yards, which, at that time, was thought a wonderful performance; at preſent water is raiſed, and probably in greater abundance, 160 yards, and upwards.

the

the collieries; which has conſiderably reduced the conſumption of oats in this neighbourhood.

Many of the collieries are ſituated at a conſiderable diſtance from the river, to which the coals are conveyed from the pits in a peculiar kind of carriage, called a *Newcaſtle coalwaggon; (pl. 1, fig. 1.)* it has 4 ſmall wheels, about 34 inches diameter, *fixed to the axles*, with which they turn round, and move on a road (called the waggon-way) made on purpoſe *with wood*, which is formed by long pieces of wood (RA, rails) about 4 inches ſquare, laid length-ways, upon ſleepers of wood (SSS) and the thickneſs of the rail above the plane of the reſt of the road, and at the exact diſtance of the waggon wheels from each other, as it is upon thoſe rails the wheels run.

A new waggon-way (including timber, levelling, gravelling, and workmanſhip) will coſt about 5s. per yard, or 440l. per mile; and the expence of keeping it in repair is generally about 1½d. per chaldron on a quantity of 15000 chaldrons annually, or 93l. 15s. 0d. per mile.*

The dimenſions of the body of theſe waggons are as follows:

	Ft.	Ins.
Length at top - -	7	0
——— bottom -	5	6
Breadth at top - -	6	0
——— bottom -	3	0
Height - -	3	9

They hold a chaldron of coals, or 53 cwt. and are drawn by a ſingle horſe.

* It has been ſuggeſted, that a waggon-way might be ſubſtituted in lieu of turnpike roads, for the conveyance of heavy goods; but we preſume, that the expence of firſt making, laying out in nearly a level line, or ſo as to have little or no aſcent, and keeping in repair, would greatly overbalance the additional weight to be drawn by one horſe; as the wood rots and waſtes nearly as much by a ſmall quantity of carriage paſſing along it, as a larger.

A gently-inclined plane is the moſt deſirable poſition for thoſe waggon-ways; but few ſituations will admit of this: Upon levels, or eaſy aſcents, a ſingle horſe draws the waggon: On ſuch parts of the way where the declination is ſufficient for the waggon to move by the power of gravity, the horſe is taken out and follows behind; and where the deſcents are ſuch, that the waggon would move with too great rapidity by its own weight, (or "*run amain,*") the motion is regulated by a crooked piece of wood, (called a *convoy*) coming over the top of one of the hind wheels; upon which the waggon-man preſſes with ſuch force as he finds requiſite, to regulate the motion of the waggon.*

It has been aſſerted, that "*the coals in this county are inexhauſtible.*"——Mr Williams, in his Natural Hiſtory of the Mineral Kingdom, is of a different opinion, and thinks it a matter of ſuch importance as to deſerve the ſerious attention of the Legiſlature.—Towards elucidating this point, it may be of ſome uſe to eſtimate what number of acres are wrought yearly in this county to ſupply the above quantity of coals: In order to accompliſh this object, the thickneſs and number of workable ſeams of coal muſt be firſt aſcertained; for which purpoſe we have been favoured with ſections † exhibiting the thickneſs and depth of the various ſtrata, in ſome of the deepeſt pits in the county; which will not only be uſeful for the preſent purpoſe, but we hope will be acceptable to many of our readers, who are curious in reſearches of ſubterraneous geography.

At St Anthon's Colliery (3 miles eaſt of Newcaſtle) the ſtrata from the ſurface to the Low Main coal, are:—

* This mode of conveyance has been uſed here upwards of 120 years.

† One of St Anthon's, about 3 miles below Newcaſtle, by Mr Johnſon; the other of Montague Main, about 3 miles above Newcaſtle, by Mr Thomas.

Soil

	Yds.	Ft.	Ins.
Soil and clay	10	0	0
Brown poſt	24	0	0
1. COAL	0	0	6
Blue-metal ſtone	5	2	0
White girdles	4	1	0
2. COAL	0	0	8
White and grey poſt	12	0	0
Soft blue metal	10	0	0
3. COAL	0	0	6
White poſt girdles	6	0	0
Whin	3	1	6
Strong white poſt	6	1	0
4. COAL	0	1	0
Soft blue thill	3	2	0
Soft girdles mixed with whin	7	2	0
5. COAL	0	0	6
Blue and black ſtone	7	1	0
6. COAL	0	0	8
Strong white poſt	3	0	0
Grey metal ſtone	3	1	0
7. COAL	0	0	8
Grey poſt mixed with whin	8	1	0
Grey girdles	6	1	0
Blue and black ſtone	4	2	0
8. COAL	0	1	0
Grey metal ſtone	4	0	0
Strong white poſt	12	0	0
Black metal ſtone with hard girdles	6	0	0
9. HIGH MAIN COAL	2	0	0
Grey metal	9	0	0
Poſt girdles	0	2	0
Blue metal	1	1	0
Carried over	163	0	2

Girdles

		Yds.	Ft.	Ins.
	Brought over	163	0	2
	Girdles	0	1	2
	Blue metal ſtone	10	0	0
	Poſt	0	1	0
	Blue metal ſtone	6	0	0
	Whin and blue metal	0	1	6
	Strong white poſt	7	0	0
	Brown poſt with water	0	0	7
	Blue metal ſtone with grey girdles	4	2	0
10.	Coal	1	0	0
	Blue metal ſtone	6	0	3
	White poſt	1	1	0
11.	Coal	0	0	6
	Strong grey metal with poſt girdles	4	0	6
	Strong white poſt	2	1	0
	Whin	0	1	0
	Blue metal ſtone	2	2	7
	Grey metal ſtone with poſt girdles	5	1	5
	Blue metal ſtone with whin girdles	3	1	3
12.	Coal	0	1	6
	Blue grey metal	1	0	8
	White poſt	4	0	7
	White poſt mixed with whin	4	0	0
	White poſt	2	2	0
	Dark blue metal and coal	0	2	2
	Grey metal ſtone and girdles	4	2	0
	White poſt mixed with whin	6	0	7
	Whin	0	1	0
	White poſt mixed with whin	2	0	6
13	Coal	1	0	3
	Dark grey metal ſtone	1	0	6
	Grey metal and whin girdles	3	1	10
	Carried over	251	2	6

Grey

	Yds.	Ft.	Ins.
Brought over	251	2	6
Grey metal and girdles -	3	0	0
White poſt - -	1	0	0
14. Coal - -	1	0	2
Blue and grey metal -	1	1	0
15. Coal - -	0	0	9
Blue and grey metal -	4	0	0
White poſt mixed with whin -	1	1	6
Grey metal - -	2	0	6
Grey metal and girdles -	2	0	9
16. Low Main Coal -	2	0	6
Total	270	1	8

In the above pit or ſhaft, which is nearly* the deepeſt in the kingdom, there are no leſs than 16 ſeams of coal. But many of theſe, from their thinneſs, are not workable. The 9th, called the *high main coal*, and the 10th, the *low main coal*, are the two principal ſeams for affording quantities of coal, being together 12½ feet thick, and are thoſe moſt generally wrought. But the 10th, 13th, and 14th, are all workable ſeams, and will afford conſiderable quantities of coal; the aggregate of the three making nearly 9½ feet thick; ſo that the total thickneſs of the workable ſeams in this colliery amount to 22 feet.

In Montague Main Colliery (3 miles weſt of Newcaſtle) ſouth of the main dyke, the ſtrata are:—

	Yds.	Ft.	Ins.
Soil and clay - -	5	0	0
White poſt - -	0	2	0
1. Coal (1) - -	0	0	4
Black metal ſtone - -	1	0	2
Grey poſt - -	3	2	0
Carried over	10	1	6

* A pit has lately been ſunk at Willington, 5 miles north-eaſt from Newcaſtle, which is 280 yards deep, to the low main coal.

Blue

		Yds.	Ft.	Ins.
	Brought over	10	1	6
	Blue metal ſtone - -	5	1	0
	Grey poſt - -	4	0	0
	Strong white poſt - -	5	0	0
	Grey poſt - -	1	2	0
	White poſt with black metal partings	10	0	0
	Grey poſt - -	0	1	4
	Brown poſt with coal pipes	1	1	8
	White poſt - -	5	0	0
	Ditto with whin - -	1	0	0
2.	Coal (2) - -	0	0	6
	Black metal ſtone - -	9	0	0
	Grey ditto - -	8	2	0
	Brown poſt with ſkamy partings	1	1	0
3.	Coal (3) - -	0	0	9
	Grey metal ſtone -	3	2	10
	Ft. Ins.			
4.	Coal 1 0 / Band 0 9 / Coal 3 6 } Benwell Main	1	2	3
	Grey metal ſtone - -	1	1	0
	Strong white poſt - -	5	1	0
	Whin - -	0	2	0
	White poſt - -	2	2	0
5.	Coal - -	0	1	0
	Black metal ſtone - -	3	0	8
	White poſt - -	6	0	0
	Black metal ſtone -	9	0	0
	Grey metal ſtone - -	10	2	4
	Grey poſt with whin girdles -	5	0	0
	Strong white poſt -	12	2	0
	Grey metal ſtone -	6	2	0
6.	Coal - -	0	0	8
	Carried over	133	1	6

Poſt

	Yds.	Ft.	Ins.
Brought over	133	1	6
Poſt girdles - -	0	2	0
Grey metal ſtone - -	2	1	0
7. Coal, called *Beaumont Seam* -	1	0	4
Strong white thill - -	1	0	7
Strong white poſt - -	4	0	4
8. Coal - -	0	1	6
Black thill - -	0	2	4
Grey metal ſtone -	0	1	2
Grey poſt - -	0	2	0
Grey metal ſtone - -	0	2	10
Strong white poſt -	1	0	4
9. Coal - -	0	1	3
Black metal ſtone -	2	2	4
White poſt - -	0	1	8
Blue metal ſtone with poſt girdles -	2	0	0
White poſt with whin girdles -	4	1	9
Black metal ſtone - -	0	1	5
Grey poſt - -	0	1	2
Blue metal ſtone - -	1	0	0
Strong white poſt - -	0	1	3
Blue metal ſtone - -	2	2	1
10. Coal - -	0	0	8
Black thill - -	1	0	4
Blue metal ſtone with poſt girdles -	2	1	0
Grey poſt - -	1	0	0
Strong white poſt - -	7	2	6
Black metal ſtone - -	0	0	1
11. Coal, called *Low Main* -	0	2	11
Grey metal ſtone - -	9	0	0
White poſt - -	5	9	0
Grey metal ſtone with poſt girdles -	2	0	0
White poſt with whin girdles -	6	1	6
Carried over	198	1	10

Grey

	Yds.	Ft.	Ins.
Brought over	198	1	10
Grey metal ſtone with poſt girdles	1	1	0
12. Coal called Low *Low Main*, or Baker's Main	0	2	10
Grey metal ſtone -	1	2	0
White poſt - -	0	2	0
Grey metal ſtone -	0	1	8
Black metal ſtone -	0	0	10
Grey metal ſtone -	2	2	6
Grey poſt - -	2	0	6
Strong white poſt with whin girdles	7	1	8
Grey metal ſtone -	6	2	6
Grey poſt - -	0	2	0
White poſt - -	1	2	0
Grey metal ſtone -	0	1	0
13. Coal - - -	0	0	6
Grey metal ſtone -	0	1	0
Grey metal ſtone with poſt girdles	6	2	2
14. Coal - -	0	0	5
Grey metal ſtone -	0	0	4
Grey poſt - -	2	1	6
White poſt with whin -	5	0	4
Grey metal ſtone -	0	1	0
15. Coal - - -	0	0	3
Grey metal ſtone with poſt girdles	2	0	6
Strong white poſt with whin girdles	1	2	5
Total depth	245	1	9

In this ſhaft there are 15 ſeams of coal, of which only four are workable, viz. the 4th, 7th, 11th, and 12th, making together 4yds. 1 ft. 7ins. of workable coal. If the medium be taken betwixt this and St Anthon's, it will be nearly 6 yards thick of workable coal, from which may be formed

A calculation of the quantity of coal in an acre of ground, ſuppoſing the aggregate thickneſs of the various ſeams amount to 6 yards.

An acre of ground contains - 4840 ſquare yards,
which multiplied by the thickneſs, 6 yards,
gives - - - - - 29040 cubic yards in an acre.

From which deduct $\frac{1}{3}$ for waſte, and the part or pillars neceſſary to be left in working - } 9680

there remains - - 19360 cubic yards to be wrought.

And as three cubic yards of coal, when wrought, afford a Newcaſtle chaldron,

therefore $\frac{19360}{3}$ = gives 6453 Newcaſtle chaldrons per acre.
divided by 3

The coals exported yearly from the rivers Tyne and Wear, with Hartley and Blyth, amount to about 825000 chaldrons,* which, with the home-conſumption of the two counties of Northumberland and Durham, will make the quantity of coals raiſed yearly about 1,000,000 chaldrons.

And the chaldrons raiſed yearly $\frac{1,000,000}{6453}$ = gives 155 acres nearly per year, cleared of coal 6 yds. thick.
divided by the chaldrons per acre

And by eſtimating the breadth occupied by the caking coals to be on an averge 8 miles broad, and 25 miles long, in the two counties, we ſhall find there will be about 200 ſquare miles, or 128000 acres, of coal proper for exportation.

* From Newcaſtle, 510000 chaldrons.
—— Sunderland, 315000 ditto.

In all 825000

Then

Then the whole area divided by the yearly consumption, $\frac{128000}{155} = 825$ years. The time before this ſpace will be wrought out.

But there are ſome reaſons to think, that a thickneſs of ſeam equal to 6 yards will not be obtained over an extent of 200 ſquare miles; probably not more on an average than 4 yards; in which caſe, the coal will be exhauſted in 550 years: and if the aggregate thickneſs of the ſeams to be obtained ſhould prove only three yards, then little more than 400 years will be the term of continuance; but it is probable, that before the half of that time be elapſed, the price to the conſumer will be conſiderably increaſed, from the increaſed expence of obtaining them, and the increaſed length of carriage from the pits to the river. This laſt, we preſume, may be reduced in ſome ſituations, by adopting canals inſtead of waggon-ways, which we have often wondered have never yet been attempted.

From the above inveſtigation it appears, that Mr Williams's apprehenſions are not ſo chimerical at have been repreſented; how far it may be right for the legiſlature to interfere, we leave to the conſideration of thoſe more converſant in political ſpeculations.

Of the coal found all thro' Bambro' Ward, Iſlandſhire, and thoſe parts of Glendale Ward eaſt of the river Till, the ſeams are very thin, moſtly from 1 to 3 feet thick, and of a very inferior quality, yielding a great quantity of aſhes, and neither caking in the fire, nor burning to a cinder: they are uſed only for home-conſumption, and for burning lime; for the latter purpoſe they are well adapted, by their property of neither caking nor burning to a cinder; and it luckily happens, that thro' all this diſtrict, the coal and lime are generally found together; a circumſtance which greatly facilitates and leſſens the expence of burning lime.

If a line be drawn from Alemouth to a little weſt of Bywell on the river Tyne, very little of this kind of coal and limeſtone will be found to the eaſt of it; and from this line to the ſea coaſt, no limeſtone whatever appears, except a ſmall patch of a different limeſtone that puts in at Whitley, near Tynemouth, and runs from thence in a ſouth-weſterly direction thro' the county of Durham, &c. In this ſpace, betwixt theſe two ranges of limeſtone, lie the caking coals of ſuperior quality above deſcribed, and the ſame breadth of coal may be traced thro' the county of Durham, ſtretching in the ſame direction, and bounded on the eaſt and weſt, in a ſimilar manner, by ſtretches of limeſtone of different kinds.

It would be a curious inveſtigation to trace theſe minerals thro' the different counties acroſs the iſland, and ſhow where the ſtrata of each ſpecies riſe to the ſurface; and the deviations cauſed in them by croſs veins or dykes, &c.; we believe it will be found that very little or no coal lies to the eaſt of this line, and that no chalk lies to the weſt.

Limeſtone,—of an excellent quality, abounds thro' all Bambro' Ward, Iſlandſhire, and that part of Glendale Ward ſituated on the eaſt ſide of the river Till; it ſtretches from hence in a ſouth-weſterly direction thro' the central parts of the county, and is found at Shilbottle, Longframlington, Hartburn, Rial, Corbridge, &c. and at numberleſs other places to the weſtward of theſe; but the ſouth-eaſt quarter, which is ſo rich in coal, is deſtitute of lime;* as is alſo that part of Glendale Ward weſt of the river Till.

Stone Marl,—abounds in many places near Tweedſide; and *Shell Marl* is found in a few places in Glendale Ward. The greateſt quantity is at *Wark* and *Sunnylaws*, where it has been formed by a depoſit of various kinds of

* Except a ſmall patch at Whitley, near Tynemouth.

ſhells,

ſhells, both univalve and bivalve, many of which are yet perfect, forming a ſtratum ſeveral feet in depth of pure calcareous earth; but the exact depth of this bed of marl has never yet been aſcertained, for want of a proper level to carry off the water: It probably may afford matter of ſpeculation to ſome readers to be informed, that in the middle of this marl there is an horizontal ſtratum of ſand about 12 inches thick; and alſo that, a few years ſince, a *Red Deer Stag*, in the attitude of running, and in every part complete, was found embedded in the marl: horns of the ſame animal have been found at different times in perfect preſervation; and a part of the *ſcalp*, with the *cores* of a pair of horns belonging to ſome animal of the *Bos Taurus* ſpecies, were lately found here: we have never ſeen any breed of cattle, the horns of which were of equal magnitude; for though the outſide ſhell or horn part was wanting, yet the *core* was 24 inches long, and 12 inches circumference at the root; and when in a perfect ſtate and covered with the outſide ſhell, muſt have been about 5 inches diameter: their form is a gentle curve, and have all the appearance of a pair of bull's horns; but probably of a different breed of cattle to any we have at preſent.

Clay Marl,—is alſo found in ſmall quantities, but in ſituations where it could not be conveniently uſed with effect.

Lead Ore,—has hitherto never been found in any quantity but in the mountainous diſtricts on the ſouth-weſt part of the county, towards the head of that branch of South Tyne, called Allendale; and a ſmall quantity at Fallowfield, a little to the north of Hexham.*

In this county, lead ore is wrought by the *bing*, a meaſure containing 8 cwt. of clean ore; the workmen being paid by the owners of the mine at different prices,

* The lead mines in Allendale produce about 12000 bings of lead ore annually, which at 4l. 4s. 0d. per bing, is upwards of 50000l. a year.

from 8s. to 36s. per *bing* (for getting, and waſhing, or cleaning) according to the richneſs. quality, or hardneſs of the mine. If the owners ſell any of the ore in this ſtate, the price is generally from 3l. 10s. to 4l. 10s. per *bing*, but they moſtly have ſmelt mills of their own, where they ſmelt it at their own coſt, take the ſilver out of it by refining,* and then caſt the lead into long pieces, called *pigs* of 1½ cwt. each.——*Pig lead* is ſold by the fother, a quantity containing 21 cwt. which is reckoned to ſell at a fair price when at 15l. or 16l. per fother; in 1776 it was as low as 12l. and in the beginning of 1782 it was 17l. 5s.—in 1788 it roſe gradually to 23l. 10s. per fother, which was ſeveral pounds higher than it was ever ſold at before; but in the following year, it fell to 16l. or 17l per fother, which ſhews the fluctuating price of this article.

The *Ore of Zink*,—is found in great abundance embedded with ſpar, in moſt of the veins producing lead ore; but its diſtance from any braſs manufactures, and from water carriage, renders it of little value. In theſe mines are alſo found great variety of cryſtallizations of ſpar, quartz, &c. &c.

The mines which produce lead ore are very fluctuating, and uncertain in point of profit to the adventurers; but tend to a general good, by giving employment to a numerous claſs of induſtrious workmen, who, being ſituated in a climate improper for the production of grain, are obliged to receive the greateſt part of their proviſions from the more fertile diſtricts of the county, and by thoſe means encourage its agriculture.

* The Alendale lead ore is ſmelted and refined at Dukesfield ſmelt-mill, and produces about 7 or 8 ounces of ſilver from each fother of lead; what is got at Fallowfield contains ſo little ſilver, that it will not pay the expence of refining; while ſome ore got in Alſton Moor, in Cumberland, yields 42 oz. of ſilver per fother.

The proceſs of refining greatly improves the lead, by making it more ductile.

Iron

Iron Ore,—may be had in many parts of the county; of late years the convenience of ſhipping it at Holy Iſland, has induced the Carron Company to have conſiderable quantities from thence.

Freeſtones,—of various kinds, abound in almoſt every part of the county, and are applied to all the purpoſes of building. Many of the quarries afford tolerable ſlates for roofing, and flags for floors: at ſome of them excellent grindſtones are got, of which a great many are exported from Camus and Warkworth.

SECT. 6.—*Waters.*

The principal rivers, which act as eſtuaries to the reſt, are the Tyne, Blyth, Wanſbeck, Coquet, Aln, and Tweed. The innumerable ſtreams, which loſe their names in the above, ſpread in every direction through the county:—The Tyne branches into nearly two equal ſtreams a little above Hexham, which are diſtinguiſhed by the names of North Tyne and South Tyne: the main branch of North Tyne, is the Reed; and of South Tyne, the Allen: The principal ſtreams which empty themſelves into the Tyne eaſt of Hexham, are the Devil's-water and the Derwent: and the river Till is the only ſtream, of any note, which empties itſelf into the Tweed, in this county.

The Tyne and Tweed are the moſt eminent for their navigation, the tide flowing up the former 16 miles, and up the latter eight or ten; the navigation of the other rivers is confined to a ſmall diſtance from their mouths; of theſe the Blyth and Aln are of the moſt importance, from the convenience which the firſt affords to its neighbourhood, for the exportation of conſiderable quantities of coals; and both of them for corn, &c. and the importation of timber, iron, and other uſeful articles.

The Tyne and Tweed have been long celebrated for

their ſalmon fiſheries: in the latter a rent of 800l. a year is paid for a fiſhing of 200 yards in length, near the mouth of the river; and the ſame rent is paid for other two fiſhings above the bridge, not more than 250 yards in length each. The fiſh taken here are, the Salmon, Bull-trout, Whitling, and large common Trout, and nearly the whole of them ſent to London; in the conveyance of which, a great improvement has taken place of late years, by packing them in pounded ice; by this means they are preſented nearly as freſh at the London market, as when taken out of the river. For the purpoſe of carrying them, and keeping up a conſtant and regular ſupply, veſſels called ſmacks ſail 3 times a week, and being purpoſely conſtructed for ſwift ſailing, frequently make their run in 48 hours. Theſe veſſels are from 70 to 120 tons burden; on an average 12 men are employed in each veſſel, and make about 14 voyages in a year; and not leſs than 75 boats, and 300 fiſhermen, are employed in taking the fiſh in the river Tweed.

CHAPTER II.

STATE OF PROPERTY.

SECT. I.—*Eſtates.*

ESTATES vary in their annual value from 20l. to upwards of 20000l. a year;—one in particular is upwards of 40000l.——Small eſtates from 20l. to 200l. a year, are found in the ſouthern and middle parts of the county, but very rarely in the northern.

There are probably few parts of the kingdom where eſtates have made ſuch rapid improvements as in this county; there being ſeveral inſtances of the value being more

more than trebled within the laſt 40 years. Many cauſes have certainly been aiding to produce this great effect; but the principal one is attributed to letting large farms, and leaſes for 21 years; by which means the tenants of capital were encouraged to make thoſe great exertions, from which ſuch advantages have reſulted, not only to themſelves and proprietors of the land, but to the community at large, from the very increaſed produce, and ſuperiority of its quality.

The uſual mode of letting farms is to fix a rent, under certain conditions and covenants, 6 or 12 months before the expiration of the leaſe; but upon one of the largeſt eſtates in the county,* the tenants have an offer of their farms 2½ *or* 3 *years* before the expiration of the leaſe, which is a mutual benefit to both landlord and tenant; and is attended with ſo many advantages, that it is in a fair way of being generally adopted.

On ſome eſtates the practice of letting farms by *ſecret propoſals* is ſtill in uſe: this is a dark and myſterious mode, which frequently defeats the end it is intended to accompliſh, and inſtead of obtaining an *exceſſive high rent*, the prize has been often gained at a *very inferior value*; and, in the language of the turf, (where only one has entered the liſts) "by walking the courſe:" and we have known ſome of the firſt farmers in the county forego their farms, rather than ſubmit to contend in the dark. Upon moſt eſtates it is generally ſtipulated, that a certain portion of the beſt old grazing lands, on each farm, ſhall be kept in graſs during the whole term.

The quantity of land to be in ploughing is moſtly limited to a certain number of acres; and at the expiration of the term, where the tenant quits on the 12th of May, he is allowed to have a crop of corn from off two-thirds of the arable lands; this is called the *way-going crop*: the

* The Earl of Tankerville's.

entering

entering tenant has the ſtraw, and leads the crop into the ſtack-yard.—The houſes, hedges, gates, drains, &c. are kept and left in repair by the tenant, who likewiſe pays all taxes, ceſſes, &c.

Of the annual value of the eſtates in this county, no authentic information could be obtained; but a probable gueſs may be formed by ſuppoſing that there are 800000 acres of cultivated land, and that this on an average is worth 14s. per acre,—and that 450,000 acres of mountainous diſtrict is worth 2s. per acre.

Then 800000 acres, at 14s. - -	600001.
And 450000 acres, at 2s. - -	45000l.
Gives the total value of the lands per ann.	£.605000

SECT. 2.—*Tenures.*

The land property in this county is moſtly freehold:—There are to be found in a few places ſome ſmall parcels of copyhold; and in thoſe diſtricts which belong to the county of Durham, ſome leaſeholds for lives, or years, held under the church.—There are alſo two or three manors of cuſtomary tenure towards the head of South Tyne.

CHAPTER III.

BUILDINGS.

SECT. 1.—*Houſes of Proprietors.*

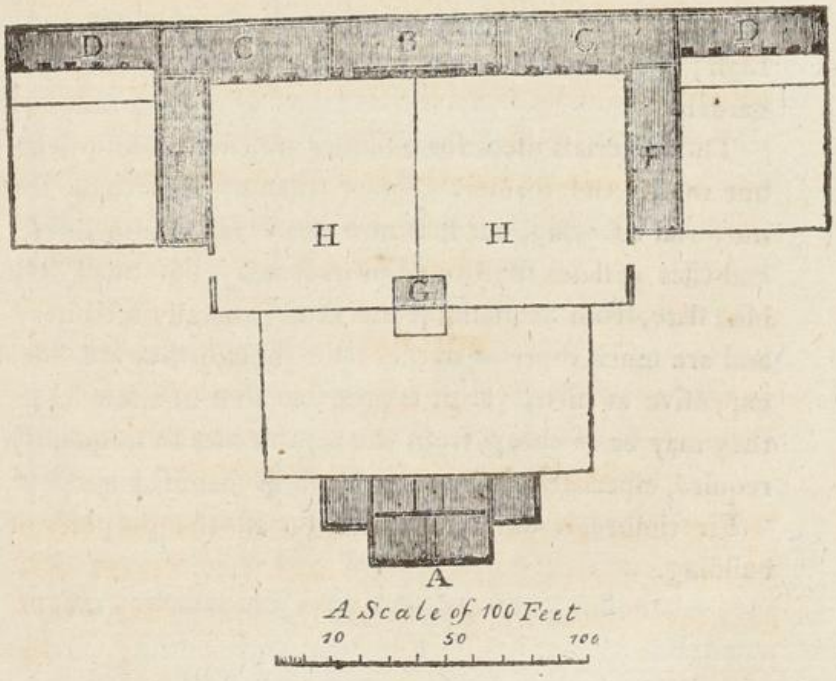
THE ſeats of the principal proprietors of this county conſiſt of venerable caſtles, old halls, and elegant modern manſions.—To give particular deſcriptions would be

be too extenſive for an Agricultural Survey; thoſe who wiſh for information on this ſubject, we beg leave to refer to Hutchinſon's View of Northumberland, Pennant's Tour, &c. &c.

SECT. 2.—*Farm Houſes, Offices, &c.*

Buildings,—for the uſe and convenience of farms, were formerly very ſhabby and ill contrived; but thoſe that have been erected of late years, are better adapted to the various purpoſes wanted for extenſive farms and improved cultivation.

The moſt approved form of diſtributing the various offices is, on the eaſt, weſt, and north ſides of a rectangular parallelogram, which is generally divided into two fold-yards, for cattle of different ages, the ſouth being left open to admit the ſun; and for the ſame reaſon, and alſo for the ſake of cleanlineſs and health, the farm houſe is removed in front thirty or forty yards; between which and the ſouth wall of the fold is a ſmall court for coals, young poultry, &c. as in the annexed plan



A. The farm-houſe.
B. The barn, 18 feet by 60.
C. Sheds, over which are granaries.
D D. Ditto, upon which are built corn-ſtacks; one of which is for wintering yearling calves, the other for holding implements of huſbandry.
E. Byers for cows and work-oxen, 16 feet by 48.
F. Stables.
G. Pig-ſtyes, with hen-houſe above.
H H. Fold-yards for cattle of different ages.

Repairs are moſtly done by the tenants; on the large farms complaints are ſeldom made of their being neglected, but upon ſmall farms the landlord is frequently obliged to lend his aſſiſtance.

SECT. 3.—*Cottages.*

Such cottages as have been erected a number of years, are built with ſtone and clay, and covered with thatch; thoſe that have been built of late years, are of ſtone and lime, covered with tiles, and moſtly a floor of lime and ſand; they conſiſt of one apartment 15 ft. by 16, to dwell in, with a ſmall one at the entrance for a cow, coals, working tools, &c. 9 ft. by 16, and are only one ſtory high: Very few of them want the accommodation of a garden.

The materials uſed for building are, ſtone and bricks, but moſtly the former. Straw (thatch) uſed to be the univerſal covering, but it is now nearly fallen into diſuſe, and tiles or ſlates ſubſtituted in its ſtead. The ſmall dark blue ſlate, from Scotland, is the kind generally uſed here, and are much ſuperior to tiles; for though they are more expenſive at firſt, yet it is probable that in a few years they may be as cheap, from the repairs tiles ſo frequently require, eſpecially where they are ſo ill manufactured.

Fir timber is univerſally uſed for all the purpoſes of building.

CHAP.

CHAPTER IV.

MODE OF OCCUPATION.

SECT. I.—*Farms, and Character of the Farmers.*

THE *ſize of farms*—varies conſiderably in this county; in Glendale and Bambrough Wards the farms are large, from 500l. to 1500l. a year; very few under 100l. In the other parts of the county they are from 50l. to 300l. a year: Some tenants in the northern parts of the county, farm from 2000l. to 4000l. a year, and upwards:—The capitals neceſſary for ſuch farms entitle them to a good education, and give them a ſpirit of independence and enterprize, that is rarely found amongſt the occupiers of ſmall farms and ſhort leaſes. Their minds being open to conviction, they are ready to try new experiments, and adopt every beneficial improvement, that can be learnt in other diſtricts; for this purpoſe many of them have traverſed the moſt diſtant parts of the kingdom to obtain agricultural knowledge, and have tranſplanted every practice they thought ſuperior to thoſe they were acquainted with, or that could be advantageouſly purſued in their own ſituation: And ſcarce a year paſſes without ſome of them making extenſive agricultural tours, for the ſole purpoſe of examining the modes of culture, of purchaſing or hiring the moſt improved breeds of ſtock, and ſeeing the operations of new-invented and moſt uſeful implements.

The character of a farmer is here ſo reſpectable, that gentlemen who poſſeſs landed property from 500l. to 1500l. a year, think it no debaſement to follow the profeſſion:

feſſion: and ſo high a name have many of the farmers obtained for their ſuperior knowledge in rural affairs, that they are ſeldom without pupils from various and diſtant parts of the kingdom, with whom they have very handſome premiums.*—Amongſt the preſent pupils may be reckoned the ſon of an Earl and the ſon of a Baronet;—who, from their abilities, attention, and anxious readineſs to learn and work at every operation, we hope will do credit to the profeſſion, and render the moſt eſſential ſervices to their reſpective diſtricts.

SECT. 3.—*Rent.*

The rent—of lands in this county uſed formerly to be clogged with payments in kind, and perſonal ſervices: But theſe have been long diſuſed, and the whole is now paid in money.—The rents are moſtly due on the 12th of May and the 22d of November; but payment is ſeldom required till four or five months after being due.

The rent per acre muſt vary with the quality of the land, and other circumſtances: At a diſtance from towns, and for the purpoſes of farming only, lands may be had from one ſhilling per acre up to 30 and 40 ſhillings:—Laſt year, a farm of upwards of 2000 acres was let for 20s. an acre, unincloſed, but tithe-free of grain:—One of 600 acres, at 24s. per acre, pays all tithes:—Another of 300 acres, at 35s. per acre, tithe-free, well incloſed, and in high condition, and ſeveral other large farms that pay tithes of every kind, have been let as high as from 27 to 37s. per acre; and ſome old rich grazing paſtures along the ſea-coaſt let for 40s. per acre.

* Generally 100l. per annum.

SECT.

SECT. 3.—*Tithes.*

Of this bane to Agriculture, we do not find any thing, peculiar to this county, which is not common to the reſt. In ſome parts the tithes are collected with moderation, in others with all the ſeverity that law can enforce; ſome let for a term of years at a fair rent, whilſt others value and let every year.

SECT. 4.—*Poor Rates.*

In Newcaſtle they vary from 2s. 6d. to 4s. 6d. in the pound, in times of peace; but at preſent, All-Saints pariſh is as high as 6s. per pound, owing to the ſea-faring people living moſtly in this pariſh; and the ſailors being impreſſed, their wives and children come for ſupport upon the pairſh.—At Hexham they are 2s. 6d.—Morpeth 3s. 6d.—Alnwick 1s. 10d.—Belford 2s. 6d.—Berwick 2s. 8d.—Wooler 1s. 6d.—and in other parts of the county we find they vary from 6d. to 2s. per pound.

SECT. 5.—*Leaſes.*

Leaſes—for twenty-one years, are let on moſt of the principal eſtates, eſpecially in the northern parts of the county. Some proprietors of land in the other diſtricts let only for nine, twelve, or fifteen years. The general time of entry is the 12th of May.* The covenants vary with circumſtances; but we think the following the beſt calculated for improvement, and the benefit of both landlord and tenant:

After the uſual reſervations of mines, woods, &c. and

* Upon the Duke of Northumberland's eſtate the time of entry is Lady-day, and the offgoing tenant has no waygoing crop.

proviſoes of re-entry on non-payment of rent or alienation, &c. the tenant covenants to pay the rent—all taxes —keep and leave all in repair—not to ſell hay, ſtraw, or other fodder, from off the premiſes—to lay the dung on the premiſes, except that bred the laſt year—not to ſow any hemp, flax, muſtard, or rape, except the laſt for green food—not to depaſture more ſtints the laſt year, than were depaſtured for two years preceding—to deſtroy the moles yearly, and ſcale the graſs grounds—to threſh the waygoing crop in an uniform manner, and deliver a daily ſupply of ſtraw to the next tenant—to keep uneaten the lands ſown with graſs ſeeds in the laſt year of the term, from the firſt of October, except one half to be eaten by the offgoing tenant after the 1ſt of April, to the end of the term—to permit the leſſor to ſow graſs ſeeds on the waygoing crop—and to plough the lands intended for fallow five months before the expiration of the term—to have no more ploughing than* acres at one time—to fallow yearly for wheat, turnips, or other green crops, one-third of the tillage lands, and lay upon every acre cart loads of lime, *where neceſſary;* or, in lieu thereof, cart loads of dung—not to keep any land in tillage more than three years at one time—to lay to graſs yearly one-third of the tillage lands, and ſow upon every acre pounds of clover, &c. (or other ſeeds ſuited to the ſoil;) to keep ſuch lands in graſs at leaſt two or three years,† before they are ploughed out again—to lay down to graſs, or have in graſs the laſt three years, all thoſe fields called —to keep in graſs

* Generally from one-third to near one-half, on the larger farms; but on ſome ſmall farms it is more.

† Weak ſoils, improper for corn, ſhould continue in graſs 5, 6, or 7 years, or until it is thought they want refreſhing by ploughing, which is only uſed in ſuch ſituations as being ſubſervient to ſtock.

during

during the whole of the term, and at the end thereof leave in graſs all thoſe fields called*

and all ſuch lands as ſhall be converted into watered meadows—to be at one half the expence of making new quick fences, and of cleaning and rearing them for ſeven years after firſt planted—*and others, that ſituation or circumſtances may require.*

The leſſor covenants, that the tenant ſhall have peaceable poſſeſſion, and a waygoing crop from off two-thirds of the tillage lands, with the uſe of the ſtack yards, barns, and granaries, for twelve months after the expiration of the term; alſo to be at one-half the expence of making all new quick fences, and of cleaning and rearing them for ſeven years after firſt planted; with other covenants that may be agreed on, reſpecting building, &c.

SECT. 6.—*Expence and Profit.*

The expence upon a farm may be eſtimated pretty near the truth, for a certain number of acres; but the profits depend upon ſo many precarious circumſtances, ſuch as ſeaſons, mode of culture, produce, markets, &c. that we think any eſtimate of profits upon a particular farm, would be a very vague criterion for judging of the reſt, and moſt probably would not ſuit any other farm of the ſame rent or magnitude in the county; we ſhall therefore ſtate the expence of cultivating an acre, ſuppoſing a farm in the rotation of three years arable and three years graſs—viz.—1 year oats.

2 turnips.
3 barley.
4, 5, 6 } clover and other graſſes.

* Theſe are generally old rich grazing paſtures, or meadows.

And that the firſt year's clover carries ſix ſheep per acre, the ſecond year four, and the third year two ſheep per acre :—Then the expence will be as follows.

Firſt year—for oats

	£.	s.	d.
Ploughing and harrowing	0	6	0
Seed and ſowing -	0	14	0
Weeding - -	0	1	0
Harveſting - -	0	6	0
Threſhing and winnowing	0	5	0
Market expences and carriage	0	6	0
	1	18	0

Second year—for turnips, *drilled at* 30 *inch intervals.*

Ploughing & harrowing 5 times	1	5	0
Lime, leading & laying on	1	5	0
Leading dung -	0	8	0
Spreading ditto -	0	2	0
Seed and drilling -	0	1	6
Hand-hoeing twice -	0	6	0
Horſe-hoeing twice -	0	1	6
	3	9	0

Third year—for barley, *ſown broad-caſt.*

Ploughing & harrowing twice	0	10	0
Seed 3 buſh.* and ſowing	0	8	0
Weeding - -	0	1	0
Harveſting, threſhing, marketing, and carriage	0	17	0
	1	16	0
Carried over	7	3	0

* This is the quantity commonly ſown, but we think 2 buſhels, or 2½ buſhels, very ſufficient ; and where drilled at 9 or 12 inches intervals, 1½ buſhels we find a proper quantity ; which ſaving of ſeed will pay for horſe and hand-hoeing, when the crop is drilled.

	£.	s.	d.
Brought over	7	3	0
4th, 5th and 6th years—clover and graſſes.			
Graſs ſeeds ſown on the barley crop - -	0	14	0
Harrowing and rolling in	0	1	0
Stoning, ſcaling, and catching moles for 3 years	0	5	0
Attendance and other expences of ſheep for 3 years	0	12	0
	1	12	0
Taxes and ceſſes for 6 years	0	18	0
Capital employed for cultivation, &c.	9	13	0
Ditto for 12 ſheep, at 26s. each	15	12	0
Total capital employed on 6 acres	25	5	0
The intereſt of which allowing 10 per cent. is - -	2	10	6
To which muſt be added the expence of cultivation -	9	13	0
Gives the expence per year for 6 acres	12	3	6
Or per acre - - -	2	0	6

The expences incurred for cultivation will be nearly the ſame, whatever the ſoil, but the produce will vary according to the quality of the land.

On good lands the produce may be,

1ſt year—Oats, 45 buſh. per acre, at 2s per buſh.	4	10	0
2	Turnips, per acre	5	0	0
3	Barley, 36 buſh. per acre, at 2s 6d do.	4	10	0
	Carried over	14	0	0

		£.	s.	d.
	Brought over	14	0	0
4th year—	Clover and graſſes -	3	0	0
5	Do. - -	2	0	0
6	Do. - - -	1	0	0
	Value of produce in 6 years	20	0	0
	Deduct expence of cultivation, &c.	12	3	6
	Leaves the rent for 6 years -	7	16	6
	Or, per acre, per year -	1	6	1

If the value of the crops be,

1ſt year—	Oats, 30 buſh. per acre, at 2s per buſh.	3	0	0
2	Turnips, - -	3	10	0
3	Barley, 24 buſh. per acre, at 2s 6d do.	3	0	0
4	Clover and graſſes -	2	10	0
5	Do. - - -	1	10	0
6	Do. - -	0	15	0
	Value of produce in 6 years	14	5	0
	Deduct expence of cultivation, &c.	12	3	0
	Gives the rent for 6 years	2	2	0
	Or, per acre, per year -	0	7	0

From the above ſtatement it appears, that nearly the ſame capital will be required to carry on a farm *in tillage*, at 7s. per acre, that it does one at 26s. per acre:—Therefore, a farm of *good land* of 100l. per year, will require leſs capital than a farm of *bad land* of 100l. per year; and alſo, that when the value of the crops in 6 years amounts to no more than 12l. ſuch lands are improper for arable, and will pay no rent;—of courſe the moſt profitable mode of employing ſuch ſoils, is to let them remain in paſturage.

CHAPTER V.

IMPLEMENTS.

THE *Carts*—uſed in this county are moſtly drawn by two horſes; they are in general heavy, clumſy, and ill-formed, and ſuch as we think few diſtricts would wiſh to imitate; they are right-lined rectangular parallelopipedons; the general dimenſions for a two-horſe cart are 66 inches long, 40 inches wide, and 20 inches deep, and contain 24½ Wincheſter buſhels, *ſtreaked meaſure*:—The uſual load for two horſes in Winter is 30 buſhels of wheat, and in Summer 36; the firſt about 17 cwt. and the latter about 20 cwt. or one ton.*

Single-horſe Carts—are becoming more prevalent in ſeveral parts of the county.—Mr James Johnſon, a common carrier at Hexham, has a horſe 16 hands high that commonly carries from Hexham to Newcaſtle 24 cwt. and 20 cwt. back again; and there are inſtances of his having carried 26 cwt. from Newcaſtle to Hexham, which is a very banky, heavy-pulling road.

Waggons—drawn by four horſes, are uſed by ſome far-

* The neateſt, moſt uſeful, and beſt contrived carts we know, are thoſe made in many parts of the North-Riding of Yorkſhire:—The ſingle-horſe carts of this conſtruction, uſed for carrying coals from the county of Durham into Yorkſhire, are 60 inches long, 36 inches wide, and 18 deep, hold 24 buſhels of coals, when ſet round the ſides with large coals and upheaped.—A man or boy drives three of theſe, two of which are equal to the greateſt quantity ever carried by three horſes.—Mr Charge, of Newton, ſends three of theſe carts for coals every day, which bring 72 buſhels of coals, the diſtance 26 miles there and back, and is performed in 12 hours by one man:—The ſame gentleman's two-horſe carts bring 36 buſhels of the ſame coals.

mers for leading coals and lime; but we hope a few years will ſhew the abſurdity of employing ſuch unwieldy carriages, ſo deſtructive to roads, and of ſo little utility to farmers.

The ſwing Plough—made in imitation of the Rotherham plough, is in general uſe through every part of this county;* its form is conſtantly varying, no fixed rules being known for its conſtruction; ſcarce two carpenters making them alike, differing widely in length and height of the beam, point of yoking, form of mould-board, &c. &c.—To remedy theſe defects it was intimated, in the firſt edition of this Report, that "*An Eſſay on the conſtruction of the Plough, deduced from mathematical principles,*" would be ſoon offered to the public.—This Eſſay is now publiſhed,† from which we have extracted the following

"PRACTICAL CONSTRUCTION

For determining the poſition and dimenſions of the moſt eſſential parts of a Plough.

"That the operation of ploughing may be performed with the leaſt loſs of power, it is neceſſary to know the height and inclination of the horſe's ſhoulder.

"While a horſe is in the act of pulling, the inclination of his ſhoulder varies from 69 to 75 degrees, according to circumſtances, the medium is 72 degrees; and the medium height of the point of draught on the ſhoulder of a horſe, 15½ hands high, is 48 inches.

* The farmers of this diſtrict have always had the good ſenſe not to load their teams with *wheel ploughs*, as wheels in general deſtroy a conſiderable portion of the power of the team, (beſides their additional weight;) hence the abſurdity of recommending *Norfolk ploughs* to thoſe diſtricts, where the ſimple *ſwing-plough* has been uſed and properly underſtood.

† For Meſſrs Robinſon, London, price 2s.

"Theſe

" Theſe data being got from experiment, and the depth to be ploughed (ſuppoſe 6 inches) given,

" Draw a right line AB, and at any point (fig. 2, pl. 1) A, erect a perpendicular AP, equal to 48 inches.

" With AP as a radius, from P as a center, deſcribe a quarter of a circle AQ, which divide into 90 equal parts or degrees.

" From P, through 72 degrees, draw a right line to meet AB in B.

" Set the length of the traces and ſwing-trees from P to H; this is commonly 102 inches.

" From H, upon AB, let fall a perpendicular HI, which meaſured on the ſcale that AP was taken from, will give *the height of the beam* HI = 16½ inches.

" Then at the diſtance of *half the depth* the land is intended to be ploughed (in this caſe 3 inches) draw a line parallel to AB; and from C, where it interſects PB, let fall a perpendicular upon AB to S, which will give the point of the ſock; and a line drawn through C, making an angle of 45 degrees with BA, will be the poſition of the fore-edge of the coulter.

" The heel of the plough will be got by ſetting the length of the ſole 36 inches from S to L.

" The length of the beam will be determined by taking the diſtance from H to any fixed point, as S, or B, or L, and applying it to the ſcale of equal parts.—In this caſe HS = 44½ inches.

HB = 53½ do.

HL = 79 do."

The form of the mould-board is ſuch, that the ſod to be raiſed preſſes equally againſt it on every part, from the ſock point S, to where it leaves it at K; it alſo differs from other mould-boards in not beginning to take its riſe from the bottom oppoſite to the heel L, but at leaſt 12 inches farther forward towards the ſock, and in being cut

away at the bottom oppoſite the heel L, about 3 inches high, (from the ſole) by which the turning of the ſod is much facilitated.

For the demonſtration of the principles from which the above conſtruction is derived, as well as the inveſtigation and practical directions for making the mould-board,* and finding the curve of the breaſt GS, with many other eſſential properties, we muſt beg leave to refer to the afore-mentioned eſſay; and only obſerve, that wherever theſe ploughs have been properly tried, they have anſwered the intention; being allowed, by all who have ſeen them at work, to go with more eaſe to the horſes than any other.—The beſt mode of applying the draught, is by two horſes yoked double, and driven with cords by the holder; which are ſufficient for ploughing the ſtrongeſt lands, and will in general do an acre per day.†

The ſingle-horſe Plough—for ploughing between the rows of drilled turnips, is repreſented in fig. 3, pl. 1, the mould-board of which moves upon two hinges, placed on the inſide, and is ſet wider or cloſer as circumſtances require, by the crooked piece of iron A (fixed to the ſtilt) being ſhifted along the flat piece of iron, placed upon the top of the mould-board with holes in it:—The width at the bottom when cloſeſt is 5 inches, and when wideſt, 9 or 10 inches.

The capſtan is made with holes in it at C, for regulating the breadth of the furrows; and at D, for increaſing

* Caſt iron mould-boards of this form, with maundrells for forging the ſocks upon, may be had of Meſſrs Whinfield and Co. iron-founders, Newcaſtle upon Tyne.

† Upon Wark-haugh, a *ſtrong deep loam*, a young Nobleman, who did not think it any diſgrace to make himſelf acquainted with the profeſſion of Agriculture, with one of thoſe ploughs and two horſes (yoked double and driven by himſelf) ploughed *two acres* per day, and not leſs than *ſix inches deep*, the third furrow or fallow.

or

Plate I.

Fig. 1.

Fig. 2.

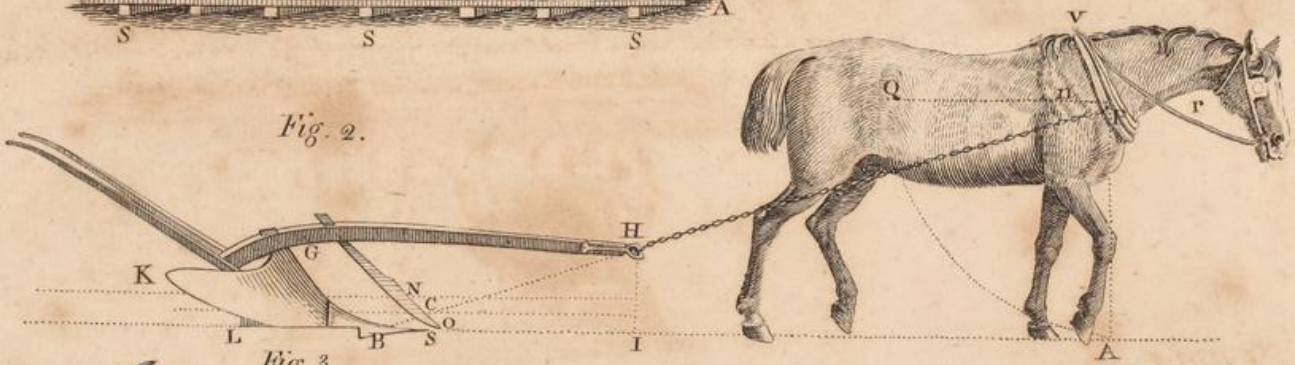


Fig. 3.

Fig. 4.

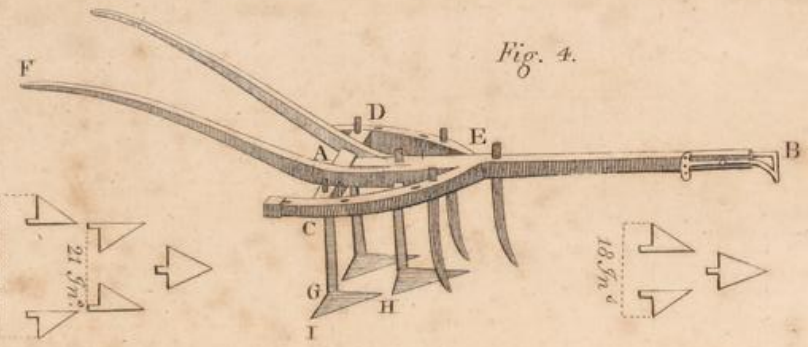
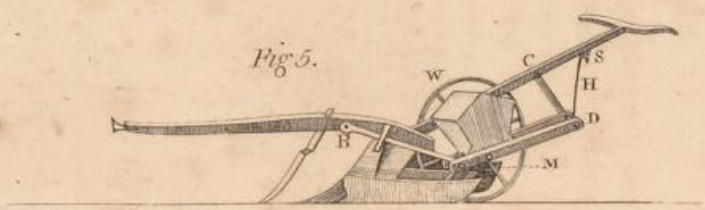


Fig. 5.



or decreasing the depth. The price of this plough, when compleatly finished, is 1l. 5s.

A double mould-board Plough,—is made by putting on another mould-board, with hinges on the other side, but about six inches longer.

A Horse hoe,—for hoeing the intervals between beans drilled at 30 inches distance is represented (*fig.* 4, *pl.* 1.) The beam AB is 5 feet long, and its height at B 16 inches: the curved sides, CF, DE, are described with a radius of 24 inches from G and D as centers; the length of the stilts from A to F, 42 inches; the length of the shanks of the hoes from G, to the underside of the beam, is 15 inches; their length, GH, $7\frac{1}{2}$ inches; and breadth, GI, $5\frac{1}{2}$ inches. This horse-hoe, with the coulters and hoes placed as in the figure, will penetrate and compleatly hoe strong lands in dry seasons, when it would be in vain to attempt to stir them with a plough or hand-hoe.

For hoeing the intervals between turnips, or other crops where the soil is light, the coulters are taken out, and other sets of hoes put in the holes made in the sides CE and DE, and end CD, to hoe from 18 to 30 inches at once; for this purpose, in *dry seasons*, it is preferable to the single-horse plough above described; and with proper formed hoes, will answer all the other purposes of expensive scufflers, cultivators, and quicken rakes; though no more than a single-horse be required to draw it, and its price be only 30 or 40 shillings, according to the number and variety of the hoes.

This implement answers very well for hoeing wheat or barley, drilled at 10 or 12 inch intervals, by making it a little wider, so as to take in four hoes.

Harrows.—A large heavy harrow called a brake, is commonly used for reducing rough land, especially fallows.

Single

Single-horſe harrows, containing four bulls, and 24 tines or teeth, five or ſeven inches long, (below the bull) are generally uſed for harrowing-in ſeed, after it has had a ſingling by the brake; a man drives three horſes, and every horſe draws his own harrow. Some people uſe two horſe harrows, joined in the middle by crooks and loops; and alſo ſmall light harrows with ſhort tines, for putting in graſs ſeeds.

Rollers—for reducing cloddy land, rolling wheat in the Spring, and graſs ſeeds, are moſtly made of wood; they are generally 5½ feet long, and from 12 to 30 inches diameter: thoſe uſed for flattening the tops of one-bout ridges, for drilling turnips upon, are 5 feet long, and 10 or 11 inches diameter; the framing is various, but that ſhewn in the annexed drawing is the moſt general *(pl. 2, fig. 3.)* The rope by which the drill is drawn is faſtened to the bar B, and is ſlipped from one end to the other, at every turning, to ſuit the ſowing. To prevent the accumulation of earth upon the roller, a thin piece of wood C, is placed at its back, to act as a ſcraper.

A drill for ſowing Turnips, on the tops of *one-bout ridges*. —When this mode of cultivating turnips was firſt introduced, the only drill uſed was a hollow cylinder of tin, with a ſmall hole in the bottom, thro' which the ſeed was ſhook: if this orifice be made of ſuch ſize as to depoſit a proper quantity of ſeed, it is very liable to ſtop, and of courſe large ſpaces are totally miſſed; if made ſo wide as to prevent this inconvenience, it then ſows far too much: This defect induced me ſome years ſince to conſtruct one upon different principles, which is now coming into general uſe.

The moſt eſſential parts of this drill conſiſt of a ſolid cylinder C *(fig. 1, pl. 2.)* of iron or braſs, 2 inches diameter, and 1 inch broad; on the ſurface are made or punched 15 or 16 cavities, of the form of a ſemi-egg,

cut

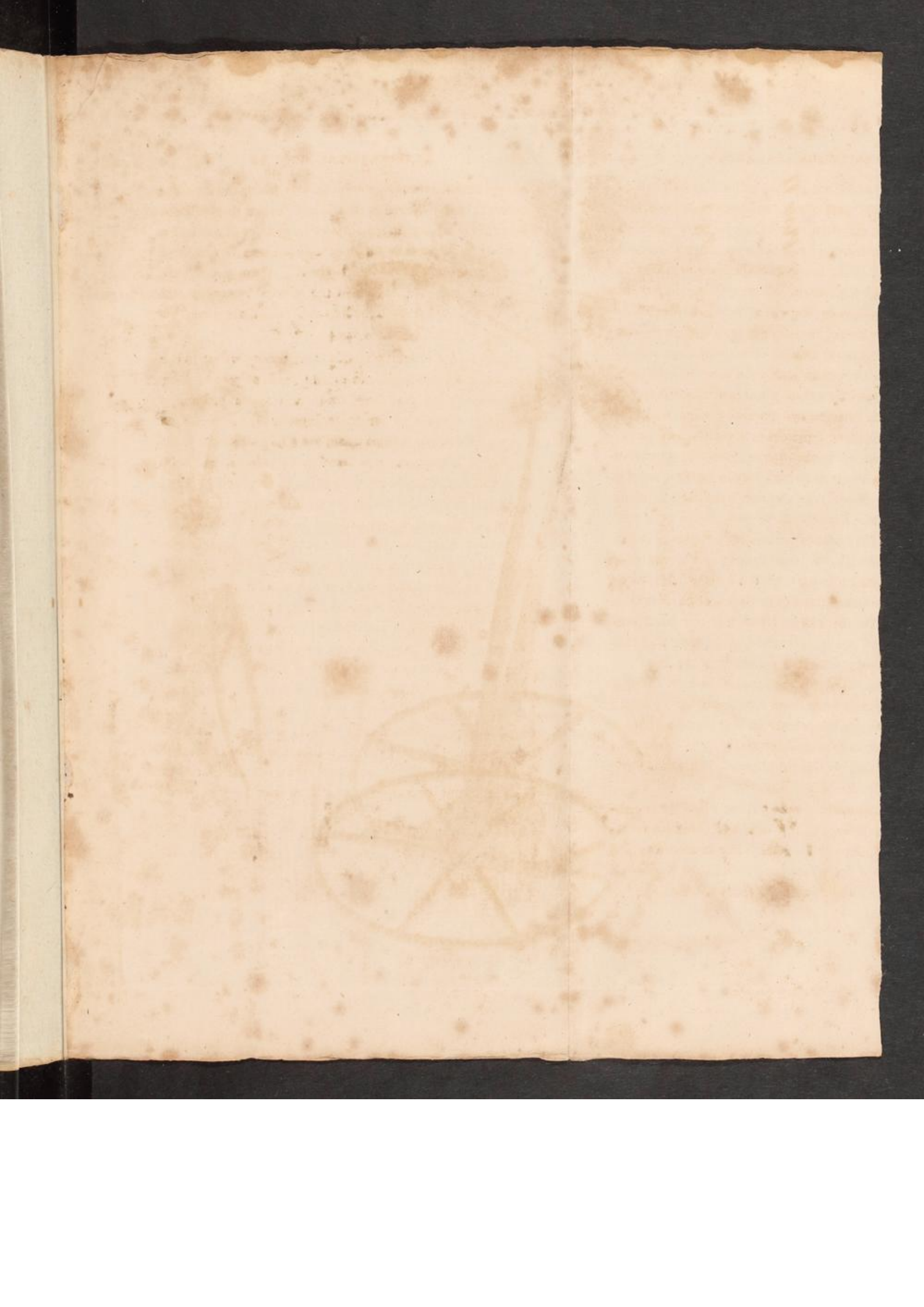


Plate II.

Fig. 1.

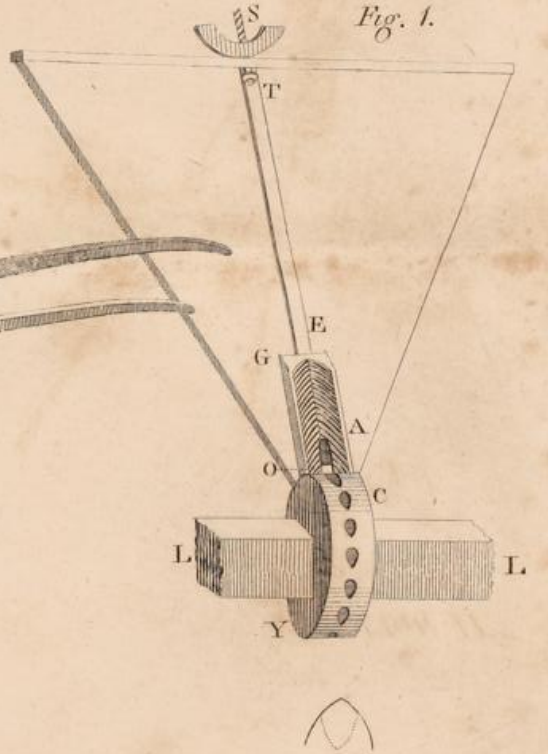


Fig. 2

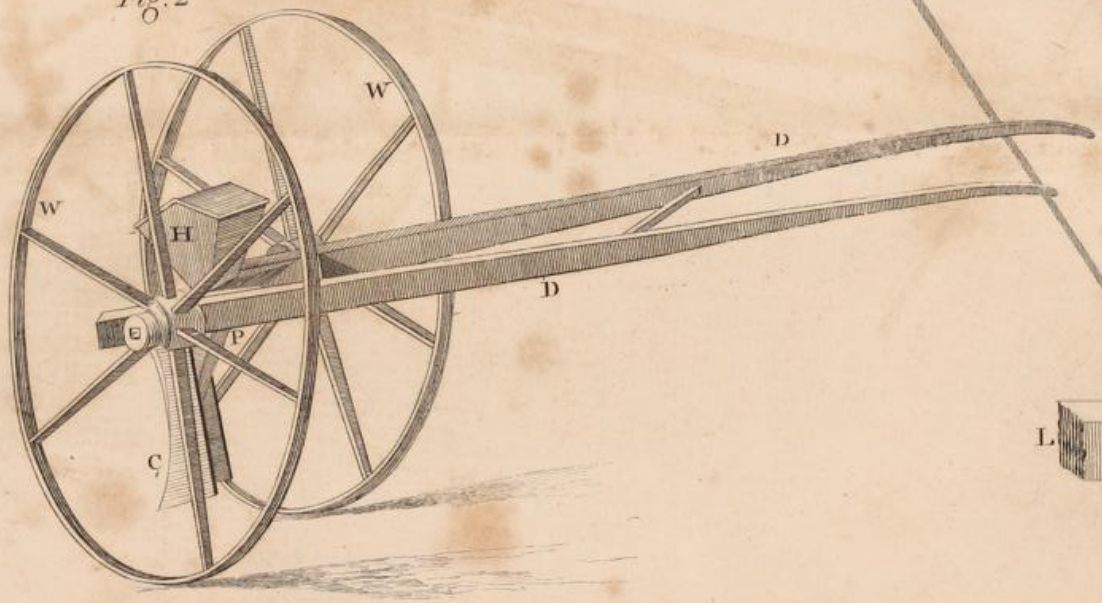


Fig. 3.

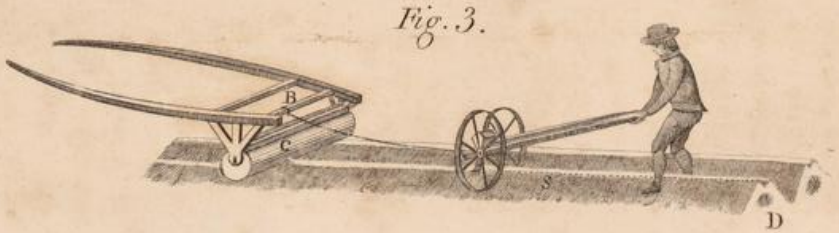


Fig. 4.

cut length-ways, and ſo deep as to hold 4 or 5 ſeeds each. On the back part of this cylinder (a little below the top) is placed the hind part of the hopper, to which is fixed a piece of iron or braſs GA, one inch long, and $\frac{3}{4}$ broad, hollowed on the inſide into the form of a Gothic arch, (as in *fig.* 4.) the ſides of which meeting the ſides of the cavities in an *oblique angle*, prevent the ſeeds from bruiſing; at the lower end of this piece of iron (which may be called a gatherer) is made a ſlit $\frac{3}{10}$ of an inch long, and $\frac{1}{10}$ wide; and at the back of it, a thin flat piece of iron ΓE, moves up and down, by means of a ſcrew S, at the top of the hopper, which enlarges or leſſens the orifice O, directly above the cavities, and increaſes or diminiſhes the quantity of ſeed delivered, as the operator thinks neceſſary: ——This ſlip of thin iron (which may be called a regulator) is let into a groove made in the board which forms the back part of the hopper.

This cylinder CY, before the cavities are made, is fixed on an iron axle LL, 1 inch ſquare, and turned very true, as well as are thoſe parts of the axle which turn in the collars, or thimbles, fixed in the ſhafts or handles DD, (*fig.* 2, *pl.* 2.) To the ends of the axle are fixed two wheels WW, 26 inches diameter, that turn the axle and cylinder round; which in paſſing thro' the hopper H (filled with turnip ſeed) bring forward in each cavity a number of ſeeds, and drop them into the ſpout P, which are conveyed by it to the coulter C, that forms a channel on the top of the one-bout ridge SD (*fig* 3, *pl.* 2.) for receiving them,—where S is the channel, and D the dung directly under the ſeeds.

If the cavities be made to hold 5 ſeeds when the regulator or tongue is ſcrewed cloſe down, and there be 16 cavities, it will then depoſit 80 ſeeds in one revolution; and as the diameter of the wheel is 26 inches, the circumference will be $81\frac{1}{2}$; in this caſe 80 ſeeds will be depoſited

in

in 81½ inches, or nearly 12 in a foot:——From this minimum quantity, by ſcrewing up the regulator, the number may be increaſed gradually to 50 or 60 in a foot; which is far too much, unleſs in very particular and unfavourable ſituations.

The price of this drill, is 1l. 5s.

Drills,—for ſowing the different kinds of grain, uſed in this county: not being able to regulate the quantity of ſeed, to ſuit different ſoils, ſeaſons, &c. we mentioned in the firſt edition of this Report, that a drill was then making, which would remedy thoſe complaints; a deſcription and drawing of which, being publiſhed in the Appendix to the Eſſay on Ploughs, mentioned in p. 38, we take the liberty of extracting from thence, "*A deſcription of a drill, upon a new conſtruction, for ſowing all kinds of grain, in any quantity, and at any diſtance.*

"The inſide part of the drill, by which the quantity of ſeed is regulated, is repreſented by *fig.* 1. *pl.* 3, where AX is an iron axle, 1 or 1¼ inch ſquare, upon which are fixed, at 9 or 10 inches diſtance, five, ſix, or more, braſs fluted cylinders, the flutes being rather more than a ſemi-circle ⅝ of an inch diameter, or ⅝ wide and ⅝ deep.

"RM are hollow cylindrical rims of hammered iron, which have ſegments turned down at right angles, to fit exactly the flutes of the braſs cylinders; the cavities of which are increaſed or diminiſhed by the ſegments of the iron cylindrical rims ſliding backwards or forwards in the flutes. This is performed in all the cylinders *at the ſame time*, by a rectangular ſpace (*n*) being made in the braſs cylinders, through which paſſes a ſtraight piece of iron IN, moving on friction wheels at I, and faſtened to the plates at LK, and alſo to the cylindrical rims RM.

"LV is a lever, the fulcrum of which is F, and moved by

Pl. III

To front page 1.

Fig. 1.

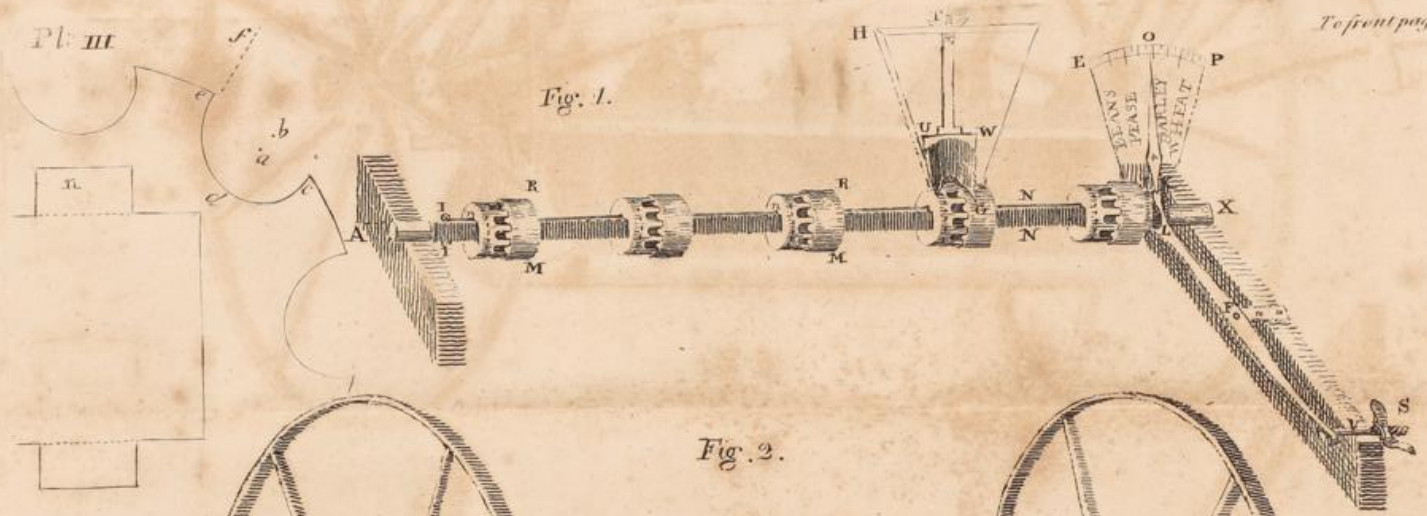
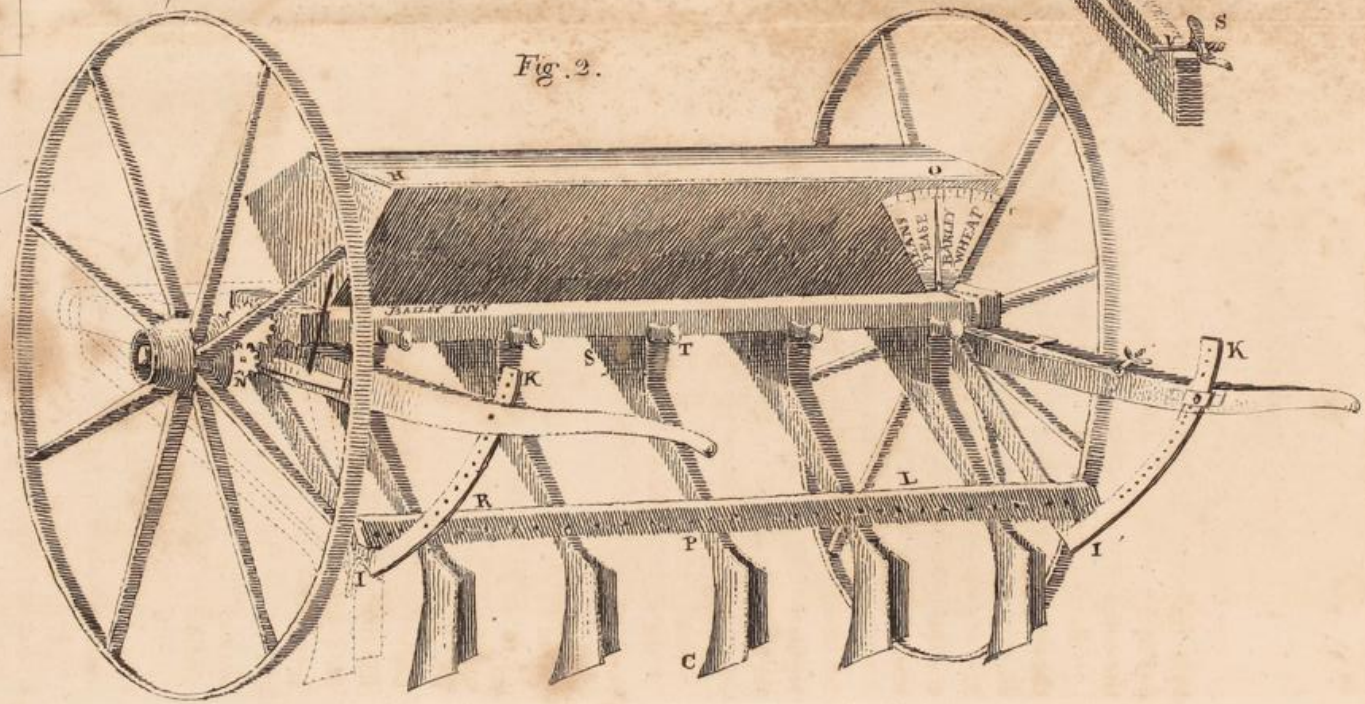


Fig. 2.



by a ſcrew S, paſſing through the frame at V. The end at LK is forked, and made to *fit exactly* the ſides of the collar or plates of iron JK.

" By turning the ſcrew S, the lever moves the whole of the rims at once, and the cavities are increaſed or diminiſhed at pleaſure,* and almoſt inſtantaneouſly, to ſow *any kind of grain*, and *in any proportion*, which is ſhewn upon the ſcale EOP, by the index KO fixed to the end of the lever at K.

" *Fig.* 2, *pl.* 3. is a view of the machine when ready for work ;†" and for a more particular deſcription, for regulating the depths, diſtances, &c. we beg leave to refer to the above-mentioned Eſſay.

For Turnips,—the large hopper is taken off, and a ſet of ſmall ones fixed upon the half-egg cavities at the end of the braſs cylinders: The quantity is regulated by a tongue ſcrewing up and down, as deſcribed in the turnip drill *(fig.* 1, *pl.* 2.*)*

For ſowing *beans* or *peaſe* at wide intervals, viz. from 27 to 30 inches, I uſe a drill with only one wheel and one cylinder, which a man wheels before him in the furrow, or (what I find much better) it may be fixed in the body of a ſmall plough, (drawn by a ſingle horſe) with one ſtilt that paſſes between the wheel and the ſeed-box, *(fig.* 5, *pl.* 1.*)* By this means the wheel moves along a ſmooth ſurface between the land-ſide and mould-board M, and the ſeed is depoſited at a regular depth: two inches anſwers very well for beans. With the ſame ſmall plough and drill I have ſown both wheat and barley, at different

* This is done with the greateſt facility and readineſs, even while the machine is going and at work; which is frequently neceſſary, where the land varies conſiderably in quality, upon different parts of the ſame ridge.

† The coulters and ſpouts may be hung differently, as repreſented by the dotted lines, and which is probably the better mode for hilly lands.

intervals

intervals from 6 to 12 inches, and 1½ or 2 inches deep, with good ſucceſs; and, for ſmall concerns, this cheap and ſimple apparatus will probably be found the moſt eligible.

It is fixed to the plough by two pieces of iron going from the ends of the drill; one to the beam at B, and the other to the ſtilt at C, and moving round on bolts, allow the wheel W to fall and riſe with every accidental hollow or eminence.

The low part of the coulter is knee'd or bent, to bring it to the ſame plane with the land ſide of the plough.

Threſhing Machines—are now becoming general in the northern parts of the country; they are all upon the principle of the flax mill; which principle was firſt introduced into this county for threſhing corn, by Mr Edward Gregſon, near 32 years ſince; the machine he uſed was worked by a man, who could threſh with it 12 buſhels of wheat in a day; but being hard work, and Mr Gregſon dying ſoon after, it was neglected. Mr Wm Menzie, who was ſervant with Mr Gregſon at the time, ſays "that his maſter took the idea from a ſmall flax mill which a Scotchman travelled the country with, for the purpoſe of ſwingling the flax which the farmers grew for their own uſe: this portable flax mill was carried in a cart from one farmhouſe to another, being a cylinder of 5 or 5½ feet diameter, and 18 inches wide; the ſwitchers were driven by his foot, with a crank like a cutler's wheel; and that the threſhing machine Mr Gregſon had, was made at that time, and exactly the ſame as the ſaid flax mill."—Mr Tho. Gregſon thinks that his brother Edward had ſeen ſomething of a ſimilar nature in Scotland, probably the ſame which Mr D. Meldrum gives an account of, about the ſame time, in a letter to Mr William Charge of Cleaſby, in the county of York, which he deſcribes as being the ſame as the flax mill; that it threſhed 150 buſhels of

oats

oats a day, which dropped through a ſkreen into a winnowing machine, that dreſſed at the ſame time.

Some time after this, Mr Oxley erected a threſhing machine at Flodden, moved by horſes, in which the corn was fed-in betwixt two *fluted rollers*, and ſtruck by ſwitchers, placed as thoſe are in the preſent machines; only they are *hung on hinges*. Thoſe in uſe now, are *fixed* as were thoſe of Mr Gregſon's. The complaint of Mr Oxley's machine was, that it did not threſh common oats clean, probably for want of velocity; for it is found in the machines now uſed, that if the ſwitchers move with a velocity of 1500 feet per minute, they will not threſh clean; and experience has proved, that to threſh common oats clean, requires a velocity of 2500 feet per minute.

Mr Ilderton erected two threſhing machines, one at Ilderton and another at Hawkhill, worked by horſes, the principle of which was to rub the grain out by projecting pieces of wood, (on the circumference of a large cylinder) rubbing againſt ſeveral *fluted rollers*: he uſed it many years, but it was frequently neceſſary to put the ſtraw twice thro' before it was perfectly clean.

We were informed by the late Sir Francis Kinlock, Bart. of Gilmerton, Scotland, that while he was attempting to perfect Mr Ilderton's machine, he ſaw a portable flax mill, made for the uſe of poor families, worked by a man. It ſtruck him that it would threſh corn, and he got one made, with the addition of two ſmooth rollers for taking in the corn; the work being too hard for a man, he ſent it to Mr Mickle's mill, to have it tried by water: ſoon after, Mr Mickle's ſon built a threſhing mill at Kilbogie; and after ten or twelve had been erected in the neighbourhood, by other workmen, he applied to Mr Kinlock to take out a patent, who told him that he did not look upon it as an original invention, and that a patent

ent would not be of any uſe. Some time after this, Mr Mickle took out a patent (for England only) in his own name, for the purpoſe we ſuppoſe of ſecuring to himſelf his own combination of wheels, &c. for movement of the various parts, as the leading principle of the machine had been applied to the ſame purpoſe at leaſt 20 years before.*

At their firſt introduction into this county, the corn and ſtraw were thrown out together upon the floor, and cauſed great confuſion: to remedy this, a ſkreen was added, thro' which the grain dropped into a winnowing machine, and from off the ſkreen the ſtraw was taken by a man: but a *circular rake*, invented about eight years ſince,† performs the operation much better; and at the ſame time ſaves a conſiderable expence. This rake is now added to all thoſe that have been lately erected; and only cauſes an addition to the machinery of one light wheel. Theſe machines are moved both by water and by horſes; two, four, and even ſix of the latter are ſometimes employed; the former is certainly the beſt power where it can be obtained.

From a review of the whole, it appears that the principle of the flax mill had been applied by different perſons at different times, for the purpoſe of threſhing corn; and ſince its being more generally uſed, different perſons have invented and uſed various combinations of wheels and other contrivances to effect the ſame purpoſe, and render the machine more perfect.

The ſimpleſt and moſt uſeful combinations and contrivances are certainly the beſt: but whoſe are entitled to

* Mr Mickle is a very ingenious mechanic, and tho' it appears he has not the merit of being the original inventor, yet he has added many uſeful improvements.

† By Mr Bailey, who firſt applied it to his machine at Chillingham.

this

this appellation we do not pretend to determine; the public muſt judge for themſelves.—The combination we ſhall offer is different to any we have ſeen, for which reaſon, and being that where the firſt circular rake was applied, we ſhall give

A deſcription and calculation of a Threſhing Machine erected at Chillingham.

In *pl.* 4, *fig.* 1, BB, is a horizontal board or table 5 feet long by 3 ft. 4 ins. broad, on which the corn CC is *evenly ſpread*, and preſented to the caſt-metal fluted rollers RR (4 inches diameter) which take it regularly in, and by their weight and ſharp edges hold faſt the ſtraw, while it is ſtruck, ſwitched, or threſhed, by the ſwitchers, or pieces of wood SSSS, fixed in the cylinder DD, and projecting 3 inches from its ſurface;* theſe, when they ſtrike the corn, move in an upward direction RE, with great velocity, and throw the corn as it is threſhed, and the ſtraw as it leaves the fluted rollers, againſt the circular rake KK, and upon the wire ſkreen G, from whence the ſtraw is taken by the rake, and delivered upon the ſloping board L, down which it ſlides to the floor N, while the corn paſſes thro' the ſkreen G into the hopper H, and from thence to the inclined board I; but in falling from H to I, a ſtrong current of air, raiſed by the fanners FFF, blows the chaff over the ſloping board O, and the light corn againſt it, which falls into the ſpace P, and the chaff into M, while the good grain ſlides down the inclined board II, to the floor at Q, from whence it is taken and put into a ſecond winnowing machine, in which are placed proper riddles to ſuit different kinds of grain: This ſecond machine is moved by a rope going

* This cylinder is made with ſtrong arms, on which are fixed the ſwitchers, and caſed round with narrow inch deals; the whole ſecured from flying off by ſtrong iron hoops, ſurrounding them at each end; the ſwitchers are covered with plate iron, to prevent their wearing.

over a pulley, fixed in the axle T, and is set a-going, or stopped, at pleasure, by a stretching pulley, as occasion requires.

Where the situation will admit of the board H, being placed about 4 feet from the floor, the second winnowing machine may be placed directly under it, and save the trouble of lifting the corn.

To find the velocity of the particular parts,—we must divide the product of the number of cogs in the *driving wheels*, by the product of the number of cogs in the *driven wheels*, and the quotient will be the number of revolutions made by the last moved part, for *one* of the first moving part.

The whole is put in motion by an overshot water wheel 14 feet diameter, which makes from 5 to 6 revolutions per minute, according to the supply of water; on the axle of this water wheel is fixed a large spur wheel *aa*, of 160 cogs ($152\frac{3}{4}$ inches diameter) which drives a cast-metal pinion *b*, of 16 cogs (15,28 inches diameter) on the axis of which is placed another spur wheel *c*, of 63 cogs (60,1 inches diameter) that drives the cast-metal pinion *d*, of 16 leaves, (15,28 inches diameter) on the axis of which is fixed the cylinder DD, (4 feet diameter, and 5 feet long) with the four projecting pieces of wood, or switchers, SSSS, that switch or thresh the corn, as described above.

Then $\frac{160}{16} \times \frac{63}{16} = 39{,}375$, the revolutions of the cylinder for *one* of the water wheel,

which, multiplied by 5,5, the medium revolutions of the water wheel per minute,

gives 216,562, the revolutions of the cylinder per minute;

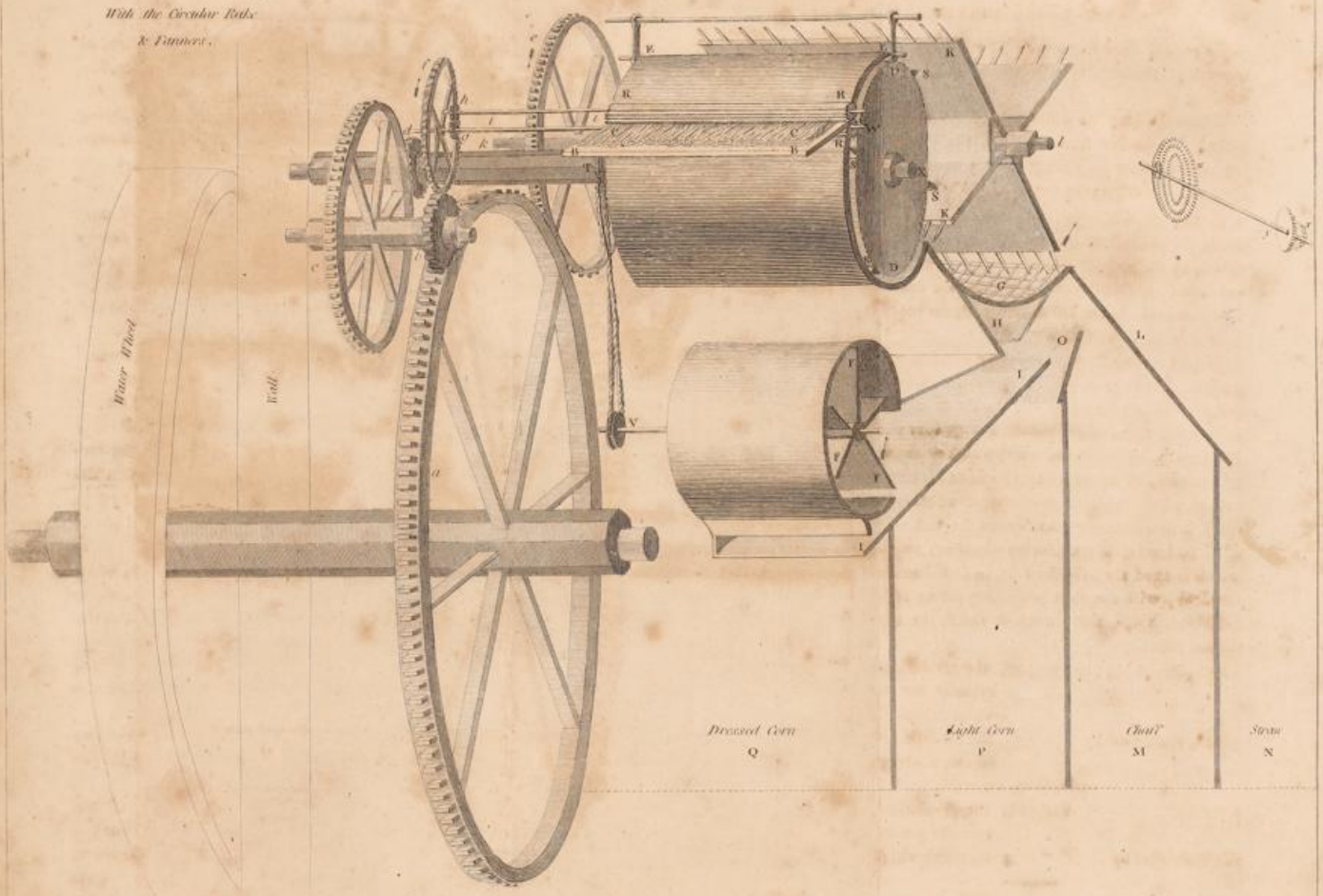
this multiplied by 4 the number of switchers, gives

A View of the THRESHING MACHINE

Erected at Chillingham, 1799.

With the Circular Rake

& Fanners.



gives 866,25 the number of ſtrokes per minute.

And as the diameter of the cylinder is 4 feet, the circumference will be 12,56;

therefore - 216,5625, the revolutions of the cylinder per minute,

multiplied by - 12,56 feet, the circumference of the cylinder,

gives - 2720 feet, the velocity of the ſwitchers per minute.

The large ſpur wheel *a*, alſo drives the light cog wheel *e*, of 63 cogs (60,1 inches diameter) fixed on the axis *kl*, of the rake, for taking away the ſtraw.

Then $\frac{160}{63}$ = 2,54 the number of revolutions, which the rake makes for one of the water wheel,

multiplied by 5,5, the revolutions of the water wheel per minute,

gives - 13,97, nearly 14, the revolutions of the rake per minute; which having 4 arms, will clear the ſcreen of ſtraw 56 times per minute.

The Rollers,—are moved by the pinion *b*, of 16 leaves, working into the ſlight caſt-metal wheel *f*, fixed on the iron axis *ii*, of the lower roller, on which axis is alſo fixed a ſmall pinion *g*, of 8 leaves, working into another *h*, of equal number, fixed on the axis* of the upper roller, which gives the two rollers an equable motion, for taking in the corn.

Then $\frac{160}{16} \times \frac{16}{36}$ = 4,444, the revolutions of the rollers for *one* of the water wheel,

* This axis is fixed into the upper roller, either by an univerſal joint, or with a ſquare tapering end, to allow the upper roller to riſe and fall, according as the corn is fed in thicker or thinner, and the concave board RE, is hung on a bolt, to allow it to riſe and fall with the roller.

multiplied by - 5,5

gives - 24,44, the revolutions of the rollers per minute.

And the diameter of the rollers being 4 inches, the circumference will be 12,566 inches;

therefore 12,566 inches, the circumference of the rollers,

multiplied by 24,44, the revolutions of the rollers per minute,

gives - 307,1 inches of ſtraw paſſing thro' the rollers per minute; which 307 inches receive 866 ſtrokes of the ſwitchers in that time, or nearly three ſtrokes to an inch.

When the rollers are required to move ſwifter or ſlower, they may be driven very conveniently from the end of the axle of the rake, by fixing a caſt-metal *faced wheel* on it, with three rows of cogs, (8, 10, and 13) working into a ſhifting pinion of 8 leaves, fixed on an iron axle; at the other end of which is put a ſmall *bevel* wheel of 12 teeth, working into another of 8 teeth on the end of the axle of the lower roller.

The Fanners,—are moved by a *croſſed rope*, paſſing over a pulley T, 10 inches diameter, fixed on the axis of the cylinder, and another V, of 8 inches diameter on the axis of the fanners. Then as the axle of the cylinder makes 216,56 revolutions per minute, we have $216,56 \times \frac{10}{8} =$ 270,7 revolutions of the fanners per minute.

From the above it appears, that when

The water wheel makes $5\frac{1}{2}$ revolutions in 1 minute,
The cylinder will make $216\frac{1}{2}$ ditto,
The rollers - $24\frac{1}{2}$ nearly,
The rake - 14 ditto, and clears the ſkreen of ſtraw 56 times per minute.

The

The fanners - $270\frac{3}{4}$ ditto,
The ſwitchers make 866 ſtrokes per minute, and move with a velocity of 2720 feet per minute.

The rollers take in nearly 300 inches of corn per minute: The medium length of good oats is about 30 inches; and, ſuppoſing half a ſheaf put in at a time, a whole ſheaf will then be equal to 60 inches:

Therefore $\frac{300}{60} = 5$ ſheaves per minute; which agrees with the uſual rate of going of this machine, when ſupplied with a *medium* quantity of water. From ſome experiments lately made, 120 ſheaves of oats were threſhed in 22 minutes, and yielded 12 buſhels, which is at the rate of 33 buſhels per hour, or 264* per day of 8 hours.

The expence, for the attendance on the threſhing and dreſſing part of this machine, is only that of three women, viz: One to feed-in, another to hand the ſheaves to the feeder, and the third to take away and riddle the corn after it is winnowed; of courſe the expence of threſhing and dreſſing 264 buſhels is only 1s. 6d.

The expence of threſhing the ſame quantity by the flail, would be one twenty-fifth part,† or $10\frac{1}{2}$ buſhels, which at 2s. per buſhel is 21s.; to which muſt be added 2s. the expence of a man and two women, to aſſiſt in winnowing, making in all, 23s.

The expence of erecting a threſhing machine of this

* This muſt be conſidered as a medium quantity; of ſhort early oats 320 buſhels might be threſhed in the ſame time; and of wheat with long ſtraw, not more than 180 buſhels: But a great deal depends on the care and *conſtant attention* of the feeder; a trifling neglect in this point, will make a conſiderable deficiency in the above quantities, which we find is too often the caſe.—Where there is plenty of water, ſo that a whole ſheaf may be put in at once, the quantity will be double to the above.

† The wages here for threſhing are, one twentieth part of the grain, when the threſher *folds or bundles up the ſtraw*—and one twenty-fifth when the ſtraw is *taken away looſe*, as faſt as he threſhes it; the threſher aſſiſts in winnowing, and finds a woman for the ſame purpoſe; the farmer finds a man and two women.

kind, was from 70 to 80l.; but ſince the advance of wood, iron, and wages, it will be now near 100l.

Machines of ſmall dimenſions are erected for about 50l. which, with 2 horſes, will threſh and dreſs 120 buſhels of oats, or 60 of wheat, in 8 hours.

Rollers, or ſmall *Millſtones*, are added to many of theſe machines, for cruſhing or grinding grain, for horſes, ſwine, &c. Knives for cutting ſtraw, and many other uſeful appendages, might be added.

The Winnowing Machine is in univerſal uſe here; we believe very little, if any corn is dreſſed by any other means: They were firſt made by a farmer of a mechanical genius called ROGERS, who lived at Cavers near Hawick, and whoſe grandſon, now a carpenter there, ſtill makes them, perhaps of as uſeful a form as any other perſon, and at as low rates as from 2l. 8s. to 3l.

Old Rogers, we are told by his deſcendant, happened in the year 1733 to ſee a machine, thrown out of the way as uſeleſs, in an old granary at Leith, of which he took ſuch notice, that, on his return home, he ſet about making one, the utility of which ſoon recommended it to many principal farmers: in a few years they were univerſally uſed, and are now become ſo abſolutely neceſſary, where large quantities of corn are to be dreſſed, that it would be attended with conſiderable inconvenience to do without them; of ſuch great utility has been the ſuperior diſcernment of this ingenious and unnoticed individual!

The preſent Mr Rogers ſays, he believes the machine his grandfather ſaw at Leith, was brought from Holland: An anonymous remarker, who ſigns himſelf a Scotch Farmer, ſtates "that it was firſt introduced by the late celebrated Andrew Fletcher of Saltoun, along with the barley mill, from Holland, in the year 1711;" and we have ſomewhere read or heard, that the Dutch brought it from

from the Chineſe, which is corroborated by the information we lately received from the Honourable Mr Douglaſs,* who was ſhewn (when on his travels in France) by the late Duke de Rochefoucalt, a ſet of Chineſe drawings, repreſenting the culture of rice in all its ſtages, from the firſt planting to its being prepared for ſale, and that the laſt drawing was a repreſentation of the *dreſſing* or *winnowing*, which was performed by a *machine exactly ſimilar to that we now uſe for the ſame purpoſe*.

Dr Deſagulier's blowing wheel, which he preſented to the Royal Society in 1734, is exactly on the ſame principles.

Two men and three women will winnow, dreſs and meaſure up into ſacks, 250 buſhels of oats, or 150 buſhels of wheat, per day,—the expence 3s. 8d.

A pair of pruning ſhears, repreſented in fig. 1, pl. 5, have been particularly recommended by Mr Tweddell, of Threepwood, to the Preſident of the Board, as being ſuperior to any other implement for the purpoſe of cutting hedges.—They conſiſt of a ſtrong ſharp knife 6 inches long, moving betwixt two ſquare-edged cheeks; the upper handle is 2 feet 6 inches long, and the other 2 feet 3 inches.

There are many other implements uſed in this county, but as we believe moſt of them are ſuch as are well known in other parts of the kingdom, it would be of little uſe to deſcribe them here.

CHAPTER VI.

INCLOSURES.

THE parts of this county capable of cultivation are in

* A ſon of the Earl of Selkirk.

general well inclosed by live hedges; the only exception is a small part of the vales of Breamish, Till, and Glen: but even here, the advantage of having well-fenced fields is so well understood, and so much desired by the tenants, that we hope, in eight or ten years, the whole of this valuable district will be inclosed by proper fences.

The size of inclosures varies with the size of farms. In some parts, from two to six or eight acres; in the northern parts, where the farms are large, the fields are from 20 to 100 acres.

The fences most generally used for new inclosures, are earth mounds; at the base of which, and on the edge of the ditch out of which they are raised, are planted the quicks, generally upon a turned sod six inches high; which we think too low, as we always find the quicks grow much better when planted three sods high, with the thickness of two surface sods laid under their roots. This in most cases doubles, and in thin soil trebles, the surface soil, and forms a thick bed of the best earth for the roots of the quicks to grow in, as will be more clearly seen in the annexed sketch of such a fence, fig. 2, pl. 5, where AB is the ditch, 4½ feet wide at top; BCD the mound; the base BD, six feet wide; and height CD, four feet. Q, the quicks planted upon three turned sods, at least 15 inches high, with surface sods and soil 12 inches thick, under and behind their roots.—The expence of making this kind of fence, is 1s. 4d. per rood of 7 yards, exclusive of quicks and railing.

The quicks should never be planted nearer each other than nine inches, and upon good land a foot. Quicks four or five years old, with strong clean stems, are always to be preferred to those that are younger and smaller.

It is a custom, in some parts, to clip young quicks every year; this makes the fence look neat and snug, but it checks their growth, and keeps them always weak in the stem,

Plate V.

Fig. 1.

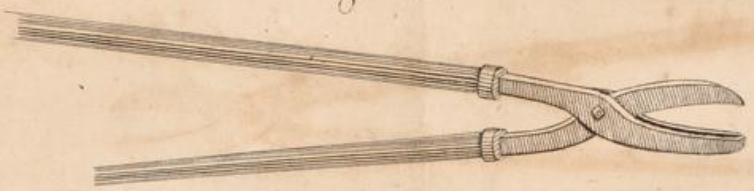


Fig. 2.

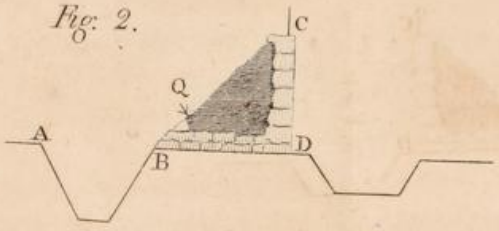


Fig. 3.

Fig. 4.

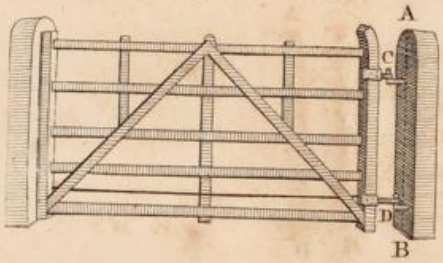
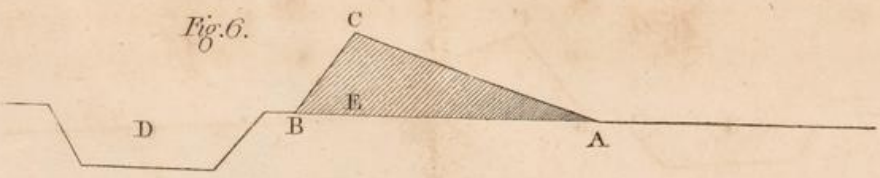


Fig. 5.

Fig. 6.



ſtem, and, when they grow old, open at bottom; while thoſe that are left to nature, get ſtrong ſtems and ſide branches, which by interweaving one with another, make a thick and impenetrable hedge, and if cut at proper intervals, (of nine or ten years), will always maintain its ſuperiority, over thoſe that have been clipped from their firſt planting. In point of profit, and of labour ſaved, there is no compariſon; and for beauty, we prefer nature, and think a luxuriant hawthorn in full bloom, or loaden with its ripened fruit, is a more pleaſing, enlivening, and gratifying object, than the ſtiff formal ſameneſs produced by the ſhears of a gardener.

Walter Trevelyan, Eſq; of Nether-Witton, ſhewed us a new mode of raiſing fences:—He erects an earth mound (fig. 3, pl. 5,) 7 feet wide at bottom AB, 4 feet wide at top CD, and 5 feet high; on the middle of the top he plants a row of quicks Q, and on each ſide at 2 feet diſtance puts in willow ſtakes WW, an inch in diameter, and 1½ or 2 ft. long, ſloping outwards, which take root and form a live fence, for the preſervation of the quicks in the middle.—Theſe ſtakes are at firſt bound together by a kind of eddering; at the time we ſaw them they had been only two years done, of courſe no judgment could be formed, for ſome years to come, whether it poſſeſſed ſuperior advantages to the mode above-deſcribed: It appeared to us an experiment yet undetermined. In ſome ſituations, we are inclined to believe, it may be very uſeful, eſpecially in cold, ſoft, marſhy ſoils: Whether it will be ſuperior in all, we ſtill entertain ſome doubts; but are perſuaded, that a full trial will be given, by the ſpirited improver who is making the experiment.—The expence is 2s. 6d. per rood of 7 yards.

Stone Walls are alſo uſed for fences in ſome ſituations; the uſual dimenſions are 2½ feet at bottom, 15 or 16 inches at top, and 4 to 4½ feet high: About half way up

a

a row of through-ſtones are put, at the rate of 9 or 10 in a rood of 7 yards, and on the top a coping of ſods, or ſtones *ſet edge-ways*; the latter is preferable, as being the moſt laſting, and preſenting a more awful aſpect, to deter the Highland ſheep from attempting to leap them — The *expence* of making theſe walls is from 5s. 6d. to 6s. 6d. a rood of 7 yards, for *winning and walling*: The expence of leading depends on the diſtance.—Twelve or fourteen cart load will do a rood.

The advantages of incloſing private property in this county principally ariſe from ſeparating lands of different qualities, which can, by theſe means, be employed in ſuch culture, or depaſtured by ſuch ſtock, as the occupier thinks moſt ſuitable; and, where ſheep are kept, they feed with more facility and readineſs, being freed from the whims of the ſhepherd, and the teazings of his dog; and, by ſeparating the dry ground from the wet, a ſtock-maſter has it more in his power to avoid that fatal malady, the rot.

Gates are made of various forms, but agree nearly in ſize, being generally 8½ feet wide, and from 4¼ to 5 feet high, with 5 ſtrong bars about 3½ inches deep, and a weaker one about 1 inch ſquare, placed between the two loweſt bars.—The lighter a gate is, eſpecially in the fore-part, the better, provided it be ſufficiently ſtrong; for this reaſon the top bar ſhould be conſiderably ſtronger than the reſt, as it is the moſt liable to be broken, eſpecially where horſes are kept, if not made ſo high that they cannot eaſily get their necks over it. The moſt approved form is that repreſented, fig. 4, pl. 5.

Hanging Gates, ſo as to have a proper fall or tendency to ſhut of themſelves, being little underſtood by carpenters, we hope the following directions for effecting that purpoſe may be acceptable.

Having ſet the poſt perpendicular, let a plumb-line, AB,

AB, be drawn upon it: on this line, at a proper height, place the hook C, ſo that it may project $3\frac{1}{2}$ inches from the face of the poſt; and at a convenient diſtance below this, place the lower hook D, $1\frac{1}{2}$ inches *to one ſide of the perpendicular line*, and projecting 2 inches from the face of the poſt; then place the top loop or eye 2 inches from the face of the "*hawtree*," and the bottom loop, $3\frac{1}{2}$ inches:—Thus hung, the gate will have a tendency to ſhut in every poſition.*

This principle has been long known and practiſed, in hanging gates that open both ways.

CHAPTER VII.

ARABLE LAND.

SECT. 1.—*Tillage.*

THE arable lands of this county being under various ſyſtems, and directed by various opinions, the management of the tillage muſt differ conſiderably.—In the operation of ploughing, it is generally agreed that the breadth of the furrow ſhould be about 9 inches, and the depth from 4 to 6 or 7 inches.

It was formerly the general practice not to plough the lands intended for fallow till after Spring ſeed-time, (and very often delayed till May, or even June) but now the fallows are ploughed before Winter, to meliorate by the froſt.—In the middle of April or beginning of May, thoſe that are intended for *turnips* or *potatoes* are harrow-

* For if the weight of the gate be repreſented by the line CD, fig. 5, pl. 5, this, by the reſolution of forces, is reſolvable into other two, CE and DE, the former repreſenting that part of the weight which preſſes in a perpendicular poſition; and the latter, that part of the weight which preſſes in a horizontal direction, and gives the gate a tendency to ſhut.

ed

ed and ploughed *acroſs*, and, where neceſſary, rolled with a heavy roller; the ſame operations are repeated two, or three, or more times, until it is thought ſufficiently fine and clean for ſowing or planting.

Thoſe that are intended to be naked fallow for wheat, receive three, four, or five ploughings through the Summer; but are ſeldom harrowed, it being thought an advantage to wheat to have the land cloddy.

On thoſe fallows where quickens or couch graſs, &c. are found, every exertion is uſed to extirpate them, by harrowing, gathering and burning, or leading off, ſo long as the ſmalleſt remains are viſible. The lime and manure are moſtly laid on before the laſt ploughing.

For barley, it is the general cuſtom to plough only once; but the beſt cultivators ſeldom ſow this grain without giving two or three ploughings, eſpecially when the land is to be ſown with clover and graſs ſeeds.

Every other ſpecies of grain is ſown after one ploughing, except when beans or peaſe are to be drilled.

Trench Ploughing, is practiſed by a few; it is an excellen mode for breaking up graſs lands, and is performed by two ploughs following each other in the ſame furrow; the firſt plough paring off the ſurface, from 1 to 1½ inches thick, and turning it into the bottom of the laſt-made furrow: While the ſecond plough, going 3 or 4 inches deeper, turns upon it a ſod of friable earth, which being deſtitute of tough fibrous roots, harrows to a fine mould with little difficulty.

This practice entirely obviates the objections to drilling upon clover lea, and the additional expence will not be more than 4s. per acre, which, put in competition with the advantages to be derived from it, will leave a conſiderable balance in favour of the practice: in breaking up old ſwards, on clayey lands, the expence is almoſt ſaved in the harrowing; on ſuch ſoils it will be found of great

ſervice

ſervice, if they are *thus ploughed* in Autumn, they may be eaſily drilled with beans or peaſe in the Spring, and the ſubſequent hoeings performed with facility; operations that would be very difficult to perform, when ploughed in the manner uſually practiſed.

The Ridges are of various forms and ſizes.—On the deep ſoiled lands, that were uſed as arable ſome centuries ſince, the ridges are moſtly very high, broad, and crooked;* upon lands that have been lately brought into cultivation, they are ſtraight, nearly flat, and in general about twelve or fifteen feet broad; on dry lands, they are quite flat, and alternately gathered and ſplit. A breadth of fifteen feet anſwers beſt for ſowing broad-caſt at two caſts.

A few years ſince, the ploughing, and various other purpoſes, for which draughts are wanted upon a farm, were performed by horſes, which in ploughing or harrowing are always yoked double, and driven with cords by the ploughman, and in general plough an acre a day; but in the ſeaſon of ſowing turnips, one and a half, or even two acres, are frequently ploughed, on *fine light ſoils*. But ſince the great advance in the price of horſes, oxen have been more uſed, eſpecially for the purpoſes of ploughing, and carting *about home*.

They are harneſſed both with yokes and collars. Where three or four are uſed, a boy is allowed to drive; when two,† the man that holds the plough drives with cords. They only plough *half a day at a time*; one half of a team being uſed in the forenoon, and the other in the afternoon.

* It is a dangerous experiment to attempt to level and ſtraighten ridges of this deſcription too ſuddenly; we have ſeen much miſchief done by it.

† Two oxen are found very ſufficient for ploughing light fallow lands in Summer; but for almoſt every other purpoſe, 3 or 4 are uſed.

SECT.

SECT. 2.—*Fallowing.*

The practice of making naked fallows on all kinds of soils, once in 3 or 4 years, was general thro' this county, till the introduction of turnips; in a few years the fallows of the dry lands were covered with this valuable plant. On such other soils as were found improper for this root, the naked fallows still prevail, with an almost universal opinion, that it is absolutely necessary to the fertility of the land; yet there are some few who dare to doubt this long-established doctrine, and presume to think, that naked fallows might be dispensed with in *many situations*, by cultivating leguminous crops, *drilled at wide intervals*, to admit being *ploughed*, or *horse-hoed* between: to which, if *proper hand-hoeings* be added, the land will be as well prepared for wheat, as if it had been a compleat naked fallow.

This is not advanced on speculation or theory; instances can be produced, where no naked fallows have been made on fields of strong loam for 12 years, yet they are as clear of quickens, couch-grass, or other pernicious weeds, as any fields in the district, that have been under naked fallow two or three times in the same period.*

Whether fallowing is or is not necessary, has been much agitated of late years; so much so, that the different partisans have obtained the appellation of "*fallowests*," and "*antifallowests*:" It happens to be one of those subjects which can never be determined by reasoning, opinions, or bold assertions; *fair experiments* only can resolve it; and whatever may be the results of such ex-

* It may be necessary to observe, that, previous to the adoption of this system, the land was cleared of quicken, or couch-grass, by a complete summer fallowing.

periments,

periments, it may be juſtly concluded, they will be the ſame in ſimilar ſoils, climates, and ſituations.

Tho' we are diffident in giving a decided opinion upon ſo important a ſubject, yet from obſervations made on the above facts, we cannot help being inclined to think, that the quantity of naked fallow might be very much reduced, and in another century will probably be totally aboliſhed, if no fortuitous circumſtances ariſe to check the exertions and ſpirit for improvement, which have been ſo prevalent of late years, and ſo generally diffuſed thro' this diſtrict.

SECT. 3.—*Rotation of Crops.*

The moſt prevailing rotation was, 1 fallow
2 wheat
3 oats
4 fallow, &c.

repeated for two, three, or four fallowings:—Upon the ſtrong lands along the ſea-coaſt, inſtead of oats after wheat, they generally ſubſtitute peaſe or beans, or beans and peaſe mixed; when laid down to graſs, it is ſown with graſs ſeeds, and continued in graſs ſeven or more years.

On dry ſoils, after ploughing out from graſs, the rotation was, 1 Oats
2 Oats
3 Turnips, ſown broad-caſt, limed and dunged and twice hand-hoed.
4 Barley or wheat, ſown up with clover and ray-graſs, and continued in graſs from four to ſeven, or more years, depaſtured principally with *ſheep*.

The *beſt cultivators* uſe the following rotations, according to ſoil, ſituation, and circumſtances.

Clayey ſoils. 1 Fallow
2 Wheat
3 Clover for 1 or 2 years, depaſtured with ſheep.

ſheep.

4 Beans or peaſe.

Strong loams. 1 Turnips, drilled at 30 inches intervals.

2 Barley

3, 4, Clover and graſs ſeeds; for 2 or 3 years, depaſtured with ſheep, and a ſmall proportion of cattle.

5 Oats

6 Beans, or peaſe, drilled at 30 ins. intervals, horſe and hand-hoed.

7 Wheat, drilled from 9 to 12 ins. intervals, horſe and hand-hoed.

Sandy and dry light loams,—after being ploughed out from graſs,

1 Oats.

2 Turnips, drilled at 30 ins. intervals.

3 Barley or wheat, drilled from 9 to 12 ins. intervals, hoed and ſown up with clover and graſs-ſeeds, depaſtured with ſheep, (and a ſmall proportion of cattle) for *three* or *more years*.

This laſt rotation has been practiſed of late years, and is becoming more general, not only upon the turnip ſoils, but upon the ſtrong clayey lands, ſubſtituting naked fallows, or beans drilled at 30 ins. intervals, inſtead of turnips; and thoſe who have tried it on ſuch ſtrong lands, find, that after two or three years clover and graſs ſeeds, depaſtured with ſheep, the land will grow good crops of oats, which they could never get it to do under their old ſyſtem.

Thoſe who have practiſed the Norfolk ſyſtem on thin light ſoils, find their crops grow worſe, eſpecially the turnips and clover, and many have been obliged to adopt this ſyſtem, by which they find their lands renovated; and

and, inſtead of having to complain, that their ſoil was "*tired of turnips and clover*,' they now find, that it produces abundant crops, and that every rotation brings it nearer its former fertility.

SECT. 4.—*Crops commonly cultivated.*

WHEAT.

The preparation, for the greateſt quantity of wheat raiſed in this county, is naked ſummer fallow:—Of late years conſiderable quantities have been grown after turnips; it is alſo grown after rape, clover, beans, peaſe, tares, and potatoes.

The kinds of wheat grown here include many varieties, and as they are known by different names in different diſtricts, we are afraid, that by barely mentioning their names, a very different variety may be taken for the one we mean; and tho' we deſpair of pointing out ſuch marked diſtinctions as accurately to diſtinguiſh them in all caſes, the ſhades of difference being often very ſmall, yet we hope there are ſome leading features which may help us to attempt an arrangement, and in ſome meaſure better enable our readers to aſcertain the variety intended; for this purpoſe we ſhall divide them into *two orders*; viz. the *ſmooth chaffed*, and the *downy chaffed*, of which we ſhall enumerate the principal varieties now grown in this diſtrict.*

I. Smooth chaffed: *with a few ſhort awns towards the top of the ear.*

Zealand—ears long and large, ſpicula very wide ſet, 9 in $3\frac{3}{4}$ inches, chaff white, ſometimes with a tinge of brown,

* We could wiſh to ſee this ſubject undertaken by Profeſſor Martin, who is well qualified to do it juſtice.

opening and ſhewing the grain; ſtraw very long, grain white and large.

White-Kent—ears middle ſized, 9 ſpicula in 3¼ inches, chaff white, opening and ſhewing the grain when ripe, ſtraw ſhorter than the laſt, grain white.

Golden ear—ears ſhort, ſpicula very cloſe ſet, 9 in 2¼ inches, chaff a yelloviſh light brown, ſhort; the grain white, and eaſily ſhook out by the wind.

Burwell-red—ears long and large, ſpicula very wide ſet, 9 in 3¼ inches, chaff a dark brown red, large and cloſed on the grain, ſtraw long, grain red.*

II. Downy chaffed: *with a few ſhort awns towards the top of the ear.*

Woolly-ear—ears middle ſized, ſpicula cloſe ſet, 9 in 3 inches, chaff white, cloſed on the grain, ſtraw long, grain white.

Velvet ear, or little wheat—ears ſmall, ſpicula cloſe ſet, 8 in 2¼ inches, chaff white, cloſed on the grain, ſtraw ſhort, grain white, ſmaller, ſhorter, and plumper than the laſt;† and the appearance of the ear is leſs in every dimenſion.

The downy chaffed wheats have ſhorter ſtraw, and are leſs liable to have the grain ſhaken out by winds (the chaff embracing the grain more cloſely,) than the ſmooth chaffed tribes, which is a conſiderable advantage; but then we are apprehenſive that this downineſs makes them retain the dews and moiſture upon the ear much longer

* This variety has been much uſed of late years, eſpecially upon crude or newly broke up lands, with great ſucceſs, and has in a manner ſuperſeded the common red wheat.

† The form of the grain of this variety is the moſt perfect of any other we have ſeen, and from the ſhortneſs of the ſtraw, it is the beſt adapted to ſow upon rich ſoils, where there is a danger of the crop lodging.

than

than the ſmooth chaffed kinds, and probably renders them much more liable to be affected by thoſe diſeaſes which give a duſky dark ſhade to the chaff, and a ruſty cankering upon the ſtraw; as we recollect few inſtances of ſmooth chaffed or red wheat being troubled with this diſeaſe, of courſe the downy chaffed kinds are moſt proper for windy open ſituations, and the ſmooth chaffed to well ſheltered incloſed diſtricts.

The ſeed is ſelected with great attention from the moſt perfect ſamples, and the practice of changing ſeed is thought advantageous; for this purpoſe more or leſs new ſeed is every year imported from diſtant parts, as Kent, Eſſex, Huntingdonſhire, Cambridgeſhire, &c.—New ſeed is preferred to old, and that immediately after being threſhed, rather than what has lain long in a granary.

Steeping in chamberlye, and powdering with quick lime immediately after, to make it ſufficiently dry for ſowing, is generally practiſed; the ſmut is ſeldom ſeen where this is properly performed,* and ſome go ſo far as to ſay, that it will cure ſmutty ſeed;†—it is done by throwing the

* In a practice of 40 years, the Meſſrs Culley have only had one inſtance of ſmut in their crops of wheat, and this was where the ſeed had not been ſteeped; and for a number of years they have not grown leſs than from four hundred to ſix hundred acres yearly.

† A field at Chillingham was ſown in 1795 with wheat, in which were *a few balls of ſmut*; one-third of the ſeed was ſteeped in chamberlye and limed; one-third ſteeped in chamberlye, dried and not limed; the remainder was ſown without either ſteeping or liming, in the harveſt of 1796; the whole had a few ſtraggling heads of ſmut, but appeared to be moſt in that which was unſteeped.—Mr Thompſon, of Chillingham Barns, made a ſimilar experiment, and had ſmut equally alike in the pickled and unpickled, but the *head ridges were conſiderably the worſt*; from hence it appears that ſteeping in chamberlye is not a preventive in all caſes.—It may be proper to remark, that there are more complaints of ſmut this year, than any other we remember; in ſome places even barley was very much affected.—We believe, that on examination, the ſtamina will always be found adhering to the balls of

wheat into a veſſel full of chamberlye, ſtirring it about with a ſtrong ſtick, and ſkimming off the light grains as they appear on the ſurface; when this is done, the liquor is let off, (by a plug or cock at the bottom of the veſſel) and the wheat taken out and mixed with quick lime; after this, the ſooner it is ſown the better, becauſe it is apt to heat and ſpoil if ſuffered to continue in the ſacks, or in large heaps; but if dried and ſpread thin on a granary floor, will keep ſeveral days.

If the grain remains too long in very putrid chamberlye, its vegetative powers will be injured; 5 or 10 minutes are as long as it ſhould be ſuffered to continue.

The quantity ſown, is from two to three buſhels per acre *broad-caſt*, according to times of ſowing, nature and condition of the land, &c.—Thoſe who drill at 10 or 12 inch intervals, find 1½ buſh. per acre amply ſufficient.

The time of ſowing, on the lands that receive a naked ſummer fallow, is September and October; after *drilled beans*, October and November; and after *turnips*, all thro' the winter, (as the land is cleared, and weather ſuitable,) until the middle of March.—In the year 1795, many hundred acres were ſown in Glendale Ward ſo late as *the beginning of April*, which was all well harveſted, and produced, on an average, about 24 buſh. per acre, of excellent grain; in many caſes ſuperior to that ſown in the autumn: which was rather ſingular, as it is generally expected that wheat ſown ſo late does not produce the grain ſo well perfected, as that which is ſown earlier.—This lateneſs of ſowing was occaſioned by the ſnow lying ſo late in the ſpring.—And we are diſpoſed to think, from

of ſmut, from which a ſuſpicion ariſes, that the cauſe may be owing to ſome defect in thoſe parts, probably from injuries received by inſects, weather, &c. as we frequently find the ſame ear bearing the moſt perfect grains along with grains of ſmut.—The ſame experiment was repeated in 1796, and intended to be continued for ſome years.

many

many experiments, that on thoſe light ſoils, the month of February is the beſt and ſafeſt ſeed-time for wheat, maſlin, and rye, of all others in the year.

For ſpring ſowing, the golden ear, and the Burwell-red wheats, are preferred to all others; except where the land is in ſuch high condition as to endanger the crop lodging; then the velvet ear is uſed, as not being ſo apt to lodge, from the ſhortneſs of the ſtraw.*—The *Triticum Æſtivum*, (Siberian wheat,) or ſpring-wheat, was introduced and ſtrongly recommended about twenty years ſince; but wherever we have ſeen it tried, the crops have been uncertain, and produce ſmall: and tho' this flinty kind will ripen, if ſown even as late as April, or beginning of May, yet it has not been able to maintain a ſtruggle with the varieties above ſpecified, and is now totally given up.

The culture whilſt growing, of the broad-caſt crops, conſiſts only in hand-weeding:—Such as are drilled, are hoed once or twice, as well as hand-weeded where wanted. Theſe hoeings not only deſtroy the weeds, but make a fine preparation for the clover and graſs ſeeds; which ſeldom fail where this operation is properly performed.

For drilling,—we find that ridges of 78 inches wide, are the moſt convenient; on theſe we drill 6 or 8 rows, the horſe going in the furrow; 3 or 4 rows are depoſited on each ſide; and being afterwards deeply water-furrowed, the land is kept much drier through the Winter, than when in broader ridges; a matter of conſiderable importance to a wheat crop on moiſt ſoils.

* In February 1792 a field of 5 acres was ſown (after turnips) with wheat: a part with *Zealand*, the remainder with *Velvet-ear*; the produce from the Zealand was 60 *buſhels per acre*, the Velvet-ear 48 *buſhels*, but the latter was injured by a blight, which was attributed to the moiſture hanging longer on the chaff of the Velvet-ear, than on the other; from which it appears, that even Zealand wheat may be ſown in the ſpring with advantage; the grain was as well perfected, as heavy, and ſold for as high a price, as any ſhewn in the market that ſeaſon.

The produce varies conſiderably, according to ſoils, ſeaſons, culture, &c. from 24 to 30 buſh. per acre may be taken as a fair average crop, under favourable circumſtances, as high as 50 and even 60 buſh per acre ſometimes occur.

The manufacture of wheat into flour for exportation, is principally carried on at Alemouth, Waren, and a few mills near Berwick; what is done in the vicinity of Newcaſtle and other places is principally for home conſumption.

RYE.

Was formerly the principal grain grown upon all the dry, ſandy, and light ſoils; but ſince the uſe of lime, and the introduction of turnips and artificial graſſes, it is rarely cultivated, except upon *very ſandy* ſoils;* it is ſown after turnips or clover, from September all through the winter, till the beginning of April.

The quantity ſown is about two buſhels per acre.

The produce from twenty to thirty buſhels per acre.

Upon lands intended for turnips next ſummer, it is frequently ſown in Auguſt and September, along with rape, as ſpring feed for ſheep, which often proves very valuable in the month of April.

Manufacture.—The principal part of the rye grown in this diſtrict, as well as conſiderable quantities imported from abroad, is conſumed in the ſouthern parts of the county, it being the moſt general bread of the labouring people in that quarter:—After being leavened, until it gains a conſiderable degree of acidity, it is made into loaves, and baked in a large brick oven, or made into

* The ſoils which formerly were occupied in growing rye are now ſo much conſolidated and improved by the uſe of lime, that they produce abundant crops of excellent wheat; ſeveral thouſand acres of which are now grown every year after turnips, where thirty years ſince, ſcarce a ſingle buſhel was ever produced.

thick

thick cakes, 1½ or 2 inches thick, called "four cakes," and baked on the girdle:—The bread is very firm and ſolid, dark coloured, and retains its moiſture or jucineſs longer than any other bread we know.

MASLIN

(That is wheat and rye mixed) is ſown in ſome parts of the county; the preparation, quantity ſown, and produce, are much the ſame as wheat; its application is for houſehold bread, for which purpoſe many people think it ſuperior to wheat alone, eſpecially when the proportion of rye is betwixt ¼ and ⅓ of the whole.

It has been remarked, that when wheat and rye are grown mixed in this manner, the grains of each are larger and more perfect than when grown ſingly, without any admixture.

BARLEY

Is generally ſown after turnips:—In Glendale Ward a few farmers cultivate it in drills, with 9 or 12 inch intervals.

The kinds moſt commonly cultivated are,

1*ſt*. *The common long ear'd barley*, which being early, productive, and beſt liked by the maltſters, is by far the moſt prevalent.—This variety is diſtinguiſhed from the next by the ſkin having a light red or purpliſh tinge a little before it is ripe, and being marked with 7 dark red lines, running longitudinally along the back of the grain, and may be called the *red ſtroked*, or *dark ſkinned barley*.

2*d*. *A variety of the long ear'd barley*, the awns of which drop, or are eaſily ſhaken off when ripe; from the grain being ſhorter, plumper, and rounder bodied than the common ſort, it is preferred by the millers for making into pearl barley.—This variety ripens later than the com-

mon kind, or red ſtroked barley, by near a fortnight, and is diſtinguiſhed from it by the grains being cloſer ſet, and the ſkin having a light yellowiſh tinge, and not being marked by *dark red* lines; it is alſo ſhorter in the ſtraw, and may be called the *yellow*, or *pale-ſkinned* long-ear'd barley.

3*d*. *Battle-door, or ſprat-barley*, is ſometimes grown, and is preferred, for ſowing upon land in high condition, where there is a danger of the other kinds lodging; it is about three weeks later of ripening than the common kind.

4*th*. *Bear, bigg, or four-rowed barley*, uſed to be the only ſpecies of barley cultivated in the county:—It is now rarely ſown, except upon raw, crude ſoils, on which it is found to anſwer better than any other, more eſpecially if late ſown, owing to the turnips having been kept longer than uſual in a cold backward ſpring, for the uſe of the feeding, and ſtore ſtock.

The quantity ſown is from 2 to 3 buſhels per acre broadcaſt; when drilled at 9 to 12 inch intervals, it is found that from 1½ to 2 buſhels per acre is ſufficient.

The time of ſowing, from the beginning of April to the latter end of May.

The produce, from 30 to 60 buſh. per acre.

Manufacture.—Great quantities are made into *pot or ſhelled barley*, not only for home conſumption, but for exportation: In the northern parts of the county very few corn mills are now to be found without the appendage of a barley mill.

Barley, or barley mixed with grey peaſe or beans, is the common bread of labouring people in the northern parts of this county; previous to grinding they are mixed in the proportion of two parts barley, and one of peaſe or beans; after being ground the meal is ſifted thro' a fine

fine ſieve, made of wood, to take out the rough huſks and coarſe bran; it is then kneaded with water, made into thin *unleavened cakes*, and immediately baked on a girdle over the fire.

In this diſtrict, barley or mixed meal, is ſeldom, if ever, *leavened* and *baked in loaves*.

OATS

Are univerſally grown throughout every part of the county; they are ſown after every ſpecies of grain, as well as graſs or clover lea.

The varieties, uſually cultivated, are,

1*ſt*. *Poland oat*—a variety of which, called *Church's oat*, from the name of the perſon* who firſt introduced them, are now in high eſtimation, and are the beſt early oat yet known for ſowing upon loamy lands in good condition; they are early, very productive, and much liked by the millers, who give two-pence per buſhel more for them than the common oat. This variety is known by the grains being remarkably ſhort, large, plump, round, and well filled, and not in the leaſt tailed: a buſhel generally weighs 46 lb.

2*d*. *The Dutch, Friezland, or Holland Oat*—were almoſt the only ſpecies of early oats grown here, before the introduction of the Church oat; they are now only grown upon dry, light lands, to which they are better adapted than the Poland oat.

3*d* *Peebles Oat*.†—A variety of common oat, but much

* Mr Church firſt had them from Mr James Robſon, apprentice of Meſſrs Culley, who brought them out of Scotland, and gave Mr Church a handful; thoſe he brought to Fenton were loſt.

† In ſome places it is called the red oat, probably from its being not ſo fair as the common oat; but it is very different from the red oat grown in the midland counties, and ought not to be called by the ſame name: For this reaſon we call it Peebles Oat.

earlier

earlier, has been lately introduced from Peebles ſhire, in Scotland; it is a very proper oat for hilly diſtricts, not only for its earlineſs, but in not being eaſily ſhaken by the wind: The grains are the ſmalleſt of any other oat we know; but from the very thin ſkin, it meals well, and is liked by the millers, and ripens nearly as early as the dutch oat.

*4th. Common Oat**— is grown upon all ſuch lands as are not thought in ſufficient condition for the Poland or Dutch kind.

5th. Angus Oat.—A variety of common oat has been introduced of late years from Angus-ſhire; it is a better bodied grain than the common oat; produces more ſtraw, and anſwers very well in early ſituations. But its being later in ripening than the common oat, will militate againſt its general adoption, in a country where early harveſts are ſo deſirable. This oat anſwers beyond every other, in poor, dry, rabbit-warren ſoils, from its throwing up ſo much ſtraw; and on ſuch ſoils ripens early enough.

6th. Tartarian Oats,—after ſeveral trials, by different people, about 20 years ſince, were given up, on account of the inferiority of the grain, and the ſtrong reedy ſtraw being of little value for fodder: We now find them cultivated in the midland parts of the county, on rather an extenſive ſcale, being found there more productive than any other kind they have tried; they ſpeak of ſome crops being as high as 80 buſhels an acre; but we ſuſpect theſe are under peculiarly favourable circumſtances, as we find that in compariſon with Angus oats, both grown in the ſame field, in the year 1795, they produced no more than 40 buſhels per acre, tho' eſtimated (by a ſtrong advocate for them) at near double that quantity; the Angus oats

* The beſt ſeed of this kind of oat is got from Blainſley, in Scotland.

were

were more productive per acre, and worth more to the millers by 3d. per bushel.

7th. Black Oats—are seldom grown in this district; we do not remember seeing them more than three or four times, and then only by way of experiment.

In point of earliness, they succeed each other, as classed above; the Angus oat being at least three or four weeks later than the Poland and Dutch.

The quantity sown in general, is seven bushels per acre of the Poland, and six of the Dutch oats: These quantities are necessary, as they do not tiller much, and are large bodied grain; but for the other kinds, we think four or five bushels sufficient.

The time of sowing,—is March or April, and the early kinds are sown sometimes as late as the middle of May.

The produce of common oats is from twenty to forty bushels per acre; of the Poland and Dutch, from forty to sixty. There are some instances of seventy or eighty bushels per acre, but these were generally attended with some favourable circumstances.*

On fresh land, and crude moory soils, oats are probably the most profitable crop that can be sown; old worn-out tillage, and strong clay land, are improper for producing this grain; it being found, that in such situations, they are scarce worth cultivating; such soils are much better adapted to the culture of wheat, pease, beans, vetches, and other leguminous crops.

The Manufacture of Oat-meal, is carried on to a considerable extent, both for exportation and home consumption; oat-meal being a principal article of food with the great mass of inhabitants, not as bread, but in *crowdies*, or

* We have been informed by a principal corn merchant in Berwick, that the oats grown in Glendale, are sold in the London market, for 1s. 6d. per quarter more than any other oats presented there.

hasty-

haſty-pudding, (provincially "*meal kail*,") for breakfaſt and ſupper; the former is made by pouring boiling water upon the oat-meal, and ſtirring it in with a ſtick, or ſpoon ſhank, till it be ſo very ſtiff, that the ſtirring implement can with difficulty be got round; it is then eaten with butter or milk: this is the breakfaſt of many of the labouring people, eſpecially in the ſouthern parts of the county; and with which they reckon they can work longer hours, than with haſty-pudding, or a breakfaſt of bread and milk.

Haſty-Pudding is made by putting oat-meal gradually into boiling water, and ſtirring it about with a peeled ſtick (*"thivel"*) and letting it continue to boil in that thickened ſtate, until ſufficiently enough, when it is taken off the fire, and poured out of the pan into pots or diſhes to cool, and then eaten with butter, or more commonly ſkimmed milk; it is an agreeable, nutritive, and healthy food, and is the general breakfaſt and ſupper of the labouring people in the northern parts of the county.

Beans

Have, time immemorial, been a prevailing crop upon all the ſtrong lands in the county, eſpecially along the *ſea coaſt* to the ſouthward: they generally ſucceed wheat, clover, or old graſs.—*The kinds cultivated*, are the large and the ſmall horſe bean, and ſometimes the mazagan; they are ſown in February, four buſhels and a half per acre *broad caſt*, and never hoed: The produce very uncertain; 20 buſhels per acre a fair average *broad-caſt* crop.

In this diſtrict, the ſoil of which is ſo well adapted to the growth of beans, it is ſurpriſing that drilling them ſhould be totally neglected, and that this beneficial mode of culture for both beans and peaſe, ſhould be confined to

a few farmers in Glendale Ward and Tweed-Side: With theſe few they are drilled from 30 to 34 inches diſtance; *horſe-hoed* or *ploughed between*, and *hand-hoed*; the crops good, and the wheat that ſucceeds, equal to that upon the ſummer fallows adjoining. We find that two or three ploughings, or horſe-hoeings between the rows, and twice hand-hoeing in the rows, are generally ſufficient.

The firſt horſe-hoeing, or ploughing, takes the earth from the rows, and the ſecond turns it back again to earth up the beans which are then in full bloom, and from 24 to 30 inches high. If the land be ſo very hard, that a plough cannot penetrate it, the horſe-hoe, deſcribed page 41, muſt be firſt uſed.

Where beans are intended to be drilled, we plough the land in Autumn, immediately after the corn is off; gathering each ridge, and harrowing it lengthways; then ſet it up in one-bout ridges at 30 inches diſtance; and if the land be in *broad high ridges*, directly *acroſs the ridges*, water furrowing after the whole is done, and opening the hollow intervals into the water furrows; this keeps the land dry, and expoſes the greateſt quantity of ſurface to the influence of the atmoſphere, and amelioration of froſts.

If any dung or manure be intended for the fallow, we put it in the hollow intervals, and cover it by ſplitting the one-bout ridges with the plough, and drawing a harrow once over, in the direction of the one-bout ridges; the beans are then drilled upon them, by the drill plough, *fig.* 5. *pl.* 1.*

Where

* A field that in the uſual rotation would have been naked fallow, was thus prepared after oats; and in February 1794, drilled at 30 inches, with large horſe beans, 2 buſhels per acre, the produce 42; in November, it was drilled with wheat, 1½ buſhels per acre, at 9 inch intervals, which was reaped in September following, the produce 36 buſhels per acre; in 1796, another field was drilled with beans at 32 inch intervals, the produce

Where the land is level, it may be ploughed into ridges of 66 or 78 inches wide; on the former (with the large drill, *fig.* 2. *pl.* 3.) we drill two rows of beans, and on the latter three: In the firſt caſe the horſe goes *in the furrow*, and the machine drills a row on each ſide of it, the diſtance of the rows 33 inches; in the latter caſe the horſe may go *on the top* of the ridge, or, what is better, two horſes may be yoked to it, ſo that one may go in each furrow.

PEASE

Were formerly a more general crop than at preſent; they are moſtly grown upon ſuch lands as have been worn out by running too long in ploughing.* The early and late grey pea are the only kinds cultivated here; the latter is uſually ſown in February or March, and the former in April: three buſhels is the quantity ſown per acre, broad-caſt; andthe quantity reaped depends very much on ſeaſons; no grain being ſo uncertain a crop as peaſe. A good crop is reckoned at twenty-five to thirty buſhels per acre. They are alſo cultivated in drills, from 12 to 18 inch intervals, and horſe and hand-hoed.

Spring Tares—are grown principally for cutting, as green food for horſes, to ſupply the vacancy between the firſt and ſecond cutting of red clover, uſed for the ſame purpoſe and for the ſame intention.

produce 45 buſhels per acre; and in November drilled with wheat, at 12 inch intervals: The crop in July 1797, is promiſing to be at leaſt 42 buſhels per acre; and both fields are as clean, or clear of quickens, or other weeds, as any lands in the county, that were naked fallow: One of them has been under this ſyſtem for upwards of ten years.

* On ſuch old tillage lands, it is found that wheat, peaſe, vetches, or tares, are the only ſpecies of grain that can be raiſed to advantage.

Winter

Winter Tares—have been lately introduced, and promiſe to anſwer well; both kinds are grown upon the fallow lands, intended for wheat or late turnips:—The winter tares are ſown in September, and the other in March.

POTATOES.

Of this invaluable root, the varieties cultiviated here are very numerous, and frequently changing; many of the kinds that were formerly in repute, being now in a manner loſt; as the *true kidney*, the *rough white*, the *blood red*, the *tawny*, *&c*; and their places ſupplied by others.

For the Table, the ſorts moſt in repute at preſent, are three or four different kinds of long whites; one of which having a red end, is called *red-ſnout*, or *red-neb*; and ſeveral ſorts of round whites, and the *pink-eye*, or red ſtreak, which is a late potatoe, and the beſt for eating in the ſpring, of any we know;—it is frequently uſed till the beginning of July.

For Stock, the principal kinds uſed are, the *champion* and the *black-a-moor*, or *black-potatoe*.

They are generally cultivated in drills, from 32 to 40 inches diſtance; whole potatoes are ſeldom or never uſed for ſets, but cut into pieces, containing one or two ſprouts or eyes. Theſe are planted about 12 inches diſtance, in the bottom of the drill, the dung laid upon them, and the ſoil turned upon the whole, by the plough ſplitting the one-bout ridges. They are kept clean by hand-hoeing, and ploughing between the drills; and as the ſtems advance in height, they are earthed up by a common, or double mould board plough, with which implements they are frequently taken up, by ſplitting the drills in which they grow, and the roots gathered by women and children.

They

They are ſeldom grown for the uſe of ſtock, except for horſes, to which they are given raw,* after the rate of two pecks per day each horſe, and found very uſeful in the ſpring, (when the ſtraw and hay become dry) and are ſerviceable for preventing greaſe or other diſorders, by keeping the horſes cool and open: They are ſometimes given to cattle and ſheep in the ſpring, when a ſcarcity of turnips prevails.

The mode of preſerving them thro' the winter, is by laying them in heaps, upon a piece of dry ground, and covering them with ſtraw 6 or 8 inches thick, and over the ſtraw another cover of ſoil about a foot thick; which ſoil is got by making a ditch from 12 to 18 inches deep round the heap: A bed of ſtraw ſhould be laid at the bottom.

TURNIPS

Have not been uſed in this county as food for ſupporting cattle and ſheep, much above ſeventy years;† for this purpoſe they were firſt grown in the northern parts of the county; it is but of late years they have been cultivated on part of Tyne-ſide.

The varieties,—are the Green Top, the Red Top, and the White Top; which laſt, is by far the moſt general

* The practice of preparing potatoes by ſteam, has not yet taken place in this county; we believe it would be a material improvement.

† Mr Edward Niſbet, who is now near 90 years of age, ſays, that it is *upwards of* 70 *years* ſince Mr Proctor, the proprietor of Rock, brought *Andrew Willey*, a gardener, to cultivate turnips at Rock, for the purpoſe of feeding cattle; that Willey afterwards ſettled at Leſbury as a gardener, and was employed for many years to ſow turnips for all the neighbourhood, and his buſineſs this way was ſo great, he was obliged to ride and ſow, that he might diſpatch the greater quantity: The practice of hoeing was alſo introduced at this time.

and

and in the greateſt repute, being ſuperior to the others in ſize and ſweetneſs.

There is a ſmall hard white kind, preferred by ſome on account (it is ſaid) of ſtanding the winter better than moſt others, but it does not grow near ſo large a quantity upon an acre.

At their firſt introduction they were ſown broad-caſt, and hoed by gardeners and other men, at extravagant wages. The late ingenious Mr Iiderton, about twenty-ſeven years ſince, had the merit of firſt reducing the price of hoeing, by teaching boys, girls, and women, to perform the work equally as well, if not better, than men. The mode he took was ſimple and ingenious: By a light plough, without a mould-board, he divided the field into ſmall ſquares of equal magnitude, and directed the boys and girls to leave a certain number of plants in each ſquare. In a ſhort time they became accurate, regular, and expert hoers; and in a few years all the turnips of the country were hoed by women and boys, at half the expence, and better than by men.

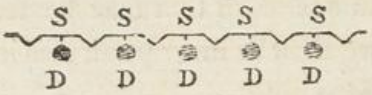
The preſent mode of drilling turnips was firſt introduced into this county about the year 1780; the advantages with which it is attended have ſo far recommended the practice, that very few are now ſown broad-caſt;* and as we think it is an operation that may be ſerviceable in other diſtricts, we ſhall be more particular in deſcribing the manner of performing it.

The land being made fine, prepared, &c. as in the broad-caſt method, the ploughman draws his firſt furrow as ſtraight as poſſible. In returning he keeps his far ſide

* The broad-caſt culture of turnips in the northern parts of the county, for many years previous to this, was not inferior to any we ever ſaw; and in reſpect to *accurate, regular, clean hoeing*, ſuperior to what we ever obſerved in *Norfolk, Suffolk*, or other turnip diſtricts, which we have frequently examined.

horſe in the new made furrow, and his plough at ſuch a diſtance as to form a one-bout ridge like Λ; by proceeding in this manner, the land, when finiſhed, will appear thus: ΛΛΛΛΛΛΛ. The diſtance of theſe little ridges is from twenty-ſeven to thirty inches. A leſs diſtance does not admit of ploughing between the drills.

The next operation is ſpreading the dung; which is performed by a cart going down every third or fifth furrow, and laying the dung in ſmall heaps; women and boys follow with ſmall three-pronged forks, and ſpread it evenly in the bottom of three or five furrows, that is, the one where the dung is dropped from the cart, and thoſe on each ſide of it: this done, the ploughman ſplits the one-bout ridges before raiſed, and covers up the dung exactly in the middle; but before the ſeed can be ſown, theſe laſt formed one-bout ridges require to be flattened at the top, by a ſmall roller that flattens two ridges at once. Upon the top, and exactly in the middle of theſe flattened ridges, the ſeed is depoſited by one or two drill machines, tied to the roller by a rope ſix or ſeven feet long; at which diſtance they follow the roller, each machine being guided by a man.* When finiſhed, the work appears in this form:



Where S repreſents the ſeed, and D the dung directly under it, which is wholly employed in promoting the vegetation of the turnips.

The roller is drawn by one horſe, driven by a boy. Setting up the ridges, and covering in the dung, is performed by a common ſwing plough. The quantity of

* See fig. 3, pl. 2.

ſeed

ſeed ſown, from one to two pound per acre; it being better to have an abundance of plants, for fear of accidents. The quantity of dung uſed is from ten to fifteen two-horſe cart-loads per acre.

When the plants have four leaves, we begin to hoe; and as they have ſo much room ſideways, we leave them only eight or nine inches diſtance from one another in the rows or drills. The hoers go ſideways, and pull the ſurplus plants, weeds, &c. into the hollow intervals between the one-bout ridges, and the turnips are left as regular as if they were planted. This work is performed by women and children, with the greateſt care and exactneſs, at the expence of four ſhillings per acre.

As ſoon as the plants are recovered, which will be in eight or ten days, a ſmall plough* (five inches wide at the bottom behind, and eleven inches at top) drawn by one horſe, takes the earth from the turnip rows, and with the ſoil covers the weeds, &c. which the hoers had pulled into the hollow intervals between the ridges. A ſecond hoeing takes place, when the plants are ſtrong enough, and otherwiſe neceſſary; and a few days after, the ſoil or earth before ploughed from the turnip rows, into the hollow intervals, is now equally divided and laid up to each drill or ridge again, by the ſame ſmall plough and one horſe, or with a double mould-board plough.—This finiſhes the buſineſs, unleſs the land has been very wild and out of condition, and requires more hoeing and ploughing between the drills.

If the drills are made in the ſame directions of the ridges at the next ploughing for corn, the ſurface will be irregular, and the dung unequally diſtributed. To avoid this, on dry level lands, the drills are made diagonally acroſs the field; but where the ridges are high, it is beſt

* See fig. 3, pl. I

to make the drills *directly acroſs* the ridges, and draw a plough down the furrows to take off the water.

It is generally ſuppoſed that a weightier crop is produced by the drill than the broad-caſt method ;* but even admitting them equal in this reſpect, the ſuperiority, as a fallow crop, muſt be allowed to the drill; for the repeated ploughings in the intervals, and hand-hoeings in the rows, effectually extirpate the whole race of annual weeds; and ſo much ſurface being expoſed through the winter, makes a higher preparation for any ſucceeding crop. Another advantage is, the facility with which they are hoed, as a boy or girl, nine or ten years old, can hoe them with the greateſt eaſe, and generally better than experienced broad-caſt hoers, who are apt to take too many plants away; while the young ones, from the apprehenſion of making them too thin, will leave them at any diſtance you ſhew them.

The application of turnips in this county is moſtly to feeding and rearing cattle and ſheep, and ſome ſmall quantities for raiſing ſeed.

When uſed for cattle, they are always led off from where they grow, being previouſly cleared of the earth and fibrous roots as they are pulled, in order to keep them as clean as poſſible. When the cattle are tied up in ſheds, which we think much better than being out in the fields, they are foddered with turnips eight or nine times a day, and with ſtraw or hay twice; great attention ought to be paid to keeping their cribs clean.

* Turnips drilled in this manner, were ſold in 1793, for 8l. an acre, for feeding cattle and ſheep, a much higher price than was given for any ſown broad-caſt; and we have known inſtances upon thin, poor, light ſoils, that the crop of turnips was of more value than the fee ſimple of the land upon which they grew; which we hope will remove the doubts of thoſe who have ſuſpected that this mode would not anſwer upon weak thin ſoils: To ſuch ſoils it is certainly the beſt adapted of all others.

When

When the convenience of ſheds cannot be had, they are given to the cattle in a dry graſs field, ſcattered as thin as circumſtances will admit: A crib with ſtraw in it ſhould be conſtantly in the field, for the cattle to ſerve themſelves whenever they chuſe.

For ſheep, they are ſometimes eaten upon the ground where they grow, particularly if a dry, light ſandy ſoil, but more generally led off into an adjoining field,* which we think a much better and more economical practice; the ſheep getting a daily, regular ſupply of freſh food, and the ſhells being kept clean, are eaten by young cattle, or thoſe that are to be fattened next ſummer upon graſs.

Sometimes every other ridge is led off, and the remainder eaten upon the ground where they grow.

When eaten upon the ground, the ſheep are not turned upon the whole at once; but have it portioned out to them, by hurdles, or nets; ſo that they may have a freſh break once a week or ten days.

For ſeed, the turnips of the beſt form are ſelected and tranſplanted in the month of October, November, or December, into a piece of ground properly prepared to receive them; in July or Auguſt following it is generally reaped, tied up in ſheaves, and when dry, put into a *long ſtack*, where it is kept through the winter, and threſhed out in April or May.

The trouble of ſelecting and tranſplanting is ſometimes diſpenſed with; but the ſeed raiſed in this manner is ſold for one-half or one-third the price of the tranſplanted

* The fields into which the turnips are led to be eaten, are ſuch as are intended to be ploughed up next year for wheat or oats:—Thus every field in rotation reaps the benefit of having the turnips eaten upon it, which we find much preferable to the ſyſtem of eating them upon the field where they grow.

ſeed; that is, when the tranſplanted ſeed is ſold for 1s. per lb. the other is ſold for 4d. or 6d.

The produce is very variable, being ſubject to many caſualties.—The average crop may be reckoned about 20 buſhels, or half a ton per acre —The land ſhould be good, and well manured after the crop; as we find the ſoil much impoveriſhed by it.

HISTORY

OF

DRILLED TURNIPS.

TO trace uſeful diſcoveries from their origin, through their various ſtages of improvement, is in moſt caſes both uſeful and entertaining; and teaches us not to deſpair, though our firſt attempts may be unſucceſsful; but rather hope, that by perſeverance, and varying modes and circumſtances, we ſhall at laſt attain the object ſought for. The method of cultivating turnips, deſcribed above, is an encouraging inſtance of this obſervation:—as we find that Mr Tull firſt cultivated turnips at three feet diſtance;—for in his Eſſay on the Principles of Tillage and Vegetation, under the article Turnips, page 96, he ſays, "When I drilled upon the level* at three feet intervals, a trial was made between thoſe turnips, and a field of the next neighbour's, ſown broad-caſt at the ſame time, whereof

* "It is impoſſible to hoe-plough them ſo well when planted upon the level, as when they are planted upon ridges; for if we plough deep near to the row, the earth will come over on the left ſide of the plough, and bury the young turnips; but when they ſtand on ridges, the earth will almoſt all fall down on the right ſide into the furrow, in the middle of the interval."

the

the hand-hoeing coſt ten ſhillings per acre, and had not quite half the crop of the drilled; both being meaſured by the buſhel, on purpoſe to find the difference.*

"Drilled turnips, by being no where but in the rows, may be more eaſily ſeen that thoſe which come up at random; and may therefore be ſooner ſingled out by the hand-hoe, which is another advantage, becauſe the ſooner† they are ſingled out the better they will thrive. *Page* 98.

"We need not be very exact in the number or diſtance‡ we ſet them out at; we contrive to leave the maſter turnips (when there is ſo much difference in them) and ſpare ſuch when near one another, and leave the more ſpace before and behind them; but if there be three maſter turnips together, we take out the middlemoſt. *Page* 100.

"Dung and tillage together will always attain the neceſſary degree of pulverization in leſs time than ploughing can do alone; therefore dung is more uſeful for turnips, becauſe they have commonly leſs time to grow than other plants. *Page* 102.

"I have had great crops of turnips in rows three feet aſunder, and much greater than I could ever obtain from

* "And I have ſince found that turnips on the ſame land planted on ridges, with ſix foot intervals, make a crop double to thoſe that are planted on the level, or even on ridges with three feet intervals."

† "The ſooner they are made ſingle the better; but yet when they are not very thick they may ſtand till we have the beſt convenience of ſingling them without much damage; but when they come up extraordinary thick, it will be much more difficult to make them ſingle, if they are neglected at their very firſt coming into rough leaf."

‡ "The diſtance need not be regular; for when a turnip has ſix inches of room on one ſide, and eighteen on the other, it is almoſt as well as if there was one foot on each ſide."

rows thirty inches aſunder. But one reaſon why I like ſix foot rows better is, that the largeſt turnips are beſt for oxen; and are pulled up and loaded with the leaſt expence.—I find that the leaſt competent number will (*cæteris paribus*) always be the largeſt. *Preface, page* ix.

"Several lands of turnips, drilled on the level of three foot rows, ploughed and doubly dunged, and alſo horſe-hoed, did not produce near ſo good a crop of turnips as ſix foot rows adjoining, horſe hoed, though no dung had been thereon for many years.

"There was no other difference, than that the three foot rows did not admit the hoe-plough to raiſe half the artificial paſture as the ſix foot rows did. The dung ploughed into the narrow intervals before drilling, could operate no farther with any great effect, than the hoe-plough could turn it up, and help it in its pulverization."

From theſe extracts it appears, that Mr Tull cultivated turnips in rows, not only on the level, but on the tops, of two and a half and three feet ridges, and both horſe and hand-hoed, as at preſent; but whether he put dung in the bottom of thoſe ridges is not ſo clear, from the expreſſion, "the dung ploughed into the narrow intervals before drilling." It is unfortunate that this ingenious gentleman, to ſupport a whimſical theory, ſhould not allow that dung was of any other uſe in vegetation, than in pulverizing the ſoil; though he is obliged to admit, that for cabbages, turnips, carrots, and potatoes, it will make the crops greater, and the cattle will like them never the worſe.*

But his diſciples entertained juſter notions of the properties and value of dung to neglect it, as will appear in the ſequel.

We are informed by a gentleman who went to direct the management of an eſtate in Dumfrieſſhire, in 1769,

* Page 41.

that

that Mr Craik, of Arbigland, near Dumfries, had then drilled turnips betwixt twenty and thirty years; by taking the medium, his firſt beginning would be about 1745. The mode he purſued was as follows:—In the Autumn, as ſoon as the corn crop was off, he ploughed his land into two-bout ridges, in which ſtate it continued all winter; next ſpring theſe ridges were ploughed, and harrowed until ſufficiently pulverized, and at laſt ſplit to make a hollow furrow for depoſiting the dung, which was covered in by the plough going twice about, making a ridge near four feet wide; then this two-bout ridge was harrowed, a ſingle-wheel drill, turning round a hollow cylinder of tin with holes in it, depoſited the ſeed directly over the dung: the drill had a ſmall roller behind to cover in the ſeed, and was drawn by one horſe. When the plants were ready for hoeing, they were ſet out at ten or twelve inches diſtance one from another, in the rows; and the intervals ploughed between through the Summer, as often as neceſſary.

From this place it is probable that the practice had travelled into Cumberland; for in the year 1755, Philip Howard, Eſq. of Corby, firſt cultivated turnips in that county, in drills with four feet intervals; finding the diſtance too wide, he reduced it to two feet, and continued it for ten years before it was followed by the farmers, who now purſue the ſame mode with little variation, except that they make the diſtance of the intervals about twenty-ſeven inches. The one-bout ridges, in which the dung is depoſited, are here called *ſlitches*, and are flattened at the top by drawing a piece of wood over them, inſtead of a roller or a harrow.

About the year 1756, or 1757, Mr Pringle, formerly a ſurgeon in the army, who had an eſtate near Coldſtream, in Berwickſhire, was the firſt perſon in that neighbourhood who cultivated turnips in this manner: His drills were

were at three feet and a half diſtance. Mr Cox, a ſerjeant, whom Mr Pringle brought home with him for a ſervant, ſays, that his maſter took his hints from Mr Tull's book, and that he alſo drilled all his corn crops, until he had overcome the annual weeds.

Mr William Dawſon, who was well acquainted with the turnip culture in England, having been purpoſely ſent to reſide in thoſe diſtricts for ſix or ſeven years where the beſt cultivation was purſued, with an intention not only of ſeeing, but of making himſelf maſter of the manual operations, and of every minutia in the practice, was convinced of the ſuperiority of Mr Pringle's mode over every other he had ſeen, either in Norfolk or elſewhere; and in 1762, when he entered to Frogden Farm, near Kelſo, in Roxburghſhire, he immediately adopted the practice upon a large ſcale, to the amount of 100 acres yearly. He began by drilling at three feet diſtance; but a few years after, trying various widths of intervals, he reduced it to two feet and a half, which he ſtill continues. As far as we have been able to obtain information, he was the firſt that uſed *a roller for flattening the* tops of the one-bout ridges.

It may not be improper to remark, that Mr Pringle purſued this mode for ſeveral years, yet none of his neighbours followed the example; but no ſooner did Mr Dawſon (an actual farmer) adopt the ſame ſyſtem, than it was immediately followed, not only by ſeveral farmers in his vicinity, but by thoſe very farmers adjoining Mr Pringle, whoſe crops they had ſeen for ten or twelve years ſo much ſuperior to their own. It is alſo deſerving of notice, that when Mr Dawſon ſettled at Frogden, the whole of that diſtrict was under the moſt wretched ſyſtem of cultivation, and the farmers unacquainted with the value of turnips, artificial graſſes, and lime. At firſt his practice met with many opponents, and was ridiculed by the old, the ignor-

an

ant, and the prejudiced; but his ſuperior crops and profits ſoon made converts: The practice in a few years became general; and this diſtrict is now amongſt the beſt cultivated in the kingdom, the land trebled in value, and the aſpect of the country greatly improved. It is a pleaſing reflection, that the example and exertions of one man has been capable of producing ſo great, ſo laſting, and ineſtimable benefits; and it is more than probable, that this mode of cultivating turnips would have died away with Mr Pringle, and the practice been loſt to this diſtrict, had it not been for the diſcernment and intelligence of this individual.

We remember ſeeing, about twenty-five years ſince, turnips cultivated in this manner, by Mr Chriſtopher Benſon, of Stainſby, near Ripley, in Yorkſhire, an ingenious gentleman, and great advocate for drilling, and who had drilled all his corn crops for many years: His nephew, Mr Donkin, informs us, that he had cultivated turnips in this manner, more than twenty years before this, which will be prior to the year 1750.

In Mr Benſon's practice deſcribed by himſelf, in Dr Hunter's Georgical Eſſays, page 379, the ſeed is drilled *upon the dung*, and that and the ſeed covered together, by harrowing acroſs the ridges:* In this paper he very properly ſums up the advantages of this mode of cultivating turnips; he obſerves, "the ſeed being placed upon the moiſt dung, will vegetate early in all circumſtances of the weather; and the manure being well covered, will be ſecured from evaporation in the hoteſt ſeaſons: The turnips being placed immediately over the manure, have a ready paſſage by means of their tap roots, into rich bed of nutriment, which will accelerate their growth, and increaſe their ſize. As the crop grows upon ridges, with a

* His nephew ſays "the dung and ſeed were covered in by a double mould-board plough ſet wide, and then harrowed."

trench

trench on each ſide, it is obvious that the turnips will remain dry in the wetteſt ſeaſons, a circumſtance of the utmoſt utility: To thoſe advantages we may add, the *doubling of the ſoil*, which I conſider as an important article in all ſituations where the *ſtaple of the land happens to be thin.*"

From a review of the whole it appears, that the preſent mode of cultivating turnips, by drilling in rows at two feet and two feet and a half diſtance, had occurred to different people in different parts, who all, at firſt, began according to Mr Tull's directions, with the addition of dung put in the bottom of the ridge; and after trying various width of intervals, found that the beſt and moſt convenient diſtance was from twenty-four to thirty inches; but it is very clear that *Mr Tull is the root from whence this excellent practice firſt originated.*

This mode of cultivating turnips, is now ſpreading far and wide, with great rapidity; beſides this county, it is alſo the general practice of Roxburghſhire and Berwickſhire, and has been lately adopted by the beſt cultivators in various diſtricts of Scotland, as well as different parts of England; amongſt which the county of Norfolk will particularly profit by it, as a firſt-rate cultivator who holds a large farm in that county, has procured the proper apparatus from hence, and ſent his ſon to be inſtructed in the different operations; it has alſo found its way into Dorſetſhire; we had the pleaſure of ſeeing it practiſed with great ſucceſs by the ingenious Mr Boſwell of Piddletown; and to the farmers of Devonſhire, it has been particularly recommended, as the beſt ſyſtem known, by the celebrated Mr Marſhall, who has minutely examined, and is well acquainted with the agriculture of the greateſt part of the kingdom.*—And the Preſident of the Board adds,

* This Gentleman has publiſhed the Rural Economy of Norfolk, Yorkſhire, Midland Counties, Glouceſterſhire, the Weſt of England, &c.

that

that this gentleman informed him, that the beſt cultivators, and moſt intelligent farmers he had ever ſeen, were thoſe who practiſed this ſyſtem on Tweed-ſide.

Sect. 5.—*Crops not commonly cultivated.*

Ruta Baga—has been tried by a few; but not ſo long as is neceſſary to draw any poſitive concluſions reſpecting its comparative merits. With us, it is not near ſo valuable as the common turnip. Hares are remarkably fond of it, and will not touch the other turnips while there is one of theſe in the field.

Rape—is ſeldom grown for ſeed, and perhaps not ſo often for ſheep as it ought, on lands improper for turnips. Upon lands that have grown early oats, and are intended for fallow next year, it is ſometimes ſown in September, as ſpring ſeed for ſheep, to ſupply the vacancy between turnips and clover. For this purpoſe a little rye is ſown along with it.

Cabbages—were cultivated, but gave way again to turnips; it being thought that the latter anſwer as good a purpoſe, and are obtained with leſs trouble.

Carrots—have been frequently tried; but have hitherto made little or no progreſs, probably from the great trouble attending their cultivation, compared with potatoes; which in ſome meaſure anſwer the ſame intention as food for horſes.

Flax—was formerly cultivated in ſmall quantities for family uſe, but is now in a great meaſure given up; it having been found, that land which had grown flax was ſo much impoveriſhed, as to require an extra manuring, before it could be brought to the ſame ſtate of fertility as the reſt of the field.

Woad, (Iſatis Tinctoria.)—This plant, the leaves of which

which are ſo uſeful in dying,* is cultivated at *Newburn* only, on the banks of the Tyne, by Meſſrs Rait, Pollock, and Dun.

The ground is ploughed with a deep furrow before Winter, and made as fine as poſſible againſt April, in which month it is ſown, at the rate of 6 buſhels per acre, broad-caſt; in about a fortnight after it makes its appearance above ground, particular care is taken to keep it clear of weeds, which is done by boys and girls from 10 to 14 years of age;† who have each a ſpade about 5 inches long and 4 inches broad, which they uſe with one hand to dig up the weeds, and with the other gather them; this proceſs is repeated two or three times before cropping; which is done by wringing off the leaves of the plant with their hands, and putting them in baſkets.—The firſt crop is generally gathered the latter end of July; the ſecond, the laſt week in September, and the third in November; but this is only from off ſuch parts where the ſecond crop was gathered firſt: It is carried from the field in carts to the mill, where it is ground into a green paſte, and made into balls about 3 inches diameter, when it is ſet upon ranges under ſheds to dry. which is done in two or three weeks; after this it is put into the houſe or pen, and kept till all the fields are gathered, and afterwards manufactured.‡

SECT.

* It is not only much uſed by dyers for its *blue colour*, but alſo for the baſis of many other colours. It was with the juice of this plant that the ancient Britons ſtained their bodies, to make them appear more terrible to their enemies.

† Two workers to an acre, from the beginning of April to December, is the general allowance.

‡ Mr Rait, in a letter to the Preſident, ſtates, that he had diſcovered that indigo might be made from the juice that is preſſed out by the mill, in manufacturing the leaves; but it ſeems he has not yet accompliſhed it, as in a ſubſequent letter he ſays, "my views upon the whole of this buſineſs terminate in one of two points; the firſt is to have the particles of colour ſeparated from the

Sect. 6.—*Corn Harveſt.*

The Corn Harveſt—in the vale of Till, and upon Tyne-ſide near Hexham, frequently begins the firſt week in Auguſt; while upon the cold backward ſoils and ſituations, oats will be often uncut the latter end of October, or beginning of November; but the moſt general harveſt is in September. Moſt of the corn is cut with ſickles, by women; ſeven of whom, with a man to bind after them, generally reap two acres per day—Oats and barley are ſometimes mown.

Wheat is ſet up in ſtooks of twelve ſheaves each; oats and barley are (*"gated,"*) ſet up in ſingle ſheaves; and when dry, bound tight at the bottom, and led home, or ſet up in ſtooks of ten ſheaves each. The ſtacks are moſtly round; but ſome of the beſt farmers ſet up their barley and wheat in long narrow ſtacks, which keep the corn much better and dryer: And the practice of placing corn upon ſtone pillars, with a cap or cover over them (to keep out the mice) and a frame of wood over all, is gaining ground, and cannot be too much recommended, as it not only prevents the mice getting to it, but keeps the corn dry and airy: It is an excellent method for grain that is to be kept until Summer; and one principal advantage is, that wheat may be led from the field and ſet upon thoſe ſtands almoſt as ſoon as reaped—They are made both round and oblong, but moſt of the latter.

the liquor, and made a marketable article by itſelf, as indigo is; failing of that, to apply it to the uſe of vats, along with the liquor or juice, in which it is in the moſt improved ſtate we can arrive at."

CHAPTER

CHAPTER VIII.

GRASS.

SECT. 1.—*Natural Meadows and Paſtures.*

WHAT is generally underſtood by natural meadows, are ſuch lands as are overflowed by rivers, and produce a crop of hay every year, without any returns of manure: Of this deſcription of meadows we have very few in this county; what are called meadows here, are ſuch old graſs lands as are employed for growing hay almoſt every year, the greateſt part of which are uplands: To enable them to ſtand this ſevere cropping, they are, or ought to be, manured on the ſurface, every third or fourth year: if this operation be neglected, they impoveriſh very faſt. Where they cannot conveniently be dunged as above, they are depaſtured one year, and mown the other; or, what is better, depaſtured two years, and mown the third; the produce, from 1 to 1½ tons per acre, a fair crop; the aftermath (or "Fog") is frequently let from 10 to 15 ſhillings per acre, and is moſtly conſumed in fattening oxen and cows.

Lands that are intended for meadow, are "*freed*" (from being depaſtured with any kind of ſtock) at different times in the ſpring, from the beginning of April to the middle of May, as beſt ſuits the convenience of the occupier; particular attention is paid to the mole-hills, dung, &c. being "*ſcaled*,"* and the ſtones and other matters that might obſtruct the operations of the ſcythe, are carefully gathered off.

* Spread abroad.

Natural

Natural Paſtures, or old graſs land, are moſt prevalent along the ſea coaſt, theſe are depaſtured with both ſheep and oxen; the general mode of ſtinting being two acres to an ox, and the ſame quantity of ground to 8 or 10 ſheep, thro' the Summer, and from 1 to 2 ſheep per acre thro' the Winter; the latter are either the ſtore flock, or ewes for fat lambs.—Sometimes Cheviot wethers $3\frac{1}{2}$ years old in good condition, are put in thoſe paſtures after the fatting cattle are taken out, and pay well if they get ſufficiently fat to be ſold to the butchers about Chriſtmas.

SECT. 2.—*Artificial Graſſes.*

The Artificial Graſſes moſt commonly cultivated in this county are, red clover, *(trifolium pratenſe,)* white clover, *(trifolium repens,)* and ray-graſs *(lolium perenne:)* with theſe ſome people mix rib-graſs *(plantago lanceolata)* and upon ſandy ſoils, hop-medic* *(medicago lupulina)* is ſown with ſucceſs.—Few of theſe graſſes are ever grown alone, except red clover, when intended to continue only one year; and even then, a ſmall portion of ray-graſs (from one to three gallons per acre) is generally ſown with it, we think with much propriety, as it not only comes early in the ſpring, but thickens the crop, and facilitates making the clover into hay.

But when land is intended to continue for three or more years in graſs, they are generally mixed in the proportion of eight or ten pounds of red clover, four pounds of white clover, and half a buſhel of ray-graſs per acre: to the above quantities are ſometimes added three or four pounds of rib-graſs, and hop-medic, as the ſoil ſuits. When red clover is grown alone, 10 or 12 pounds an acre are ſown upon dry friable ſoils, and from 14 to 18

* This in ſome places is called hop-trefoil, a name properly belonging to a very different plant, viz.—Trifolium agrarium.

pounds upon ſtrong loams or clays. They are ſown in March, April, and May, upon lands fallowed the ſummer preceding for wheat, or turnips ſucceeded by barley, and ought always to be harrowed in, as well as rolled. Harrowing is particularly neceſſary upon ſtrong lands growing wheat; and acroſs the ridges is the beſt mode of performing the operation. We find, that where corn is drilled, and the intervals hoed, it pulverizes the ſoil, and makes the fineſt preparation for graſs ſeeds of all others: where this is properly done, and harrowed once acroſs, after the ſeeds are ſown, they ſeldom or never miſs; long experience having proved, that nothing requires a finer tilth than clover and graſs ſeeds:—Upon the beſt ſoils, the clover and ray-graſs mixed, are generally ready to depaſture with fat ſheep by the beginning of April, and from May, through the Summer, will carry ſix or eight ſheep per acre, according to the luxuriance of the crop and fertility of the ſoil; the ſecond and remaining years, they are depaſtured by the ſtore flock. Theſe paſtures are frequently mown when the ray-graſs begins to flower, which not only increaſes the bottom graſs, but a quantity of excellent hay is obtained, of conſiderable value.

When the clovers are not depaſtured, but kept for hay, they are generally mown about the latter end of June; the average produce about 2 tons per acre. The ſecond crop is rarely cut for hay, but depaſtured by cattle or ſheep, chiefly the latter: When cattle are put into a freſh clover "fog," eſpecially in wet weather, they ſometimes hove, by the ſudden fermentation of the clover; to prevent this inconvenience, cattle are put upon it in the middle of the day, when it is free from dew or any moiſture, they being firſt filled with natural graſs, which hinders them from eating ſo greedily, as if put on hungry; if the clover once paſs, they ſeldom take any harm afterwards:

wards: by uſing this precaution, we have not had any cattle hoven, for ſeveral years.——When very much ſwelled, an inſtrument is uſed, (ſimilar to that uſed by ſurgeons in tapping for the dropſy) it is ſo contrived, that after being thruſt in between the hip and rib, (on the near ſide) one part pulls out, while a tube remains in the orifice, thro' which an amazing quantity of fetid air eſcapes, and relieves the animal; but they are very apt to hove again afterwards.

We have heard of hoven cattle being relieved, by giving them an egg ſhell full of tar.

The practice of keeping horſes in the houſe, ſheds, or fold-yards, all Summer, upon *cut clover, tares, &c.* was introduced into this county, about the year 1770; it is now generally adopted by the beſt farmers, who find their horſes thrive better; are cheaper kept than depaſturing at large; and alſo, that a quantity of manure is gained by this means, which otherwiſe would have been in a great meaſure loſt, or of very little uſe; as the dung of horſes, when dropped in paſtures, is moſtly deſtroyed by inſects, in the Summer ſeaſon.—An acre of good clover uſed in this manner, will keep from 2 to 3 horſes, from the beginning of June till the end of October, about 20 weeks.

Saintfoin, Lucern, and Chicory, have been tried on a ſmall ſcale, but do not ſeem to come into general uſe; the crops of clover being thought more valuable.

In order to draw any fair comparative value between the produce of old graſs lands and artificial graſſes, the ſoil and ſituation ought to be exactly alike, and experiments accurately conducted; for want of ſuch data, no juſt concluſions can be made; but we believe, that general obſervation and experience have eſtabliſhed an opinion, that the ſame lands which in a ſtate of old graſs carried 3 ſheep an acre, will, for the firſt year of clover and ray-

graſs, depaſture 5 or 6; on rich, old grazing paſtures, the difference will probably not be ſo great, and what they fall ſhort in Summer, will be made up by their ſuperiority in Winter; on clayey ſoils, it would certainly be a dangerous experiment to convert thoſe rich grazing paſtures into tillage, as a certain portion of ſuch is a valuable acquiſition to every farm; but they are ſo rarely ſcattered, that few farms are ſo fortunate as to enjoy ſo deſirable an appendage.

SECT. 3.—*Hay Harveſt.*

The hay harveſt is ſeldom begun before the middle of June. The mowers cut from half an acre to three quarters a day, and that very ill; the hay-makers are equally indolent and inactive. After the graſs is cut it is by ſome tedded, ſtrewed, or ſpread abroad, and repeatedly turned till dry;* others, the day after it has been tedded or ſtrewed, put it into foot cocks (wappings) which can ſcarcely be too ſmall; (if the weather keeps dry it is in two days more, put into large cocks;) if the weather proves wet, we know no mode by which it will ſave better, or waſte the ſmell leſs, as the rain paſſes thro' them, and a ſmall quantity of air or ſun dries them again, or they are eaſily turned over.—In either mode, when ſufficiently dry, it is put into ricklets (provincially *pikes*) of about half a ton each in the field; which ſtand there for two, three, or more weeks, until a convenient opportunity offers for leading them home, to be put into one large ſtack. In theſe ricklets, the hay takes a firſt ſweating, which prevents its heating when put into larger maſſes.

For the purpoſe of drawing it together to be put into pikes, or ricklets, it is either cocked, or put into large

* We never ted or ſtrew clover when mown, but turn it in the ſwathe, with the head of the rake, backward and forward, until it be fit to put into large cocks, or pikes, which we prefer to every other mode we have ſeen, as it preſerves the leaves upon the clover much better than when ſtrewed abroad.

heaps

heaps, which are trailed in by one horſe, yoked to the ends of a long rope, put round the bottoms of thoſe cocks or heaps; upon the hind part of which, a boy gets with his feet, to keep it down, and prevent its ſlipping over the top of the hay; when arrived at the place wanted, one end of the rope is taken off the hook at the horſes ſhoulder, and being thus looſened at one end, the horſe moves forward, when the rope draws thro' under the hay and leaves it.

When the hay is neither put into cocks, nor large heaps, but remains in a thick row, it is then neceſſary to uſe two horſes, viz. —One yoked to each end of a ſtrong ſweeping rope; and two perſons to get upon the rope with their feet, one on each ſide the row, who reſt with their arms upon the hay, and ſtep forward on the rope as the hay gathers. To prevent the hay from ſlipping off behind, a ſmall cord is faſtened to the hind part of the ſweeping rope; and extended to each perſon's hand, which they let out as they ſtep forward, or find otherwiſe neceſſary. By either of the above modes, the hay grown upon a field of 8 or 10 acres may be drawn together in a few hours, and is much more expeditious than either ſledges or carts.

When the large ſtack is made in the field, the "Pikes," are drawn to it, by putting a ſtrong rope round their bottom, the two ends of which are faſtened to the hind part of a cart, in which are yoked 3 or 4 horſes.—This ſaves the trouble of forking and loading them in carts, and is done in much leſs time.

SECT. 4.—*Feeding.*

Oxen,—are moſtly grazed in the eaſtern part of the county, and a few in the vicinity of Whittingham; they are bought in May or June, and ſold as they become ready, to ſupply the large fleets of colliers and other trad-

ing veſſels belonging to Newcaſtle, Shields, Sunderland, Hartley, and Blythe.

Some few graziers buy only ſuch oxen as are forward by having got turnips in the Spring: theſe generally go off in June, and are followed by cows, heifers, or kyloes;* of which, thoſe that do not get fat on the paſture, to be ſold thro' the Summer, are put upon fogs (aftermaths) and ſold in November and December. The cows are alſo bought in the ſpring months, and are chiefly uſed for home conſumption. The kyloes are bought at Falkirk-Tryſts, ("*meetings*") or at Newcaſtle Fair, in the Autumn, and wintered upon coarſe, rough ground or ſtraw: (ſometimes a few turnips are given in the Spring) and are ſold all thro' the Summer, as they become fit for the butcher, to ſupply Newcaſtle and other markets. Thoſe that are ready to go off in June, always leave the moſt profit; beef being frequently ſold at that ſeaſon for a ſhilling a ſtone more than the ordinary prices.

The profit of grazing, like all other ſpeculations, varies with circumſtances; but we believe we may venture to average it at 3l. or 3l. 10s. for keeping on graſs from May-day to Michaelmas. Cows, in general, leave more than oxen, in proportion to their weight; but they are ſubject to diſorders of the udder, that frequently reduce the profit, and deter many people from grazing them.

Some few graziers follow the old cuſtom of keeping only one kind of ſtock upon the ſame ground; whilſt others, we think with more propriety, intermix with oxen and cows, a few ſheep, and two or three colts in each paſture; which both turn to good account, and do little injury to the grazing cattle: In ſome caſes, ſheep are a real benefit, by eating down and deſtroying the ragwort (*Senecio*

* An excellent breed of ſmall cattle from the Highlands of Scotland.

Jacobæa) which disgraces some of the best pastures in the county, where *oxen only* are grazed.

Sheep, that have been wintered upon turnips, are put to the earliest grass that can be obtained; the clovers and ray-grass are generally ready in April; the old grass lands not before May: In both situations they are continued till shorn, and sold off, from the latter end of May, thro' all June and part of July, from 2l. to 2l. 15s. each. In 1797 the prices were from 2l. 10s. to 3l. 10s each: The draft ewes, or shearling wethers intended for turnips next Winter, succeed them, and thus a regular rotation is kept up. Of late years, some farmers have sold their shearling wethers in July, (when only 15 months old) to the butchers, for as high prices, as from 30 to 35 shillings each. In 1796, they sold from 40 to 45 shillings each; and in 1797, as high as 50 shillings, after shearing a fleece worth 6 shillings.

A large portion of the lands of this county being liable to the rot, and unsafe for a breeding flock, the occupiers of such situations, venture ewes for fat lambs for one year; these are bought in the Autumn, put to tup early, (some in August) the lambs sold in May, June, and July; after which the ewes are fatted, and sold in October and November.—Such lambs as are early, and go off in May, often sell for 20 shillings each; but the others average at about 12s. 6d. The price of fat ewes depends much on their being of a good or slow feeding sort, and will vary from 24 to 30 shillings: The average may be called 27 shillings.———The proceeds from long-woolled ewes will be:

	£	s.	d.
A fat Lamb - -	0	12	6
Ditto Ewe - - -	1	7	0
Carried over	1	19	6

	£.	s.	d.
Brought over	1	19	6
Fleece - - - -	0	4	6
	2	4	0
Deduct prime coſt	1	0	0
Profits on Ewe and Lamb, for one year	1	4	0

The profits of thoſe that have lambs, ſold at 20s. will be 1l. 12s.

The Cheviot ewes are generally put to a large long-woolled tup, which increaſes the ſize of the lambs: The proceeds are:

	£.	s.	d.
A fat Lamb - - -	0	11	0
Ditto Ewes - - -	0	14	6
Fleece - - - -	0	2	6
	1	8	0
Deduct prime coſt	0	13	0
Profit for one year	0	15	0

Mr Hay of Lelbury, and Mr Watſon of Waren, not having ſo ready a market for the great quantities of bran, pollard and oat-chimmings, which their extenſive manufactures of flour and oat-meal produce, have applied it to feeding different kinds of ſtock; they both agree that for feeding pigs, it is of little value; one of the gentlemen ſays, that from ſome experiments he had read, he was induced to enter largely on the buſineſs, and perſevered in it, till he loſt upwards of a thouſand pounds.

For Horſes—they both think it very valuable along with hay or ſtraw, inſtead of corn; Mr Watſon allows his horſes 6 buſhels of bran, or 4 buſhels of pollard, and 2 of oat

oat ſeeds per week, the average price of which is about 5 ſhillings; the horſes are in high condition, and ſleek as ravens, but not more ſo than thoſe that have 2½ buſhels of oats per week, the price of which at 2s. per buſhel is equal to the value of the bran.

For Cattle—Mr Hay ſays, that "in the beginning of October, I tie up my cattle in ſheds, and place before every beaſt a crib for bran, and another for turnips, and to each give a peck of *pollard*, morning and evening, with *full allowance of turnips*, well cleanſed and topped; I frequently mix oat ſheeling ſeeds and oat duſt, which makes them fonder of the pollard, if ſtale or old kept. Three months ſtall-feeding in this way is equal to 6 months in the uſual way."

In order to form ſome idea of the utility of the above mode, we muſt eſtimate the expence of the pollard, in addition to the full allowance of turnips: pollard being a finer kind of bran, is ſold for 2d. a buſhel more; of courſe when bran is 10d. per buſhel, pollard will be 1s. and allowing that an ox will fatten as much in 10 weeks with the above keeping, as he will in 20 by the common mode, the account will ſtand thus:

	£.	s.	d.
10 Weeks—Pollard 70 buſhels, at 1s. -	3	10	0
Ditto———Turnips, at 4s. 6d. - - -	2	5	0
———— Attendance - - - - - -	0	10	0
	6	5	0

	£.	s.	d.
20 Weeks—Turnips, at 4s. 6d. - - -	4	10	0
Ditto———Straw - - - - - - -	0	10	0
————Attendance - - - - - -	1	0	0
	6	0	0

Hence

Hence it appears that feeding with pollard and turnips is not cheaper than the common mode, *even allowing that it is done in half the time.*

Mr Watſon put 6 oxen into a fold-yard (with a ſhed in it) on the 20th of May; in 7 weeks they had eaten 360 buſhels of bran and oat ſeeds mixed, with which they had for the firſt three weeks coarſe hay, the other four, cut clover. With this their cribs were kept conſtantly full: The value of bran and oat ſeeds amounts to about 6s. per per week each beaſt; of the hay and clover no account was kept, but it cannot be eſtimated at leſs than 1s. which makes with attendance 7s. per week each beaſt; near double the expence of graſs, and more than the improvement of the cattle would pay, tho' they were certainly in very thriving condition.

Mr Watſon once attempted to keep two heifers on bran only; they grew worſe and worſe, and were obliged to have other food; when they got graſs, they eat much more bran than when they got bran alone.

For Sheep,—theſe gentlemen allow 7 buſhels per week per ſcore, to their ſtore ewes on graſs, that is 5s. 10d. per week, or 3½d. per ſheep beſides graſs.

Mr Hay wintered 150 ewes on 38 acres; they had 53 buſhels per week of bran; but this land would have wintered 70 ewes without any aſſiſtance, therefore the bran was applied to the ſupport of the 80 additional ewes; of courſe the expences per week will be

	£.	s.	d.
53 buſhels of bran at 10d. per buſhel, which divided by 80 -	2	3	4
gives the expence per week of keeping a ſtore ewe - - - - - - - - - -	0	0	6½

which is near double the price uſually paid for turnips.

Mr

Mr Watſon is ſummering 175 ewes on Spindleſton-Hill (a bare rocky paſture); to this flock he allows 16 buſhels of bran per day, or 112 buſhels per week, which at 10d. per buſhel, is 6¼d. per week per ſheep, beſides the graſs; they are in excellent condition, but it is a price for keeping ſtore ewes that moſt farmers would ſtare at.

To a flock of 65, year-old fat wethers, he gives 42 buſhels of bran per week, which is near 6½d. per week per ſheep; they are depaſtured upon good land, at the rate of about 7 ſheep an acre, which is ſcarcely double the number the ſame ground would keep equally well without bran, of courſe theſe ſheep coſt above 1s. per week per ſheep, a price that the appearance of the ſheep does by no means promiſe to repay.

Theſe are all the facts that have come to our knowledge, reſpecting feeding with bran; from which it appears that it *is not ſo beneficial a practice* as had been *repreſented to the Board.*

CHAPTER IX.

GARDENS AND ORCHARDS.

IN gardening we do not find any practices in this diſtrict but what are generally known to the profeſſion; and in reſpect to Orchards they are thinly ſcattered indeed.—The froſty nights, and north-eaſt winds from the German Ocean, which are ſo prevalent here in the ſpring months, are very inimical to fruit crops; and it is probably owing to this circumſtance that there is ſuch a ſcarcity

city of orchards; ſo much ſo that we believe nine tenths of the apples conſumed in this county are imported from Kent, Eſſex, and other ſouthern counties.

CHAPTER X.

WOODS AND PLANTATIONS.

WOODS growing in a natural ſtate are found moſtly on the banks of rivers; thoſe of the north and ſouth Tyne, the Wanſbeck, Coquet, and their tributary ſtreams, have by far the greateſt quantity. Of old oak timber, from eighty to one hundred and forty years growth, the probable value may be about 60,000l. of which two-thirds can only be ſaid to be proper for building ſhips of great burthen.

The demand by the collieries and lead mines for ſmall wood, has induced the proprietors of woods on the Derwent, Tyne, &c. to cut them at an early age. From twenty-five to thirty years growth is the general term for oak, elm, and aſh; but birch, willow, and aller, are cut ſooner; and hazle for corf-rods* once in three or four years.

The price of aſh and elm is from 1s. to 2s. per foot; of oak, from 2s. to 3s. per foot; of birch, aller, &c for pit props, ſix feet long, and from four to ſix inches diameter, 4d. each; corf rods, 6d. per hundred. Oak bark laſt year was ſold for 9l. per ton. Under this manage-

* Corves are a kind of large wicker-work baſkets, uſed for bringing coals out of pits, made of rods from ½ to 1 inch diameter.

ment

ment, and at thoſe prices, an acre in thirty years will produce, on an average, 60l. clear of expences; there has been inſtances of an acre of wood, thirty-two years old, ſelling for 100l. and another of ſixty years growth, worth 200l. per acre; but theſe were in particularly favourable ſituations.

In the management of theſe woods, the general practice is to cut all away together. The ſyſtem of Anthony Surtees, Eſq; of Newbiggen, we think preferable: he takes his away in *patches*: and as the older trees interfere with the younger ſprings, and where a thriving healthy oak is in a convenient ſituation, he lets it ſtand for timber; by this means the young ſpring is ſheltered, and an annual produce of upwards of 100l. is obtained from ſixty acres of woodland.

Plantations, on an extenſive ſcale, are riſing in every part of the county; and are almoſt in every inſtance doing well, and promiſe not only to repay the ſpirited exertions of the proprietors, but will add greatly to the ornament and improvement of the country.

Amongſt the great variety of trees we have obſerved in thoſe plantations, the larch riſes proudly pre-eminent above the reſt, and in almoſt every ſituation far outſtrips the various ſpecies of firs and pines, wherever we have noticed them planted promiſcuouſly together. In many plantations in the northern parts of the county, the *ſpruce firs*, between 20 and 30 years old, have *died-off*; and this in ſo many very different ſoils and ſituations, that they are now in a great meaſure diſcarded from the plantations that have been made of late years; the cauſe of this failure has not been yet ſatisfactorily accounted for.

CHAPTER XI.

WASTES.

THE *commons*—in this county capable of being converted into profitable tillage land are now very trifling, the greateſt part having been incloſed within the laſt thirty years; the whole amounting to near 120,000 acres. Of this, the commons belonging to the manors of Hexhamſhire and Allendale contain 50,000 acres, a great part (35,000) of which are high, expoſed, heathy mountains. Theſe are to be converted into ſtinted paſtures, not being thought capable of any other improvement.

The increaſed value of ſuch incloſed commons, depends (as we have ſtated in our Report of Cumberland) entirely upon the ſyſtem of cultivation purſued. Upon Bulbeck-common there are lands which, in a ſtate of common, were not worth more than 1s. an acre, a part of which has been in tillage twenty-five years, and grown three white crops ſucceſſively, betwixt one fallowing and another. This land is now dear enough at 4s. an acre; while Mr Hopper's of Black-Hedley, is worth 10s. or 12s. His ſyſtem is, when firſt broke up from heath, to pare and burn, and plough in the autumn; next ſpring plough acroſs, lime and ſow oats; then fallow and lime, 75 buſhels per acre, and ſow turnips; after which, oats and graſs ſeeds, four pounds red clover, five pounds white, and one buſhel of ray graſs, and continue in graſs ſix or ſeven years; then to plough for oats—turnips—oats—and ſow up with graſs ſeeds as before. There are inſtances, where the increaſed value is in the ratio of twelve to one, or even more; but

theſe

theſe are, where the commons were of no value to the proprietor, which is in general the caſe.*

The extent of waſte lands—or open mountainous diſtricts, incapable of affording profit by cultivating with the plough, is very great, as we have before ſtated; conſiderable quantities of which are private property, and of courſe may be depaſtured by ſheep or other ſtock to the greateſt advantage; of thoſe that are common, it would certainly be beſt for every man to know his own ſhare.

Draining would be highly uſeful to many parts of theſe diſtricts; there are alſo many excellent ſituations for planting, and of all other purpoſes to which ſuch lands are convertible, this ſpecies of improvement ſeems to us the moſt promiſing to make the greateſt returns.

CHAPTER XII.

IMPROVEMENTS.

SECT. I.—*Draining.*

DRAINING—is one of thoſe improvements that has lately made its way into Northumberland, and is now moſtly practiſed in the middle and northern parts of the county; the theory is pretty well underſtood in thoſe diſtricts, and the practice is becoming more prevalent every year. Hollow drains are generally uſed, filled with ſtones, where they can be got; where theſe cannot be obtained,

* The ſtinted common of Holy Iſland was divided in 1790, the allotments that were gotten for a right, which never let for more than 2l. are now let for 14l. or 15l. per ann. and in a few years will be worth upwards of 20l.

(but

(but at a great expence) ſod drains are the only reſource, eſpecially in the northern parts, where there is little wood.

Sect. 2.—*Paring and Burning.*

Paring and Burning is not much practiſed in the eaſtern and northern parts of the county; in the midland and ſouthern parts it is moſt prevalent, but even there it is confined to old ſwards, and coarſe, rough, ruſhey and heathy lands; for the firſt breaking-up of ſuch ground, it is certainly very convenient, and preferable to any other mode we have ever ſeen; but tho' we are fully convinced of its beneficial effects in ſuch ſituations, yet we have our doubts whether it could be uſed with advantage upon lands that have lain a few years in graſs, and that would produce good crops of grain *immediately on being ploughed out*, which is not the caſe with coarſe, rough, heathy lands, or even very old ſwards on rich fertile ſoils; it being found that crops on the latter, are fre ently very much injured by "*leaping*" for two or three years; which paring and burning entirely obviates, and enſures full crops to the farmer; who need not be under any apprehenſion of his ſoil being ruined by it, provided he purſues the following courſe:—1. Turnips.—2. Oats.—3. Fallow, well limed for turnips.—4. Barley, ſown up with clover and graſs ſeeds, and depaſtured with ſheep for three or four years, and afterwards (if not intended to lie in graſs) continue it in the rotation mentioned page 64: It is the *injudicious cropping*, more than the ill effects derived from paring and burning, that has been the chief cauſe of bringing ſuch an odium on this practice, which is certainly an excellent one in *ſome ſituations*, and *properly conducted*; but like the fermented juice of the grape, may be too often repeated and improperly applied.

The popular clamour againſt this practice, "that it *deſtroys the ſoil*," we can by no means admit; and are inclined

ed to believe, that not a ſingle atom of ſoil is abſtracted, though the bulk of the ſod or turf be diminiſhed: this ariſes from the burning of the roots or vegetable ſubſtances, which, by this proceſs afford a conſiderable portion of Alkaline Salts, phlogiſtic or carbonic matter, and probably other principles friendly to vegetation; as we find thoſe aſhes produce abundant crops of turnips, which fatten, ſtock much quicker than thoſe after any other dreſſing or manure we have ever ſeen, and the ſucceeding crops of corn are ſo very luxuriant, as to tempt the *injudicious cultivator* to purſue it too far; and for the ſake of temporary gain, may be ſaid to rip it up, as the boy did with his gooſe that layed golden eggs.

SECT. 3.—*Manuring.*

In ſome parts of this county, where the turnip culture is carried to ſuch extent, every exertion of ingenuity is practiſed to raiſe a large portion of *Farm Yard Dung*; for without this valuable article, it is well known that good turnip crops are not to be expected, and the farmers of ſtrong ſoils are ſufficiently ſenſible of the advantage of dung to their crops, not to uſe every endeavour to increaſe its quantity.

The farmers of turnip ſoils, in order to have their dung ſufficiently rotted, lead it out of the fold yard in the winter, make it up in large dunghills in order to increaſe the putrefactive proceſs, and prepare it for that ſtate of diſſolution, by which its component parts are ready to be aſſimilated into new bodies; and in which ſtate only, it can be of uſe in vegetation.

Upon the hill-farms around Cheviot, we have been often ſurprized, to ſee at the doors of the ſhepherds' houſes, ſuch immenſe dunghills, the accumulation of unnumbered years, probably centuries: to avoid this increaſing nuiſance, many of them have *ingeniouſly contrived* to build

their houſes near a "*Burn ſide*" for the *convenience* of having it *taken away by every flood*: notwithſtanding they have lands adjoining, upon which, if this manure was properly applied, the greateſt improvements would enſue, and conſiderable quantities of excellent hay be produced, for the ſupport of the flocks in winter ſtorms, in which ſeaſons they are very often under the neceſſity of purchaſing hay in the Lowlands, and of having it conveyed on horſe-back to the top of theſe hills in the deepeſt ſnows, at a very great expence.*

Lime—is found in many parts of this county, of an excellent quality. In Bambro' Ward, where it has been long uſed, many intelligent farmers begin to doubt of its efficacy, and the propriety of continuing to lay it upon their *old tillage lands*. Upon the dry ſoils in Glendale Ward, where it has not been uſed much above 40 years,† its effects are more conſpicuous, eſpecially upon ſuch lands as have been ſeldom or never limed. In its natural ſtate, the ſoil of this diſtrict is dry, duffy, light, full of fibrous, roots, and when in fallow, on paſſing over it, you ſink to the ancles; after being ſufficiently limed, the fibrous roots diſappear, the ſoil becomes denſer, firm to the tread, retentive of moiſture, and produces better and more abundant crops of grain than before: when laid to graſs, the effects of the lime appear to an inch, by the ſuperior verdure

* We were glad to ſee Mr Smith, Mr Marſhall, and a few others, departing from this trait of barbariſm, and applying their manure in a very proper manner.

† Mr James Hall of Thornington, was the firſt perſon that ever carried a cart load of lime acroſs the river Till, for laying upon land: The firſt year he prevailed upon his father to allow him to lead 10 cart load, which had ſo wonderful an effect, that the quantity was increaſed next year, and in a few years after, the uſe of it became general.

dure which takes place as far as it has gone.* Many of these dry soils, after being limed, grow white clover naturally; where not limed, it seldom appears; but they cover principally with *agrostis capillaris* (fine bent,) which is seldom eaten by any kind of stock, if they can get other food: When land has been sufficiently limed, this plant disappears; and wherever it is found, it may be safely concluded, that the soil on which it grows has not had its due quantity of lime.

About seven years since Mr George Reed, of South-Middleton near Wooler, cleared from broom, 30 or 40 acres of light, dry, channelly soil, that had *never been limed*, which was sown with rye; the rye stubble was ploughed in the Autumn, and the worst part of it limed at the rate of 100 bushels per acre; next Summer the whole was drilled with turnips (dunged &c. as described page 89) which came up all alike, and continued to do equally well for three or four weeks; but little or no rain falling in that period, and the weather continuing droughty, those turnips upon the land which had *no lime*,

* About twelve years since, when looking over the farm of Thornington, with Mr James Hall, (the late tenant) we were surprised with the sudden alteration in the verdure of the land, which took place immediately at the junction of two ridges, one side was a fine dark green, *eaten very bare*, and covered with a thick mat of *white clover and ray-grass*; the other was a dingy brown, principally composed of *fine bent*, and *sheep's fesque*, and in a great measure *neglected by the sheep*: An explanation was desired for so great a contrast, and Mr Hall informed us, that when this parcel of land was last in fallow, the part which was *eaten so bare*, and looked so green, was *well limed*; the other, which the sheep neglected, had *never been limed*.

It has been said, and repeatedly copied by writers on Agriculture and Botany, that "*sheep prefer the* "*Festuca Ovina*" *to all other plants*:" In the above instance it was quite the contrary; from which, and from other observations we have made, we are inclined to believe, that the idea has probably originated more in conjecture than experiment. It has also been remarked by botanical writers, that sheep refuse to eat ragwort, (*Senecio Jacobæa*:") The fact is, they are so very fond of it, they will not allow a plant to flower wherever they depasture.

died away; whilſt thoſe upon that part which *was limed* were diſcernible *to an inch*, flouriſhed with unabated vigour, and produced an excellent crop, (for ſuch land) worth at leaſt 4l 10s. an acre; many ſimilar inſtances might be produced, but this is the moſt ſtriking we recollect to have noted.

The mode of burning lime, in this county, is moſtly in draw-kilns, of the form of an inverted cone, with two or three eyes or mouths for drawing out the lime, and admitting air: Theſe kilns are kept burning and drawing perpetually. Some of the large ſale kilns will afford 40 or 50 cart load a day: A cart load of coals is reckoned to burn two cart loads of lime.

The Price, at the kilns, is from 3s. to 4s. 6d. for 25 upheaped buſhels.

The Quantity, laid upon an acre, is from 75 to 150 buſhels.

The general practice of uſing lime, is to lay it up in heaps of three or four cart loads each; and as ſoon as the clods are fallen, ſlacked, or reduced to the ſtate of quick-lime, it is ſpread evenly upon the land, and harrowed and ploughed in as ſoon as poſſible after: ſometimes, inſtead of laying it up in heaps of 3 or 4 cart loads each, it is laid upon the land in the clod ſtate, in little heaps of about a buſhel each, which are covered with earth until ſufficiently ſlacked or fallen, and then ſpread abroad.

In either mode, or in whatever manner lime is applied, it certainly has the greateſt effect, when both it and the ſoil are in the moſt pulverized ſtate.

Upon the turnip ſoils where very large quantities of lime are uſed, it would be extremely difficult to get a ſufficiency in the early part of Summer, previous to the turnip ſeaſon; in ſuch ſituations, it is uſual to lead as much as poſſible thro' the Summer and Autumn, which

is

is laid up in very large heaps (from 50 to 150 loads each) and before Winter covered with ſods, or thatched with ſtraw, to prevent the rain from penetrating it: If well ſecured, it is found in a very quick ſtate, in the Spring, ſometimes a great portion of it remaining unſlacked.

The opinions reſpecting the good or ill effects of lime, are exceedingly various; ſome aſſerting that it can never be uſed in too large a quantity; whilſt others contend, it is of no uſe whatever: Our own practice authorizes us to ſay, that upon ſome ſoils, the application of lime, (or calcareous earth in ſome other form) in conſiderable quantities, is abſolutely neceſſary, in order to bring them to their moſt fertile ſtate, and to prepare them for the action of other manures; whilſt upon other ſoils, lime produces no ſenſible effect, and if uſed in large quantities, will prove very detrimental.—Thus may one of the moſt valuable applications we know, for the improvement of many ſoils, be condemned, by thoſe who draw *poſitive concluſions*, from *partial obſervations of facts*. The practice of paring and burning, we believe, owes the opprobrium, which ſome have thrown upon it, to *a ſimilar mode of reaſoning*.

Stone Marl, has formerly been uſed in conſiderable quantities, near Tweedſide, but the more immediate effects of lime have entirely ſet aſide the uſe of ſtone marl.

Shell Marl is uſed with great advantage, at the rate of 20 or 30 cart loads an acre, on the farms of Wark, Sunnylaws, and Learmouth.

Sea Wrack, Sea Ware, or Marine Plants—driven aſhore by the tide, are uſed with great effect, wherever they can be had. Of theſe the *fucus veſiculoſus*, and its relatives *F. ſerratus and inflatus*, (Skeir Ware) are not held in much eſtimation, and when uſed, require to be laid up in large heaps to putrify. If laid upon the land, as the others

are, when taken immediately from the ſhore, they dry, and turn to a black coriaceous ſubſtanc . The *fucus digitatus* (Waffels) is the great favourite, and another ſpecies called *May-weed*, which we cannot point out by its Linnæan name, not having had an opportunity of ſeeing it, but from the deſcriptions we have heard, ſuſpect it to be the young plants of the *fucus digitatus*.

Coal Aſhes—are chiefly uſed in the vicinity of the principal towns, as a dreſſing for graſs land; for this purpoſe they are found of conſiderable benefit, eſpecially upon ſtrong, coarſe, and wet lands.

SECT. 4.—*Weeding*.

Weeding corn is univerſally practiſed; *the broad caſt crops* are hand-weeded, in which operation the thiſtles (being rather unpleaſant to handle) are in ſome parts drawn by a pair of large pliers ("nippers") with flat cheeks; in others they are cut over by a weeding hook, made in the form of a Λ, with ſharp edges on the inſide; but this mode of cutting is only a temporary relief, as they ſpring again very ſoon after: pulling up by the roots ought certainly to be practiſed in every inſtance, as there is not a weed the farmer has to contend with, more difficult to eradicate than the corn thiſtle, *(Carduus Arvenſis.)*

The drilled crops, are both horſe and hand hoed, at leaſt twice each, and with ſo much attention, that no kind of weeds are ſuffered to remain; the whole being kept in the cleaneſt and compleateſt garden-like culture.

The moſt prevalent weeds, that give the Northumbrian huſbandman the greateſt trouble, are:

Of

Of the *Perennial kind*,

Triticum repens—*Couch Wheat.*	These all go under the general names of *Quickens*, *Couch*, or *Twitch graſs*; the Holcus principally on light dry ſoils.
Avena elatior—*Tall Oat.**	
Holcus mollis—*Soft Holcus.*	
Seratulæ arvenſis, or Carduus arvenſis.†	*Corn Thiſtle.*

Annuals.

Sinapis arvenſis—*Wild Muſtard.*	*Charloc.*
Sinapis Alba—*White Muſtard.*	
Raphanus Raphaniſtrum—*Wild Radiſh.*	
Avena Fatua—*Wild Oat.*	

Thoſe of leſs note, and more partial viſitants, are

Galeopſis Tetrahit	*Hemp dead nettle*
Spergula arvenſis	*Corn Spurry*
Anthemis Cotula	*Stinking Camomile*
Polygonum Perſicaria	*Peachwort*
Ranunculus arvenſis	*Corn Crowfoot*
Lythoſpermum arvenſis	*Corn Gromil*
Veronica arvenſis	*Corn Speedwell*
Scandiæ Pecten Veneris	*Shepherd's needle.*

Sect. 5.—*Watering.*

Watered Meadows—were firſt introduced into this county by Meſſrs Culley, about 26 years ſince; and notwithſtanding the manifeſt advantages of this operation, yet ſo ſlow is knowledge in making its way, that it was near 20 years before any other perſon ventured to purſue the practice, and profit by the example: It is now begin-

* This is readily diſtinguiſhed from the other kinds of quickens, by its bulbous or granulated roots.

† Linnæus has claſſed this plant with the Seratula; but Lightfoot has very properly removed it to the Carduus.

ning to ſpread in the neighbourhood, and we hope in a few years will be adopted in every ſituation that can derive benefit from it

Sir William Lorrain, with a ſpirit that marks his wiſh for improvement, brought two men from Leiceſterſhire, to drain his grounds at Kirkharl. This buſineſs they ſeem to have underſtood and executed well; but we think they have miſled the worthy Baronet, in telling him they underſtood laying out land for watering. We were ſorry to ſee a firſt attempt executed in ſo bad a ſtyle, which may tend more to diſcourage the practice, than forward its introduction.

SECT. 6.—*Embankments.*

In the vicinity of Wooler, a large tract of low flat ground (called *Haughs)* adjoining the rivers Till and Glen, being ſubject to be frequently overflowed, an attempt was firſt made to embank them at Yevering, in the year 1787 which anſwered the purpoſe, and ſoon after was adopted on the haughs of Turvilaws, Doddington, Ewart, &c by which the lands that could not be let for more than 15s. per acre (from the great hazard of loſing the crop) are now let for more than double the ſum.

The height of theſe banks is from 3 to 5 feet; the form is repreſented by a ſection fig. 6, pl. 5, where the height CE is 4 feet, the baſe BA 15 feet, BC 5 feet, and the ſlope next the water CA, 13 feet. The ſide BC was faced up with ſods the green ſide out, cut from the ditch D, out of which was dug the materials for forming the bank;* and

* In ſome ſituations it is beſt to cut the ditch, on the ſide next the river, leaving checks at proper intervals, to prevent the run of the water. Theſe cavities fill up in a few years, with mud brought by the floods; and the bank is in leſs danger of breaking when there is no ditch at the back of it.

the

the ſide CA, covered with green ſods pared from the baſe BA, previous to throwing up the earth.

The expence from 2s. to 3s. per rood of 7 yards.

CHAPTER XIII.

LIVE STOCK.

Sect. 1.—*Cattle.*

THE different kinds of cattle bred in this county are the ſhort horned—the Devonſhire—the long-horned—and the wild cattle.

The ſhort horned kind have been long eſtabliſhed over the whole county, the other kinds are found only in the hands of a few individuals, who have introduced them with a laudable view of comparing their merits with the eſtabliſhed breed of the country.—They differ from the other breeds, in the ſhortneſs of their horns, and in being wider and thicker in their form, conſequently feed to the moſt weight; in affording the greateſt quantity of tallow when fatted, in having very thin hides, and much leſs hair* upon them than any other breed (the Alderneys excepted); but the moſt eſſential difference conſiſts in the quantity of milk they give beyond moſt other breeds: there being inſtances of cows giving 36 quarts of milk per day, and of 48 firkins of butter being made from a dairy of 12 cows: but the more general quantity is 3 firkins per cow in a ſeaſon, and 24 quarts of milk per day:

* It is probably from the thinneſs of their hides and hair, that they are accounted tenderer than moſt other breeds.

Their

Their colour is much varied, but they moſtly are an agreeable mixture of red and white. From their being in many places called the Dutch breed, it is probable they were originally brought from the Continent.

They have been much improved of late years, by the exertions and attention of enterpriſing breeders; who have already improved them ſo far, as to be ſold fat to the butchers at 3½ years old. The weight of the carcaſe is in general from 60 to 80 ſtone, (14 lb. to the ſtone) but there are inſtances of individuals attaining much greater weight.

Sir H. Grey bred and fed two ſeven-years old oxen that weighed 152 ſtone 9 lb. the four quarters only; and a ſpayed heifer, 132 ſtone, 6 lb. ditto. Mr Smith of Togſtone, a cow, 127 ſtone 11 lb. ditto.

But large ſize is not now conſidered as an excellence: Quick feeders, that lay their fat upon the moſt valuable parts, and have the leaſt offal in the coarſe parts, are the kind which every enlightened breeder wiſhes to be poſſeſſed of.

The long Horns have been introduced from the improved ſtocks of the Midland counties, at different times and by different breeders; but have in moſt inſtances given way again to the improved breed of ſhort horns.

The Devonſhire breed is only in the poſſeſſion of Walter Trevelyan, Eſq. of Nether Witton, who introduced them about three years ſince; their offspring has not yet got to a proper age to form a judgment of their comparative merits.

The Wild Cattle—are only found in Chillingham Park, belonging to the Earl of Tankerville; and as it is probable they are the only remains of the *true and genuine* breed of that

J.Bailey del.1794.

Neele sculp.t Strand.

WILD CATTLE in Chillingham Park

that ſpecies of cattle,* we ſhall be more particular in our deſcription.

Their colour is invariably white, muzzle black; the whole of the inſide of the ear, and about one third of the outſide from the tip, downwards, red; horns white, with black tips, very fine, and bent upwards. Some of the bulls have a thin upright mane, about an inch and an half, or two inches long. The weight of the oxen is from 35 to 45 ſtone, and the cows from 25 to 35 ſtone, the four quarters; 14 lb. to the ſtone. The beef is finely marbled, and of excellent flavour.

From the nature of their paſture, and the frequent agitation they are put into, by the curioſity of ſtrangers, it cannot be expected they ſhould get very fat; yet the ſix years old oxen are generally very good beef. From whence it may be fairly ſuppoſed, that in proper ſituations, they would feed well.

At the firſt appearance of any perſon they ſet off in full gallop; and, at the diſtance of two or three hundred yards, make a wheel round, and come boldly up again, toſſing their heads in a menacing manner; on a ſudden they make a full ſtop, at the diſtance of forty or fifty yards, looking wildly at the object of their ſurprize; but upon the leaſt motion being made, they all again turn round, and gallop off again with equal ſpeed, but not to the ſame diſtance: forming a ſhorter circle, and again returning with a bolder, and more threatening aſpect than before; they approach much nearer, probably within thirty yards, when they make another ſtand, and again gallop off: this they do ſeveral times, ſhortening their

* We are no ſtrangers that there may be found in two or three different Parks of the kingdom, breeds of cattle which paſs under the denomination of Wild Cattle; but are inclined to believe that they have been contaminated by croſſing, and that thoſe in Chillingham Park are the only remains, which anſwer the deſcription given by *Boethius*, of this ſpecies of cattle.

diſtance,

inſtance, and advancing nearer; till they come within a few yards, when moſt people think it prudent to leave them, not chuſing to provoke them further, as it is probable, that in a few turns more they would make an attack.

The mode of killing them was, perhaps, the only modern remains of the grandeur of ancient hunting. On notice been given, that a wild bull would be killed upon a certain day, the inhabitants of the neighbourhood came mounted, and armed with guns, &c. ſometimes to the number of an hundred horſe, and four or five hundred foot, who ſtood upon walls or got into trees, while the horſemen rode off the bull from the reſt of the herd, until he ſtood at bay; when a markſman diſmounted and ſhot. At ſome of theſe huntings, twenty or thirty ſhots have been fired before he was ſubdued: on ſuch occaſions, the bleeding victim grew deſperately furious, from the ſmarting of his wounds, and the ſhouts of ſavage joy that were echoing from every ſide: from the number of accidents that happened, this dangerous mode has been ſeldom practiſed of late years; the park-keeper alone generally ſhooting them with a rifled gun, at one ſhot.—When the cows calve, they hide their calves, for a week or ten days, in ſome ſequeſtered ſituation, and go and ſuckle them two or three times a day. If any perſon come near the calves, they clap their heads cloſe to the ground, and lie like a hare in form, to hide themſelves. This is a proof of their native wildneſs, and is corroborated by the following circumſtance, that happened to the writer of this narrative, who found a hidden calf, two days old, very lean, and very weak; on ſtroking its head, it got up, pawed two or three times like an old bull, bellowed very loud, retired a few ſteps, and bolted at his legs with all its force; it then began to paw again, bellowed, ſtepped back, and bolted as before: but knowing its intention,

tion, and ſtepping aſide, it miſſed me, fell, and was ſo very weak, that it could not riſe, though it made ſeveral efforts; but it had done enough, the whole herd were alarmed, and coming to its reſcue, obliged me to retire; for the dams will allow no perſon to touch their calves without attacking them with impetuous ferocity.

When any one happens to be wounded, or grown weak and feeble through age or ſickneſs, the reſt of the herd ſet upon it, and gore it to death.

Dairy.—This county cannot boaſt of its dairies; thoſe who live in the vicinity of Newcaſtle, and other populous places, make a handſome return by the ſale of milk, freſh butter, &c but upon moſt of the large farms in this county, dairies are not held in much eſtimation.

Breeding young cattle—is practiſed in almoſt every part of the county. Upon the large farms, cows are kept more for this purpoſe than the profit of dairying: there are inſtances of 50 or 60 calves being brought up in one ſeaſon, by one farmer, who did not milk more than fifteen cows. Calves are certainly beſt reared with milk, but where ſuch numbers are bred, many different things have been mixed with, or ſubſtituted for, this nutritive and natural diet; oats and bean meal, oil cake, lintſeed, boiled turnips, &c. are uſed, and have their various advocates; but lintſeed is moſt approved; eggs are excellent for mixing in the calf's food; when cheap in the Spring, perhaps they cannot be better employed. In the Summer the calves are turned to graſs, and in the firſt Winter get turnips and ſtraw. After being a year old, they are kept in Summer on coarſe paſture; and in Winter on ſtraw only.

Hiring Bulls—for the ſeaſon, is practiſed in this county; as high as 50 guineas have been paid for a bull of the ſhort-horned breed, for one ſeaſon, and from 3 to 5 guineas given, for ſerving a cow; but the more common premium is a guinea.

SECT.

SECT. 2.—*Of Sheep.*

In this county there are three diſtinct breeds.—The Cheviot ſheep, the Heath ſheep, and the long-wooled ſheep.

The Cheviot ſheep—are hornleſs, the faces and legs in general white.* The *beſt breeds* have a fine open countenance, with lively prominent eyes; body long, fore quarters wanting depth in the breaſt, and breadth both there and on the chine; fine clean ſmall boned legs; thin pelts, weight of carcaſe when fat, from 12 to 18 lb. per quarter; fleeces from 2½ to 3½ lb each, and ſold in 1792, for 11d. per lb. The wool is not all fine, there being in a fleece of 3 lb. weight, only 2 lb. of fine wool, worth one ſhilling per lb. (when the whole fleece ſells at 10d. per lb.) and one pound of coarſe, worth only 6d. per lb.

They are bred only upon the hilly diſtricts in the north-weſt part of the county, and do not extend much farther ſouth than Reedwater.

The *beſt kind* of theſe ſheep are certainly a very hardy and valuable mountain ſheep, where the *paſture is moſtly green ſward*, or contains a large portion of that kind of herbage; which is the caſe with all the hills around Cheviot, where theſe ſheep are bred; for as to the mountain of Cheviot itſelf, no kind of ſheep whatever are bred upon it; and we find it an univerſal practice, amongſt the moſt experienced ſheep farmers, to depaſture the *heathy*

* Many of the Cheviot ſheep have dark faces, and were more ſo formerly. We were informed by Mr Chiſholm, Mr Readhead, Mr Marſhall, &c. that theſe dark-faced ones grew equally as fine wool, were as hardy, and equally as good thrivers as the white-faced ones; but that the people to whom they ſold their ſheep, and eſpecially tups, preferred white faces; for which reaſon, they have endeavoured to get quit of black faces.

diſtricts

diſtricts with old ſheep, (gimmers and wethers) but they never attempt to keep a breeding flock upon them.*

Blindburn is probably the higheſt and coarſeſt paſture in this county where this kind of ſheep are bred. We examined the herbage, and found, that the ewe-paſture had a conſiderable portion of green ſward, the coarſeſt parts of which conſiſted of

Nardus ſtricta	*Wirebent*†	
Juncus ſquarroſus	*Stoolbent*	
Scirpus cæſpitoſus	*Deer hair*	
Eriophorum vaginatum	the leaves	*Ling.*‡
	the flowering ſtem,	*Moſs.*
Erica vulgaris	*Heath or Hadder.*	

The ſhape of this breed of ſheep has been much improved of late years; but all thoſe who have been aiding in making ſuch improvements, readily acknowledge,

* Mr Robſon of Chatto, informed us, that ewes and lambs would not do upon his farms of *Common Burn*, near Wooler, and *Felhope*, and *Carſhope*, at the head of Coquet. On ſuch ſituations, the gimmers are found to be hardier, or do better than the wether ſheep of the ſame age, called Dinmonts.

† The Engliſh names inſerted after the Latin ones, are ſuch as the Cheviot ſhepherds know them by.

‡ In the county of Durham, Yorkſhire, and ſome other parts, *erica vulgaris* is known by the name of *ling*.—This plant grows in wet moſſy places; it generally ſprings in February and March. The ſheep are remarkably fond of it, not only the flowering ſtem, but the roots; and will ſcratch away the moſſy ſoil ſix or eight inches deep, to obtain it. We have ſeen them working up to the eyes for this purpoſe. The ſhepherds tell wonderful tales of the nutritive powers of this plant; aſſerting, that ſheep reduced by hunger, will recover faſter, and thrive much better upon this plant, than turnips. It is certainly a valuable plant for three or four weeks; but after it has flowered, the ſheep totally neglect the flower ſtem *(moſs)* and depaſture only on the leaves, *(ling.)*

It is ſomewhat ſingular that the Cheviot ſhepherds ſhould conſider the *flowering ſtem*, and the *leaves* of this plant, as two diſtinct ſpecies; nor could ſome of them be convinced to the contrary, until the plant was taken up, and they were ſhown, that their *moſs* and *ling* grew both from the ſame root.

there

there is ſtill much to be done; eſpecially to the fore quarter, which they all agree is very defective; but we hope it will not long remain ſo, as we think we ſee a ſpirit of inveſtigation ariſing amongſt theſe breeders, that in a few years will remedy not only this defect, but will diſcover others, which at preſent they are not willing to admit. But as knowledge is progreſſive, we cannot expect the perfection of this breed of ſheep can be obtained at once; it muſt proceed by ſlow gradations, as every other improvement hath done; it is a great point gained, that we admit defects, and are deſirous to amend them.

That breed of ſheep which brings the moſt profit to the farmer, will always be purſued by him, whatever his ſituation; but that object, we preſume, is not to be obtained in this diſtrict from *fine wool alone*. Perfect mountain ſheep ſhould be *active*, *hardy*, *well formed*, and *quick feeders*: theſe qualities will always recommend them to the grazier, who will never purchaſe a ſlow feeding animal, while he can get one of a different ſort, though at a conſiderable advanced price. But if to theſe qualities, ſo eſſential to the ſale of a mountain farmer's ſtock, can be added a *fleece of fine wool*, a breed of ſheep would then be obtained, the propereſt for a hilly diſtrict of any we have yet ſeen. There is little doubt but this may be accompliſhed by *proper ſelection*; and probably the *beſt kind* of Cheviot ſheep, from their hardineſs, and producing a portion of fine wool, are the propereſt ſtock for laying the foundation of ſo deſirable an improvement.

Mr Robſon, of Belford, (now of Chatto) ſays, he improved the ſhape of his ſheep very conſiderably; particularly the fore-quarter, and the wool, in having leſs buttocks; by uſing three rams which he purchaſed in Lincolnſhire, thirty-three years ſince; and we know other inſtances of improvement, by uſing tups of $\frac{1}{3}$ or $\frac{1}{4}$ Diſhley blood.

blood. In all theſe caſes, we do not find the ſheep leſs hardy, or wool of leſs value; but the carcaſe materially improved.*

Mr Readhead, of Chatto, is of opinion, that there are ſome ſituations amongſt the Cheviot-hills, where the South Down ſheep might be ſucceſsful; thoſe who are poſſeſſed of ſuch, would do well to make a *fair* experiment; ſhould it ſucceed, a very great improvement of the Cheviot wool, in point of fineneſs, would be derived by croſſing with this breed: but probably what it gained in fineneſs, it would loſe in weight, for it is not the value per *pound* which conſtitutes the farmer's profit, but the value *per fleece;* or rather, that breed is *the beſt*, which brings the *moſt profit in fleece and carcaſe jointly*,† from the ſame ground, in equal times. Opinions and conjectures will never decide this matter; it can only be done by *fair* experiments, conducted by perſons of judgment and impartiality.

The Mode of Management—amongſt the ſheep farmers of theſe hills, is to divide their flock into different parcels, viz. lambs, hogs, gimmers, ewes, and wethers, and each parcel kept on ſuch paſturage as is thought moſt proper for them. Every parcel is attended by a ſhepherd, who is bound to return the number of ſheep delivered to him, either alive, or in his account of dead ſheep, which are in

* Mr Smith, of Woodhall, had ſome of his Cheviot ewes put to a tup of Mr Thompſon's; the produce of which were examined when 18 months old, by Mr Robert Thompſon, and the report was, that the form was amazingly improved, and the gimmers ſtood the Winter remarkably well. This Gentleman is purſuing the experiment, and we hope will find the produce of the *third* or *fourth* croſs ſufficiently active and hardy for ſeeking their food on many of the hilly paſtures around Cheviot.

† This criterion militates very ſtrongly againſt the Spaniſh ſheep; unleſs they can be found with carcaſes of ſuperior form, and inclination to fatten, to any we have yet ſeen.

general ſold at different prices, according to their goodneſs.

The ewes are 2½ years old before they are put to the tup; and are kept till five or ſix years old: the loſs of lambs is ſometimes very conſiderable, not only on being dropped, but alſo from other diſorders, as the "*milk-ill*," which attacks them from 3 to 7 days old, the "*quarter-ill*," &c. which Mr Chiſholm of Clennel eſtimates at not leſs than 15 *per cent.* taking one year with another. And Mr Smith of Woodhall ſays, that "altho' the Cheviot breed be as healthy as perhaps any, yet there can hardly be an inſtance adducible of any of the different ſheep flocks coming all to the ſhears, much leſs the hogs; out of which it is common to allow two out of each ſcore."

The Heath Sheep—have large ſpiral horns, black faces and legs, a fierce wild-looking eye, and ſhort firm carcaſſes (weighing from 12 to 16 lb. per quarter) covered with long, open, coarſe ſhagged wool. The fleeces weigh from three to four pounds each; and ſold, in 1792, for ſixpence per pound. They are an exceedingly active and hardy race, and ſeem the beſt adapted, of all others, to high expoſed *heathy* diſtricts; ſuch as we find them in poſſeſſion of here, from the weſtern parts of the county of Durham, to North Tyne.

Mr Hopper, of Blackhedley, buys year old wethers of this kind of ſheep for 10s. 6d. each, and two-year olds for 14s. which he depaſtures upon a *heathy moor* of 4000 acres; from whence he takes them at 3½ years old to turnips; and ſells, the May following, from 28 to 32 ſhillings each: he has tried the Cheviot ſheep in the ſame manner, but thinks the other a hardier and better feeding ſheep.*

* Mr Hopper ſays, that the beſt ſheep of this kind he has tried, are bred about Moffat, in Scotland.

The

The breeders of this kind of ſheep on the ſouth weſt corner of the county, are very confident, that they are a *much hardier ſheep* than the Cheviot breed; and upon their high expoſed heathy mountains, where there is *very little green herbage*, much more profitable; while the Cheviot farmers aſſert, that theirs are equally hardy, and that the greater value of the fleece gives them a decided ſuperiority. We have before ſtated that the fineneſs of wool is not a proper criterion, by which the merits of a breed of ſheep are to be determined; it can only be done by fair experiment, in which all the circumſtances of the caſe are included; but we do not find that this has ever been done by either party, and tho' it is only opinion againſt opinion, yet both parties are ſo poſitive, that they are ready to quarrel with any perſon who happens to expreſs an opinion of his own: we ſhall therefore content ourſelves with ſtating, that the queſtion can only be properly decided by a parcel of each kind of ewes (ſuppoſe 100) being depaſtured and kept in every reſpect equally alike, upon ſome of thoſe high, expoſed ſituations, the height of which is much more elevated, and the herbage much coarſer than the Cheviot paſtures; and almoſt totally covered with *Heath or Hather (Erica Vulgaris.)* And at the end of *five, ſix, or ſeven years*, that breed which has brought the greateſt number of ſheep to market, and made the moſt profit, will deſervedly be deemed the *hardieſt*, *beſt*, and *moſt eligible*, for ſuch ſituations.

Until ſome experiment of this kind determine the matter; we hope, we ſhall not give offence to either party by ſtating, that we have ſeen the heath ſheep bred with advantage upon higher and coarſer paſtures than *Common Burn*, or thoſe others around Cheviot, which are deemed improper for a breeding flock of the Cheviot kind; and that it may probably turn out, that each breed is particularly adapted to particular ſituations, the one to *coarſe expoſ-*

ed mountains, where the luxury of green herbage is thinly ſcattered, or rarely to be found: the other, to *hilly paſtures*, where conſiderable portions of verdant ſurface predominate, ſuch as characterize the paſtoral diſtricts around Cheviot.

The long-woolled ſheep,—which formerly occupied the lower diſtrict of this county, were called *Muggs*, probably from their faces being covered with a muff of wool, cloſe to their eyes. Theſe being a ſlow feeding tribe, have given way to the Diſhley breed, which were firſt introduced into this county in the year 1766,* and by their ſuperior merit have ſo far made their way againſt every prejudice and oppoſition, that it is probable in a few years there will be a difficulty in finding a flock that is not more or leſs related to the Diſhley blood.

The improved breed of long-woolled ſheep—are diſtinguiſhed from other long-woolled kinds by their fine lively eyes, clean heads, ſtraight broad flat backs, round barrel-like bodies, very fine ſmall bones, thin pelts; and that ſingular property of making fat at an early age, perhaps more than any thing elſe, gives them a ſuperiority over the other breed in this iſland.

The weight of the carcaſe in general is, ewes three or four years old, from 18 to 26 lb. per quarter; the wool upon an average, 7½ lb. a fleece; the length from 6 to 14 inches; ſold in 1792, at 10d. per lb.

The moſt approved mode of management of this breed of ſheep is as follows: The ewes generally lamb in March, when we give them a few turnips to increaſe their milk. The latter end of June or beginning of July the lambs are weaned, and ſent to middling paſture; but a good paſture would certainly be a more eligible practice. The ewes are milked two or three times to eaſe their udders, and ſuch

* By Meſſrs Culley.

as are not intended to be continued for breeding, are culled or draughted out, and put to clover: when this fails, they get turnips, and are ſold about Chriſtmas to the butchers, very fat; the price from 34 to 40s. each; frequently meaſuring four or five inches thick of fat on the ſides, and two or three inches down the back, all the way from head to tail. And though this breed be not eminent for much tallow, yet ewes under ſuch circumſtances have been known to produce from eighteen to twenty-four pounds of tallow each.

The lambs, after being weaned, take the name of Hogs. They are generally put to turnips the beginning of November, and continue at them till the middle of April or beginning of May; when the wether hogs are put upon good paſture, or ſecond year's clover. The ſecond Winter they have turnips until the clovers are ſufficiently grown to receive them, which is generally about the middle of April: they are clipped or ſhorn about the middle of May, when we begin to ſell them, and are moſtly all ſold by the middle or end of June. Morpeth is our beſt market, where the two ſhear wethers are generally ſold for from forty to fifty ſhillings a head; in 1797, they ſold for 3l. per head on an average. At this age they are equally fat as the ewes before deſcribed:

Of late years it has been cuſtomary to ſell the ſhearling wethers, in June or July, to the butchers, fatter than moſt other breeds will be at two or three years old; the weight of theſe ſhearling wethers is from 18 to 21 lb. per quarter.

We generally reckon one third of the ewes to have twin lambs. They are put to the tup, ſo as to have lambs at two years old, and kept for breeding until three or four years old, except ſuch as are of particular good forms, or have other valuable properties: theſe we keep as long as ever they will breed. Such as are defective in

ſhape, ſuſpected of being ſlow feeders, or other unprofitable qualities, we never put to the tup, or attempt to breed from them.

Letting Tups—to ſerve ewes for the ſeaſon, has been a practice in this county for near 30 years, and is becoming more prevalent daily; the prices vary from five to one hundred guineas, for the uſe of one ſheep; and ewes are frequently taken in to be ſerved by a favourite ram, at as high rates as from 3 to 5 guineas each. The number of ewes to be ſerved by a ſhearing tup, is generally ſtipulated not to exceed 80, and for an aged ſheep 120.

At the firſt introduction of this breed of ſheep, a great prejudice was raiſed againſt them, and clamorous outcries made, that their adoption would be the ruin of the country, and no means were left untried to depreciate their value: but every obſtacle has been overcome by their ſuperior merit, which ſeems now to be univerſally acknowledged, as may be judged from the following circumſtance.

In October 1795, Mr Thompſon of Chillingham Barns, having quitted a farm, he advertiſed to ſell by auction, 500 ewes, in lots of 5 each.

	£.	s.	d.	
The firſt 100 ewes, ſold on an average for	21	0	0	per lot of 5 each.
The ſecond 100 for	20	2	6	ditto
The firſt 100 gimmers for	29	0	0	ditto

Several lots of the gimmers ſold for above 35l. each lot, one in particular for 38l. or 7l. 12s. each ſheep.

The higheſt lot of ewes was 28l or 5l. 12s. each.

The purchaſers amounted to upwards of 50, amongſt whom were ſeveral, that a few years before, were the moſt violent, and loudeſt exclaimers againſt any "change or innovation," in the eſtabliſhed breed of the country.

Breeding Sheep—of the long-woolled kind, to be ſold to graziers

graziers to fatten, is practiſed by the occupiers of ſuch farms as do not afford a ſufficiency of turnips, or ſuch as do not produce any: thoſe who are in the latter predicament, either take turnips for wintering their hogs, or put them upon good old graſs paſtures. The wethers are generally ſold in September and October, being then ſhearlings, for, from 22s. to 26s. each; and the ewes three and a half years old, from 18s. to 24s. each; in 1796, they were as high as 2l. each.

There are few or no ſheep bred in thoſe parts of the county, called Caſtle-Ward, Bedlingtonſhire, and the ſouth-eaſt corner of Morpeth Ward.

The modern maxims of breeding were introduced into this county by one of Mr Bakewell's firſt diſciples, upwards of 30 years ſince; previous to which, "*big bones*" and "*large ſize*" were looked upon as the principal criteria of excellence, and a ſacred adherence to the rule of never breeding within the canonical degree of relationſhip; but thoſe prejudices are at this period, in a great meaſure, done away; and the principal farmers of this diſtrict may now be claſſed amongſt the moſt ſcientific breeders in the kingdom, who have purſued it with an ardour and unremitting attention that have not failed of ſucceſs.*

Salving—was formerly univerſally practiſed, and it was thought the ſheep could not do well without it. In the lower diſtricts it is now almoſt totally diſuſed; and ſome of the hill farmers have laid it aſide, and find their flocks do equally well as before; and the wool ſells for a much better price than when it is ſalved; but it is of leſs weight,

* It is this knowledge of breeding, and the nice diſcrimination of ſelecting proper ſtock for grazing, added to their improved mode of cultivation, that gives them a celebrity of character, for their extenſive knowledge in rural affairs, and that has for ſome years back made this diſtrict *a School for Agriculture*, where pupils from various parts have come to be inſtructed.

as may be naturally expected, from the want of near ¾ of a pound of salve upon each fleece.

This salve is composed of 12 lb. of butter, and 4 quarts of tar, mixed well together while warm, which quantity serves 24 sheep, the number a man will salve in a day.

Milking.—It used to be a general practice through all this county to milk ewes after the lambs were weaned, for six, eight, or ten weeks; from this milk great quantities of cheese were made, and sold for about 3d. per pound. When kept to three or four years old, it is exceedingly pungent, and on that account some people prefer it to cheese of a much better quality.

To milk ewes two or three times after the lambs are weaned is a useful practice; but when continued to eight or ten weeks, it becomes very detrimental, keeps the ewes lean, and ill prepared for meeting the severities of Winter.

This custom has been long disused by the intelligent farmers in the lower districts; and we are glad to find it much laid aside by the most considerable hill farmers. The profit of milking ewes for six or eight weeks is estimated at 8d. per ewe; and it is generally agreed they are decreased in value, at least 1s. 6d. per head; of course there is a loss of about 1s. per head by milking. In one instance of milking long-woolled ewes, last Summer, there was a loss of at least 3s. per head.

Sect. 3.—*Horses.*

The best draught horses used in this county are brought from Clydesdale, in Scotland; they are in general from 15½ to 16 hands high; strong, hardy, remarkable good and true pullers; a restive horse being rarely found among them.

Those bred in the county are of various sorts, descended from stallions of different kinds, from the full blood racer,

racer, to the ſtrong, heavy, rough-legged black. From the full blood ſtallions and country mares, are bred excellent hunters, road and carriage horſes; and from the other kinds of ſtallions are bred the draught horſes, which in general, are middle ſized, active animals, well adapted to the huſbandry of the country.

We have before obſerved, that ſince the price of horſes had been ſo very high, ſeveral oxen had been uſed for the draught; but whether with propriety or advantage, will appear from

A comparative Statement between HORSES and OXEN, for the purpoſe of the Draught.

BY way of preliminary it will be neceſſary to admit as data, That a horſe which eats 70 buſhels of oats per year, will not conſume of other food ſo much as an ox that gets no corn;* but in the following eſtimate, we ſhall al-

* This is deduced from the following experiments.

Three working horſes about 15½ hands high, eat in 14 days, 96 ſtones of hay; which is for each horſe at the rate of 16 ſtones a week, with an allowance of oats, 12 gallons per week.

Mr Thompſon's of Chillingham Barns, 18 horſes in 12 days, eat 430 ſtones of hay; which is 14 ſtones per week, each horſe: allowance of oats, 16 gallons per week.

Mr Atkinſon's of Yevering, eat per week, 13 ſtones of hay, 2 buſhels of potatoes, and 16 gallons of oats.

Mr Jobſon's of Newtown, 5 years old working oxen, with a full allowance of hay, had, each ox, 6 quarts of oats per day.

In 15 days 4 oxen eat 164 ſtones 7 lb. of hay, which is after the rate for each ox, of hay 19¼ ſtones per week.
of oats 10½ gallons ditto.

Three days after, the ſame oxen were put to hay only; and in 7 days eat 79 ſtones 10 lb. or 20 ſtones each ox per week, which is only ¾ ſtone more, than when they got 10½ gallons of corn, in the ſame time. This is a ſingular circumſtance, and deſerving of further inveſtigation.

An unworked ox, 3½ years old, was put to good old meadow hay, the 29th of November, and eat 49 ſtones in 21 days; or per week, 16 ſtones 5 lb.

An idle horſe (15½ hands high) eat of the ſame hay, 20 ſtones in 10 days; or per week, 14 ſtones—had no corn.

low

low horſes to eat as much as oxen, as the difference is not yet ſufficiently aſcertained.

That the oxen are yoked at 3 years old, and are worked till ſix; and for the firſt year require 8, to do the work of 2 horſes; but after having been worked a year, and become tractable and ſtronger, 6 are equal to 2 horſes, either by being yoked three at a time, or two, and driven by the holder with cords; of courſe, the expence of a driver may be eſtimated to be ſaved for one half the year.

That the expences of a ploughman, the plough and other articles that are the ſame in both teams, need not be taken into the account.

And that oxen, to work regularly through the year, cannot work more than half a day at a time.

Expence of an ox per ann.

	£.	s.	d.
Summering,——Graſs 2 acres, at 20s. per acre	2	0	0
Wintering——on ſtraw & turnips 2 0 0			
but if on hay - - 4 0 0			
The average is* - -	3	0	0
Intereſt at 5 per cent, for price of the ox -	0	10	0
Harneſs, ſhoeing, &c. - - - -	0	15	0
	6	5	0
Deduct for the increaſed value of an ox for 1 yr.	1	0	0
gives the expence per ann. of an ox for the team	5	5	0
And the expence of 6 oxen - - -	31	10	0
To which muſt be added the expence of a			
Carried over	31	10	0

* A great portion of the ſoil of this county is improper for turnips; in thoſe diſtricts hay is given, inſtead of turnips, for which reaſon we have taken the average.

driver,

	£.	s.	d.
Brought over	31	10	0
driver for ½ a year - - -	3	10	0
Total expence of a team of 6 oxen -	35	0	0

An 8 ox team.

	£.	s.	d.
The expence of an ox per ann. being -	5	5	0
			8
That of 8 will be - - - - -	42	0	0
To which, add the expence of a driver -	8	0	0
gives the expence per ann. of an 8 ox team	50	0	0

			£.	s.	d.
Therefore the expence of a team of oxen					
	the first year, will be -		50	0	0
ditto	the second year -		35	0	0
ditto	the third year -		35	0	0
	divided by -	3	120	0	0
Gives the average expence per ann of an ox team, from 3 to 6 years old - -			40	0	0

Expence of an horse per ann.

	£.	s.	d.
Summering,——Grass 2 acres, at 20s. per acre	2	0	0
Wintering,——Straw 13 weeks, at 9d. per week	0	10	0
Hay 16 ditto, 1½ tons, at 2l. per ton. - - - -	3	0	0
Corn (for a year) 70 bushels of oats, at 2s. per bushel - - - -	7	0	0
Shoeing and harness - - - -	1	0	0
Carried over	13	10	0

Annuity

	£.	s.	d.
Brought over	13	10	0
Annuity to pay off 25l. in 16 years, the purchaſe value of the horſe at 4 years old*	2	5	0
	15	15	0
Expence of a horſe per ann. - - -	15	10	0
Ditto of a two horſe team - -	31	10	0

If a three horſe team be uſed, the account will ſtand thus:

	£.	s.	d.
The expence of an horſe per ann. being -	15	15	0
			3
That of 3 will be - - - -	47	5	0
To which, add the expence of a driver -	8	0	0
gives the expence of a 3 horſe team -	55	5	0

If the compariſon be made with the horſe team of many of the midland counties, where they uſe 5 *horſes, yoked one before another in one plough;* the account will ſtand thus:

	£.	s.	d.
The expence of one horſe per ann. being -	15	15	0
			5
Carried over	78	15	0

* This is calculated on the ſuppoſition, that a horſe bought at 4 years old, will work 16 years; and admitting his price to be 25l. then the queſtion will be, to find what annuity will pay off 25l. in 16 years, allowing compound intereſt at 5 per cent, which by the rules laid down by the writers on algebra, will be 2l. 5s. 0d.

That

	£.	s.	d.
That of 5 will be - - - -	78	15	0
To which add the expence of a man to drive	18	0	0
The expence of a team of 5 horſes will be -	96	15	0
Ditto of 3 ditto - -	55	5	0
Ditto of 2 ditto - -	31	10	0
Ditto of 8 oxen - -	50	0	0
The average expence of an ox team, from 3 to 6 years old, that will do the ſame quantity of work as 2 horſes - - - -	40	0	0

The concluſions to be drawn from the above ſtatement are ſo obvious as to need little elucidation; but we cannot help remarking, how ſtrong the force of prejudice muſt be, to continue the uſe of 5 horſes, and heavy, clumſy, unwieldy *wheel ploughs*, where a ſimple *ſwing plough*, and 2 horſes yoked double, and driven by the holder, would do the ſame quantity of work, equally well, and at one third the expence!

But before any proper concluſions can be drawn whether *ox teams* or *horſes* are the moſt eligible, it will be neceſſary to conſider, whether the quantity of land employed in ſupporting thoſe animals be uſed in the moſt profitable mode to the community, as well as the occupier.

With the latter, the firſt queſtion for conſideration is, whether 8 oxen uſed in the team, or in grazing, will pay him the moſt money?

Suppoſe 8 oxen, at *three years old*, were put to the plough, and plough 6 acres per week; which, at 3s. 4d.* per acre, is 20 ſhillings; and if they work 48 weeks in a year, then their whole earnings (after deducting 6l. for

* If to this 3s. 4d. be added 1s. 8d. the wages for the ploughman and driver, it will make 5s. the uſual price for ploughing an acre in this diſtrict.

expences

expences of harneſs, ſhoeing, &c.) will be 42l.: but if they plough only 5 *acres per week*, (which is probably nearer the truth), then their whole earnings will be only 34l.

The ſame oxen put to graze, to pay the ſame money, ſhould improve in value 5l. 5s. each, in the firſt caſe; and 4l. 5s. in the latter: but we are inclined to believe, there are few ſituations, if the cattle are of a good quick feeding kind, where they would not pay *conſiderably more*.

In reſpect to the community, the account will be nearly as follows:

From the above ſtatements, we find that an ox for ſummering and wintering, requires - 3½ acres;—
therefore a 6 ox team will require - 21 ditto
And 2 horſes for graſs and hay per ann. require - - - 7 ditto
For corn & ſtraw - - - 4 ditto
Land neceſſary for keeping 2 horſes per ann. - - - - 11 ditto

The difference is the quantity of land required for a team of oxen more than horſes. - 10 acres

Hence it appears, that a team of 6 oxen requires 10 acres more land to maintain them than a team of 2 horſes, which will do the ſame work: and of courſe, the produce which might be derived from this 10 acres, is loſt to the community: ſuppoſe it be one half in graſs, and the other half in ploughing, then we ſhall have,

5 Acres of clover, or graſs.
1⅔ Ditto of oats.
1⅔ Ditto of turnips, or fallow.
1⅔ Ditto of wheat.

It

It would then ſend to market yearly, at the loweſt computation,

$7\frac{1}{2}$ Cwt. of beef.
8 Quarters of oats.
And 5 Ditto of wheat.

From this view of the ſubject, it appears, that if oxen were univerſally uſed for the draught, in the room of horſes, there would be a conſiderable defalcation in the ſupply of the markets, both in corn and animal food.* And the loſs to the farmer would be the profit derived from the produce; which by the uſual mode of aliowing one-third for the farmer's profit, would in this caſe be about 10l.

SECT. 4.—*Swine.*

The *Berkſhire pigs*, and the large *white breed*, were formerly the moſt prevalent in this county; but the ſmall *black Chineſe breed* has in a great meaſure ſupplanted them, eſpecially upon the large farms; and theſe are likely to give way to a ſmall white breed lately introduced, remarkably quiet, inoffenſive animals; on which account they are principally preferred to the Chineſe breed.

* In this county it is eſtimated that there are capable of cultivation, 800000 acres; and allowing $\frac{1}{3}$ of this to be in tillage, that is 266666 acres; and that every 50 acres in tillage will require a team to manage it properly; of courſe there will be at leaſt 5333 teams, but for the ſake of round numbers call it 5000 teams.

			£.
Then 5000 × $7\frac{1}{2}$ cwts. beef	= 37500 cwts. beef at 30s.		56250
5000 × 8 qrs. oats	= 40000 qrs. oats at 16s.		32000
5000 × 5 qrs. wheat	= 25000 qrs. wheat at 40s.		50000
		£.	138250

The value in proviſions that would be loſt in this county yearly, if horſe teams were aboliſhed, and oxen uſed in their ſtead.

SECT.

Sect. 5.—*Rabbits.*

Rabbits are found in conſiderable numbers among the ſand hills along the coaſt, and are probably the moſt eligible ſtock for ſuch ſituations, having been ſold of late years for 2s. per couple.

Sect. 4.—*Goats.*

Goats—are kept in ſmall numbers, on many parts of the Cheviot hills, not ſo much as an object of profit, but the ſhepherds aſſert, the ſheep flocks are healthier where a few goats depaſture. This probably may be the caſe, as it is well known, that goats eat ſome plants with impunity, that are deadly poiſon to other kinds of domeſtic animals.

The chief profit made of theſe goats, is from their milk being ſold to invalids, who come to Wooler in the Summer ſeaſon.

Sect. 7.—*Poultry.*

Poultry,—in a diſtrict like this, where they are ſold ſo low, are the moſt unprofitable ſtock kept upon a farm; the value of the corn conſumed by them, being generally double to what they are ſold for; and the labouring people are ſo well convinced of their inutility, that they conſtantly and univerſally ſell them, knowing from experience, that if the value received for them be laid out in either beef or mutton, it will be much more ſerviceable; and this piece of economy is ſo well underſtood, that we believe there is ſcarce an inſtance of a labouring perſon ever making uſe of poultry for his own family; they are always conſidered as articles *purpoſely bred to pamper luxury.*

CHAPTER XIV.

RURAL ECONOMY.

SECT. I.—*Labour, &c.*

THROUGH the greateſt part of this county, and eſpecially upon the large farms, there are very few ſervants kept in the houſe; ſeldom more than two men and two maids: but the ploughman, carters, barnmen, ſhepherds, &c. have each a houſe and garden or yard to themſelves, and are generally married. The conditions of ſervitude for one year are:

		£.	s.	d.
2	Cows kept, or money in lieu at 3l. each,	6	0	0
3	Buſhels of wheat - at 5s. per buſh.	0	15	0
33	Ditto of oats - - at 1s. 8d ditto -	2	15	0
12	Ditto of barley - at 2s 6d. ditto -	1	10	0
12	Ditto of rye - - at 3s 4d. ditto -	2	0	0
10	Ditto of peaſe - - at 3s 6d. ditto -	1	15	0
24	lb of caſt wool - at 6d. per lb.	0	12	0
1	Buſhel of potatoes planted, a pig tethered, keeping hens, &c.	2	4	0
	Carriage of coals, ſix cart loads, - - -	1	0	0
	In all	18	11	0

They are bound to find a woman labourer to work for the following wages: for harveſting 6d. per day, for hoeing

ing turnips,* hay-making, ſcaling, weeding corn, &c. uſed to be 4d. per day, but was laſt year raiſed to 6d. per day.

In addition to the above conditions, the ſhepherd generally has as many ſheep kept as are worth four or five pounds a year; but, if he has any under-ſhepherd to keep to aſſiſt him, the number is increaſed accordingly. In the hilly diſtricts, their ſheep ſometimes amount to hundreds, beſides ſix or eight neat cattle.

An overſeer or head ſervant has, in addition to the above, as much money as to make his place worth from 20l. to 30l. a year.

Threſhing is moſtly done by the piece; a twenty-fifth part of the corn threſhed, being the general cuſtom, if the ſtraw be taken away unfolded; but if the threſher folds the ſtraw, he has a twenty-firſt part, and finds a woman to dreſs the corn, and to work at all other work, for the ſame wages as the others; he has ſtraw for his cow in Winter, but pays for her Summer's graſs.

The yearly wages of houſe ſervants are, for men, from 8l. to 12l.; for women, 3l. to 5l.

The wages of day labourers, without victuals or any allowance of beer, are,

	s.	d.		s.	d.
For Men, in Summer, - -	1	2	to	1	4†
Winter - - - -	1	0	to	1	2
Harveſt - - -	1	6	to	1	9
Women, ditto - - - -	1	0	to	1	3

* In this branch of labour, the women in the northern parts of the county excel: the writer of this note has at different times viſited *Norfolk*, *Suffolk*, and all the principal turnip diſtricts in the iſland; but never ſaw turnips *ſo well hoed*, and *compleatly cleaned*, or kept in ſuch *garden-like culture*, as on theſe borders.

† In 1796, the wages got up to 2s. and in harveſt to 2s. 6d, for men; and for women, to 1s. 9d.

for

	s.	d.		s.	d.
—— for other work - -	0	6	to	0	8
Maſons - - - - - -	1	8	to	2	0
Carpenters - - - - - -	1	6	to	2	0

Upon ſome of the large farms, a carpenter and ſmith are hired by the year.

The hours of working are from ſix in the morning to ſix in the evening, when the length of day will permit, with the following intervals of reſt:

	H.	M.
At breakfaſt - -	0	30
Ten o'clock - -	0	30
Dinner - - -	1	30
Four o'clock - -	0	30
In all	3	00 hours of reſt, and nine of labour.

SECT 2.—*Proviſion.*

The price of grain in this county fluctuates very much: betwixt the markets of Newcaſtle and Hexham, and thoſe of Alnwick, Berwick, and Wooler, there is always a conſiderable difference;* the prices in the northern parts being in general the loweſt, or amongſt the loweſt, in the kingdom, owing to the produce being ſo much greater than the home conſumption. This ſurplus affords large quantities to be yearly exported from Berwick, Alemouth, and other places along the northern part of the coaſt.

The average prices of grain at Berwick, in 1792, were,

	s.	d.	
Wheat - -	5	0	per buſhel.
Rye - -	3	4	ditto

* Wheat and barley, in Newcaſtle market, are moſtly ſixpence a buſhel higher; and in Hexham, nine-pence.

	s.	d.	
Barley - -	2	6	ditto
Oats - -	2	2	ditto
Peaſe - -	3	6	ditto

Fat ſtock being eaſily driven from one place to another, keeps the price of butcher's meat more upon an equality in all the markets of the county.

The average price of butcher's meat is from threepence-halfpenny to fourpence-halfpenny per pound; but in May and June it generally gets to fivepence, and the two laſt years has been ſixpence and ſevenpence.

	s.	d.	
Butter - -	0	6	a pound of 16 ounces.
Skim-milk and ewe cheeſe	0	3½	ditto
Fat gooſe - -	2	0	
Turkey - - -	3	0	
Duck - - -	0	8	
Chicken - - -	0	6	s. d.
Eggs, per dozen - -	0	3	to 0 6
Potatoes, per buſh. - -	1	0	to 1 6

SECT. 3.—*Fuel.*

Upon the edges of the moors, towards the weſtern parts of the county, a few peats are burnt; but in every other part, we believe, coals are univerſally uſed.

The quantity conſumed by a poor family, is from 5 to 7 cart loads a year.

CHAPTER XV.

POLITICAL ECONOMY.

SECT. I.—*Roads.*

THE turnpike roads are moſtly in good order; thoſe that have an opportunity of getting whinſtone, or limeſtone, are the beſt; but they certainly would be better if the ſurveyors would order the ſtones to be broken ſmaller and the roads made wider. One great objection to ſome of theſe roads is the many ſteep banks they are diſgraced with, ſome of the worſt might have been avoided; but it ſeems the original ſetters-out of theſe roads had a predilection for climbing and deſcending ſteep banks: this is notorious on both the roads upon Rimſide-Moor, without even the plea of being nearer; as the leveller road would have been nearer, travelled in much leſs time, and with far leſs fatigue. Some ſimilar caſes appear on the poſt road, which we hope will be remedied in the next application to Parliament for a new act.

The townſhip roads are in ſome places good, but by far the greateſt part are deſerving of a different appellation; the cauſe of this deficiency is in moſt caſes to be attributed to the neglect and manner of performing the ſtatute-work.

One mode of remedying this neglect, would be to appoint a ſurveyor, with a ſmall ſalary, who ſhould be empowered to collect the compoſition due for ſtatute-work,

and employ this money for repairing the road where *moſt neceſſary* for the *public in general*, without having regard to the convenience or influence of individuals.

A book ſhould be kept by the ſurveyor, and yearly examined, ſettled, and ſigned by a committee of inhabitants, before it went to the magiſtrates. We know from experience, that by this means the road would be much better made, and in near double the quantity: for when a farmer ſends his cart to perform ſtatute-duty, it ſeldom carries more than half a load, and the ſervants practiſe every manœuvre to put off time, and do as little as poſſible, which would not be the caſe with hired carts, as every inhabitant would be ready to report any mal-practices.

SECT. 2—*Canals.*

In this county there are no Canals; and notwithſtanding their manifeſt utility to a diſtrict like this, where ſuch immenſe quantities of heavy articles are to be conveyed; yet we believe, no attempt was ever made, or even ſo much as a canal projected, in any part of the county before 1792, when ſome gentlemen on Tweedſide had it in contemplation to make a navigable canal, from the collieries and lime works near Berwick, to Kelſo in Scotland, and from thence up the Tweed and Tiviot; but a ſurvey being made by Mr Whitworth, it was dropt, probably on account of the great expence.

The next public notice we can trace, was given by Mr Dodd, in 1794, of a canal from Newcaſtle to Carliſle, or Maryport, in Cumberland, to join the eaſt and weſt ſeas. This was to paſs on the *ſouth ſide* of Tyne: but Mr Chapman propoſed a line to paſs on the *north ſide* of Tyne, the peculiarity of which was, that it ſhould come from Haydon-Bridge, to the *upper parts* of Newcaſtle, upon *one level without a lock*, and the goods conveyed from thence

to

to the river, either by a kind of ſtair-caſe of locks, or in waggons on an inclined plane. By this propoſal, the principal ſupporters of the grand canal were divided into two parties; the conſequence of which was, that the money to compleat the great deſign of uniting the two ſeas, could not be raiſed, and of courſe it was given up; one on the north ſide, propoſed *to ſtop* at *Haydon-Bridge*, and another on the ſouth ſide at *Hexham*. The ſubſcriptions for defraying the expence of the north line, we were informed were filled; and application was made to Parliament in 1797, to obtain an Act for making a canal on the north ſide, but it met with ſo ſtrong an oppoſition from the land owners, that it was thought proper to withdraw it.

The ſubſcribers for a canal on the ſouth of the river ſtill perſevere in their endeavours to accompliſh the line to Hexham, or Haydon-Bridge; and we have not heard that any oppoſition to the meaſure is intended by the proprietors of lands, through which it is to paſs.

SECT. 3.—*Fairs.*

The principal Fairs in this County are:

MAY

4th.——*Wooler*—for a few cattle, ſheep, horſes, hiring ſervants, &c.

10th.——*Allendale*—for cattle.

12th.——*Alnwick.*—A large ſhow of both fat and lean cattle.

14th.——*Haltwhiſtle*—for cattle, chiefly cows for grazing.

JUNE.

Tueſday before Whitſuntide. } *Belford.*—A few cattle and ſheep.

Wedneſday before Whitſunday. } *Morpeth*—for fat cattle, ſheep, &c.

Whitſun Eve —*Stagſhaw-Bank*, (near Corbridge)——fo cattle, ſheep, horſes, &c.

Whitſun-Tueſday—*Whitſun Bank*, (near Wooler.)——A large fair for cattle, horſes, and great numbers of ſheep, principally long-woolled hogs, and ewes and lambs; and a hiring for ſervants.

Friday in Trinity week. } *Berwick*—a few lean and fat cattle.

JULY

4th ——*Stagſhaw Bank*, (near Corbridge.)—This is one of the largeſt ſheep fairs in the north of England;* principally of the black-faced heath ſheep, which moſtly come from the ſouth weſt of Scotland: there are alſo great numbers of cattle, horſes, and ſwine.

Wedneſday before the 22d. } *Morpeth*—for fat cattle, ſheep, &c.

Laſt Monday,——*Alnwick*,—fat and lean cattle.

AUGUST

5th.——*Hexham*.—Cattle, horſes and ſheep, chiefly lambs, both of the Cheviot and heath kind; from the vicinity of *Langholm*, (in Scotland.)

12th.——*Newcaſtle*—holds 9 days for horſes; and for fat and lean cattle, on the laſt or 12th.

23d.——*Belford*—A few cattle and ſheep.

24th.——*Whittingham*,—for fat and lean cattle, and a few horſes. The beſt ſhow of fat cattle of any fair in the county.†

26th.——*Elſdon*,—a few cattle.

SEPTEMBER.

Saturday after the 15th } *Bellingham*,—a few cattle, chiefly ſmall cows.

* Upwards of a hundred thouſand ſheep are ſhown at this fair.

† This fair uſed to be held on the 4th of September, but was altered a few years ſince.

19th.

19th.——*Harbottle*,—for a few cattle, moſtly ſteers and heifers.

27th ——*St. Ninians*, (near Wooler),—a very large ſhow of ſheep and cattle, with a few horſes.—The ſheep are moſtly draft or caſt ewes, and ſhearing wethers.

OCTOBER.

Firſt Tueſday—*Alnwick*—for fat and lean cattle.

2d.——*Rothbury*,—for cattle, moſtly for ſteers and heifers.

17th.——*Wooler*,—for very great numbers of ſheep, of the Cheviot and long-woolled kinds: a few cattle and horſes.

29th.——*Newcaſtle*,—for horſes, cattle, and ſwine.

This is one of the largeſt fairs in the north of England. The horſe fair begins nine or ten days before the 29th, and continues every day in the town, where great numbers of remarkable fine horſes, for the field, the road, and the carriage, are ſold daily. The abundant choice of every kind, brings great numbers of dealers from London and various other diſtant places: its celebrity has increaſed very much of late years, and we believe it may be juſtly claſſed amongſt the firſt horſe fairs in the kingdom.

The ſhow of cattle is alſo very great, not only for the breed of the country, but alſo for large droves of kyloes, (Scotch cattle) which are purpoſely driven from the Highlands, to be ſold at this fair.—The fair on the 29th, is held on the Town-moor, and is called the *Cow-hill fair*.

NOVEMBER.

1ſt.——*Rothbury*—for young cattle.

8th.——*Hexham*.—Cattle.

14th.——*Allendale*.—Cattle, moſtly ſmall cows.

22d.——*Newcaſtle*.—Fat cattle, chiefly cows: this fair is held in the town, and is called the "*Stones fair*."

22d.——*Haltwhiſtle*.—A few fat cows, and lean cattle for wintering.

SECT.

Sect. 4.—*Markets.*

Tuesday.—*Hexham*,—for corn and other provisions.

Ditto—*Belford*.—The chief support of this market, is the sale of corn, great quantities of which are sold by sample, for exportation.

Ditto.—*Newcastle*,—a small market for provisions of various kinds.

Wednesday.—*Morpeth*,—for corn, butcher's meat, butter, &c. and for fat cattle and sheep: of the former on an average not less than 80 weekly; and of sheep, and lambs 1600;* which are bought up for the consumption of Newcastle, Shields, Sunderland,† &c.

Thursday.—*Wooler*,—principally for corn, considerable quantities of which are sold by sample, mostly for exportation.

Friday.—*Rothbury*.—This market is little more than nominal, there being only one butcher who sells a few carcases, and which constitutes nearly the whole of the market.

Ditto.—*Allendale*,—for corn, butcher's meat, and considerable quantities of potatoes and garden stuff from Hexham; all for the supply of the mining district to the westward.

* Mr Thomas Spours, who has attended this market for upwards of 40 years, says, that 30 years since, there was not half this number; and he remembers, that for several weeks in the Winter, very few sheep or cattle, if any, were exhibited.

† It may be proper to remark, that 30 or 40 years since, the butchers of those places were obliged to purchase a great deal of fat stock, in the neighbourhood of Darlington, and other parts of the county of Durham; the produce of the north not being equal to their demands: but the scales are now turned, the northern farmers being able, not only to supply the increased population of those places, but to send great numbers of both fat cattle and sheep, every year, to Leeds, Wakefield, Manchester, &c.

Saturday

Saturday.—*Newcaſtle.*—A very large market, and well ſupplied with corn, butcher's meat, fiſh, poultry, butter, &c.

Dr Hutton, in his Plan of Newcaſtle, in 1772, ſtates the annual conſumption of this place to be 5000 catttle, 10000 calves, and 147000 ſheep and lambs.

Ditto.—*Alnwick*,—a large market for corn and proviſions of various kinds.

Ditto.—*Berwick*,—for corn, butcher's meat, and other articles of proviſions; at both this market and Alnwick, conſiderable quantities of corn are ſold by ſample for exportation.

SECT. 5.—*Commerce.*

The commerce of this county is derived principally from the coal trade: the ſhips belonging to the port of Newcaſtle, in 1772, are ſtated by Mr Pennant, to be 3948, their tonnage, 758214 —The principal exports are coals, lead, lead ſhot, wrought iron, grindſtones, pottery, glaſs, &c.

The exports from Berwick, are chiefly corn, flour, oatmeal, ſhilled barley, potatoes, fiſh, eggs, wool, &c. coaſtways; which has increaſed very much of late years: the foreign trade is chiefly to the north of Europe.

The number of veſſels belonging to this port is about 40, making upwards of 3000 tons: the receipts of the cuſtoms are, upon an average, about 3000l. per ann.

The port of Alemouth alſo employs a few veſſels in exporting corn, flour, &c.

And a few veſſels are employed in the Summer ſeaſon, in carrying lime, from the neighbourhood of Bambro', to different parts of Scotland.

SECT. 6—*Manufactures.*

This county is not diſtinguiſhed by any ſtaple manufactures;

factures; the principal are derived from, or connected with the coal trade and mines; as ſhip-building, roperies, forges, founderies, copperas, coal tar, ſoda, or marine alkali, white lead, potteries, glaſs works, &c.

Hexham has been long famed for its manufacture of gloves, which employs about 300 hands.

To eſtabliſh *manufactures of Woollens*, two or three eſſays have been lately made at Alnwick, Mitford, and Acklington; and a cotton Mill has been lately erected at Nether-Wittton; all of which, from preſent appearances, we hope are doing well.

There is one ſpecies of manufacture carried on in this diſtrict, with an agricultural production of ſmall value, viz. that of ſtraw, which is not only made uſe of as a covering for the heads of the wives and daughters of the humble cottager, but has alſo lately been converted into ornaments that might accompany the richeſt and moſt ſplendid dreſs, which the palace or the drawing-room exhibits; and, for the honour of the plough, has not only been converted into buttons for the men, but alſo into rings and ear-rings for the ladies.

Agriculture is certainly benefited by manufactures in the conſumption of its produce, by the great number of people employed: but we do not find any new modes of practice or improvements in agriculture, introduced in their vicinity, or reſulting from the exertions of thoſe connected with them.

SECT. 7—*Poor.*

We do not find any mode of managing the poor in this county, different from that generally uſed in other diſtricts.

In thoſe townſhips where they are collected and maintained in poor houſes, the rates are eaſier, than where they are relieved at their own houſes. We are inclined to believe

lieve that work-houſes, under proper regulations, would not only conſiderably leſſen the rates, but the poor might be ſupported more comfortably.

SECT. 7.—*Population.*

Of the population, we could not collect ſufficient data, from whence even a tolerable gueſs could be made.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT.

IN our journey through this county, wherever we enquired what was the chief obſtacle to improvement? the anſwer was univerſally, "*Tithes!*"—An impoſition ſo pregnant with miſchief, and ſo often the ſource of violent diſſenſions betwixt the clergy and their pariſhioners, ſhould if poſſible be removed, either by purchaſe, commutation, or any other means, by which a *fair equivalent* ſhall be rendered for them: for ſo long as they exiſt, it is impoſſible to expect that agricultural improvements will be carried on to the extent of which they are capable. In our Survey of Cumberland, we have ſhewn the great uncertainty of employing money in ſpeculations of improving land; and that the tithes, in ſuch caſes, are a large portion of a man's capital in trade, and not a tenth of the natural produce of the earth, which ſome have thought was all that was intended by the original impoſers, who no doubt meant them for a good purpoſe; but if through a ſucceſſion of ages, a change of manners, of ſentiments, and

and of cultivation, has taken place, and the ill effects of tithes be univerſally felt, and acknowledged to leſſen the quantity of food obtainable from a conſiderable portion of this kingdom, a change in the mode of paying tithes would alſo be deſirable; for the proprietors of ſuch lands are not only loſers, but the community at large. It is ſurprizing that a grievance of ſuch magnitude ſhould have ſo long evaded the reviſion and regulation of the legiſlature; and that it ſhould be always ſo ſtrenuouſly oppoſed by the clergy, there being no wiſh to take any thing from them, but to render a *fair equivalent* for what is their due; and which there would be little difficulty in doing, notwithſtanding the many objections that have been invented, to perplex this moſt intereſting queſtion.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—*Agricultural Societies.*

THERE never was any Agricultural Society in this county; and if any ever had exiſted, it probably would have been ſoon diſſolved, if we may judge from the experiments that have been made in ſome neighbouring diſtricts, where we find, that after a few years continuance, they have been given up; but whether from a radical defect in the inſtitutions, the non-attendance, and indifference of members, or the *injudicious diſtribution of prizes*, we are not prepared to ſay; but think that public farms are much more likely to promote improvements in the Science of Agriculture.

SECT.

SECT. 2.—*Weights and Meaſures.*

Weights and meaſures—are in a ſad ſtate of confuſion; a pound, a ſtone, a buſhel, a boll, are rarely the ſame in different markets, and frequently vary in the ſame market for different articles.

At Newcaſtle.

4 Beatments	- -	1 Peck
2 Pecks	- - -	1 Kenning
2 Kennings	- -	1 Buſhel, *Wincheſter.*
2 Buſhels	- -	1 Boll.

At Hexham.

For Wheat, Rye, and Peaſe.

4 Quarts	-	1 Forpit
4 Forpits	-	1 Peck
4 Pecks	-	1 Buſhel
2 Buſhels	-	1 Boll, = 4 *Wincheſter buſhels.*

For Oats and Barley.

4 Quarts	-	1 Forpit
5 Forpits	-	1 Peck
4 Pecks	-	1 Buſhel
2 Buſhels	-	1 Boll, = 5 *buſhels, Wincheſter.*

At Alnwick.

3 Quarts	-	1 Forpit
4 Forpits	-	1 Peck
3 Pecks	-	1 Buſhel, *Wincheſter.*
2 Buſhels	-	1 Boll of Wheat.
6 Buſhels	-	1 Boll of Barley or Oats.

At Wooler.

4 Quarts	-	1 Forpit
3 Forpits	-	1 Peck
3 Pecks	-	1 Buſhel
6 Buſhels	-	1 Boll

A ſtone of wool in ſome parts is 24 lb. in others 18 lb.; and a ſtone of every other article is 14 lb.

The Board of Agriculture could not do the public a greater ſervice, than by bringing forward a regulation of weights and meaſures. One weight, and one meaſure, derived from the ſame root, and increaſing or decreaſing in a ten fold ratio, would introduce ſuch ſimplicity, eaſe, and perſpicuity, into all tranſactions of buſineſs, (where calculations are neceſſary) as would prevent the numberleſs miſtakes and errors which are daily happening.

Preparations for remedying this great inconvenience, have been made at different times; and we believe there are ſufficient materials for perfecting the meaſure, whenever it is thought proper to bring it forward.

SECT. 3.—*Vermin.*

Moles and rats—are two ſpecies of vermin which we think capable of being in a great meaſure extirpated, or ſo far reduced, as to render their depredations of little conſequence. In Cumberland, a mole is rarely to be ſeen: this is in conſequence of every occupier of land contributing his due proportion towards their deſtruction. A ſimilar plan eſtabliſhed in this county for deſtroying vermin, we believe, would readily be complied with by every good farmer; and the bad ones ought not to have it in their power to injure their more induſtrious neighbours.

Crows—of late years, have become a very great nuiſance, not only for rooting up wheat, and other grain, in a ſprouting ſtate; but clover and potatoes, corn ſtacks, and young plantations, are greatly injured by them. Laſt Spring, a collection of ſixpence a plough was made by a few farmers in Glendale Ward, for pulling down their neſts. Many thouſands were deſtroyed by this means; and we hope the practice will be continued until they are found leſs pernicious.

Foxes.

Foxes—are very numerous, and very deſtructive to young lambs, in a diſtrict like this, where ſo many ſheep are bred; but while they are ſo anxiouſly preſerved for the chace, we deſpair of ſeeing any regulations take place for reducing the numbers of this miſchievous animal.

Dogs—in every place are ſwarming: two thirds of them at leaſt are kept by people who have no manner of uſe for them; and are conſtantly complaining of their inability to obtain food for their families. It would be doing theſe people an act of juſtice, to exempt them from doing ſtatute duty on the high-ways, on condition they did not keep a dog; and to ſupply the deficiency by laying a tax upon dogs, which tax ſhould be applied towards repairing the roads.*

CONCLUSION.

Review of ſome particular parts.

IN taking a review of the foregoing report, we find, that the minerals are of great importance to this county. In reſpect to the coals, it appears, that they are not inexhauſtible, and in two or three centuries will probably be ſo far wrought out, that the metropolis will have to be ſupplied from other diſtricts with this neceſſary article, of a very inferior quality, and at a much higher price.

The moſt ſtriking parts in a view of the Agriculture, are

* Since the firſt edition of this report, the Legiſlature have thought proper to lay a tax upon a certain deſcription of dogs, but have exempted the only ones, which are a nuiſance to the community.

the great extent of farms: leaſes for 21 years, and the opulence, intelligence, and enterpriſing ſpirit of the farmers: but the moſt prominent feature, is keeping a due balance betwixt the arable and graſs lands, ſo as always to have a large breeding live ſtock, eſpecially of ſheep.—Various ſyſtems of huſbandry have been tried, and the boaſted one of turnips, barley, clover, and wheat, has been purſued till the crops have evidently declined, particularly the turnips and clover; and the only means of reſtoring ſuch lands, has been by adopting the ſyſtem of three years arable, and three years graſs, *depaſtured with ſheep*, and a ſmall proportion of cattle: by this mode, nature has time to prepare a ſufficient lea-clod, which being turned up for the turnip fallow, will enſure a vigorous crop of turnips, as it is well known they always flouriſh upon freſh land, or where they find the remains of a lea-clod to vegetate in. It is from this circumſtance, and the peculiar and excellent mode of cultivating them, that ſuch great crops are produced, with not more than 10 *or* 12 *cart loads* of dung per acre: crops that are ſeldom worth leſs than 4, 5, or 6l. per acre, for the purpoſes of feeding cattle and ſheep, have in ſome inſtances been ſold for 7 and 8l. per acre. This mode of cultivating turnips in drills, is alſo of great importance, being much ſuperior to the broad-caſt culture, not only for the turnip crop, but for every other crop that ſucceeds them.

The proportion betwixt the quantities in arable and graſs, varies according to the quality of the ſoil, and other circumſtances; but in moſt ſituations it is uſual to keep a certain portion of the beſt and richeſt old grazing lands, conſtantly in graſs, as a "corps de reſerve," in caſe the artificial graſſes fail; and on ſtrong clayey ſoils, for depaſturing a portion of the ſtore flock upon in winter; for this purpoſe, it is neceſſary upon ſuch ſoils, to have a much larger portion of old graſs land, than upon dry loams; and

and which is generally eaten lightly in the latter part of Summer, that there may be a good aftermath, againſt the time the artificial graſſes fail.

It is this union of ſtock and tillage, and purſuing the ſyſtem mentioned in page 64, that enables the farmers to pay ſuch high rents; and which keeps the land always in a *due ſtate of fertility*, to produce the moſt profitable crops;* and at the ſame time is managed and kept clear of weeds at the leaſt expence. The portion that is kept in graſs for three years, breeds and fattens ſuch a number of ſheep, as leave a conſiderable profit, probably equal, if not more than the arable crops: the yearly profits of a ſheep, being eſtimated at not leſs than from 20 to 30s. 6 or 8 of which, an acre of clover will fatten, and an acre of turnips about double the number.

By this ſyſtem are obtained the principal advantages of folding, without any of its inconveniences; for if on an average

The 1ſt year's clover & graſs carry	7 ſheep	per acre for 20 weeks
2d. ditto - - -	5 ditto	20 ditto
3d. ditto - - -	3 ditto	20 ditto
and the turnips - -	12 ditto	20 ditto
that is - - -	27 ſheep	per acre, for 20 weeks,

which is after the rate of 540 ſheep per acre for one week *once in ſix years*; at the ſame time that the ſheep are leaving, on an average, a profit of 25 ſhillings a year each.

* There is a certain ſtate of fertility neceſſary for producing maximum crops of grain; land may be too rich as well as too poor, for growing corn: we have frequently ſeen crops of wheat rendered of little or no value, by the injudicious application of a few cart loads of manure per acre more than was neceſſary; upon lands made too rich, corn is very apt to lodge; which not only injures the crop of grain, but entirely deſtroys the clover and artificial graſſes ſown along with it.

By this means, and the lime and manure laid on the fallow turnips, or drilled beans: the lands are kept in the higheſt ſtate of fertility, for producing all kinds of grain and green crops; and the profits from the ſheep, we preſume, are much greater, than could be obtained from the "*folding-breeds;*" by the mode of folding practiſed in Norfolk, and ſome other parts of the kingdom.

If our farms were ſtocked with thoſe breeds of ſheep, ſo much extolled for their folding properties, and managed under the folding ſyſtem, we are clearly of opinion, (from having examined the various breeds,) that a very great diminution of rental would take place in a few years. But when the Northumbrian farmers are informed that the profits of a Norfolk ſheep in "lamb, wool, and folding, are only from 10 to 13 ſhillings per year,"* we need not be apprehenſive that they will adopt this practice, the remnant of a barbarous age; when the country was, for the moſt part, in open townfields with appendant common; but which, we hope, will give way to a more enlightened ſyſtem; though this prejudice for Folding-ſheep, like many others, will probably require a ſeries of years totally to extirpate it: the misfortune is, that thoſe who know the leaſt about ſtock, are generally the moſt bigotted for retaining the original breeds of the country; and the loudeſt to raiſe a clamour, againſt innovation and attempts at improvement.

It will be proper to obſerve, that the ſheep ſtock of this diſtrict has been ſo much improved within the laſt 30 years, that they can now be ſold fatter at 15 months old, than they uſed to be at more than double that age; yet we find that the ſame childiſh arguments were uſed at that time, againſt changing the "eſtabliſhed breed of the country," as are uſed by ſome people at this day, in favour of the worſt breed of ſheep in the kingdom.

* Suffolk report, by A. Young, Eſq.

This

This improvement in the ſheep ſtock, has been accompliſhed by the practice of hiring tups, at no inconſiderable prices; and which is now become ſo prevalent, and ſo many competitors have entered the liſts, that we hope the ſpirit of emulation will not ſlacken, and that we ſhall ſee additional improvements every year.

Having thus taken a ſhort review of the moſt ſtriking features of the agricultural practice of this diſtrict, we ſhall next proceed to offer a few hints on the

Means of Improvement.

To thoſe few who practiſe the ſyſtem of taking two white crops to a fallow, and of continuing their land in tillage for nine, twelve, or more years, and of ſowing it up with common hay-ſeeds, white clover, &c. and letting it continue as many years in graſs, as it continued in tillage; we would recommend the ſyſtem in the article *Rotation of crops*, (page 64.)

Of drilling beans and peaſe;—we have before expreſſed our ſurpriſe, that ſo excellent a practice ſhould be neglected in all that extenſive diſtrict along the ſea coaſt, where they are ſo much cultivated; we hope that the good ſenſe and enterpriſing ſpirit of the wealthy farmers of this diſtrict will no longer be ſwayed by old cuſtoms, but will be ready to make a fair experiment, of a ſyſtem which has been practiſed on ſimilar ſoils with ſucceſs, and may, in all probability, be equally beneficial on theirs. The difference betwixt a naked fallow, and a crop of beans, is too ſtriking to need any elucidation.

Watered Meadows.—There are many parts of this county capable of deriving great benefits from this practice, eſpecially where the waters are unmixed with vitriolic impurities, derived from their connection with coal-mines, or ſtrata of aluminous earth. We have alſo our ſuſ-

picions of ſuch waters as are ſtrongly tinctured by infuſions of peat-moſs.

Draining—is alſo another operation from which great advantages are to reſult; but they ſhould be *hollow drains*, executed with judgment, and well ſecured: and not *ſurface drains*, a foot wide, and ſix or eight inches deep; ſuch are mere *temporary reliefs* to a tenant, but no *permanent improvement*.

In the live ſtock of this county, there is certainly great improvement to be made, and like many other branches of ſcience, the more we inveſtigate the ſubject, the more we are convinced of its unlimited improvements: but improvements of this kind are not ſo eaſily ſpread as thoſe of cultivation. If a farmer ſees any modes of practice more beneficial than thoſe he knew before, he can readily adopt them; or if he diſcovers and ſelects a new variety of any ſpecies of grain, more productive and more valuable than any hitherto known, it multiplies ſo faſt, that it is readily diſſeminated; but *improved breeds of ſtock* are not ſo readily diffuſed; they are much ſlower in their propagation, and much more eaſily contaminated, and are only to be preſerved by *attention* and *judgment*: when *theſe* become general, we may hope that improved breeds of ſtock will prevail over the whole county; this period is probably more diſtant than a true patriot would wiſh, but in the mean time we hope, that thoſe who are already poſſeſſed of improved breeds of ſtock, will not ſlacken in their purſuits; that by their example, the knowledge and practice of breeding may, by degrees, be better underſtood, and a ſpirit of emulation more generally diffuſed. When we conſider and reflect how ſlow that moſt valuable breed of ſheep (now beſt known by the appellation of the *Diſhley breed*) has ſpread, and how very ſmall a part of this iſland they ſtill cover, one would be almoſt led to think that the breeders were not bleſſed with the ſenſes of ſeeing and feeling.

feeling.—Mr Bakewell has been employed above 40 years in the important taſk of improving this breed of ſheep, to a degree of perfection unknown at any former period; yet it is a very few years ſince many of his near neighbours purſued a very different, and leſs lucrative ſpecies. To this day, we are pretty well informed, that more than half the large fertile county of Lincoln continue to breed a ſlow feeding, unprofitable kind, though adjoining the county of Leiceſter: which is the more to be regretted, becauſe that county certainly produces more ſheep than any other in the iſland, and perhaps we do not hazard too much if we aſſert it as our opinion, that it ſends more mutton to market than any two counties in the kingdom. However, we flatter ourſelves, that the labours of the Board of Agriculture will have a happy tendency towards opening men's eyes, and convincing them of the propriety of not only cultivating the ground in a more maſterly manner, but of ſtocking their paſtures with the moſt profitable animals.

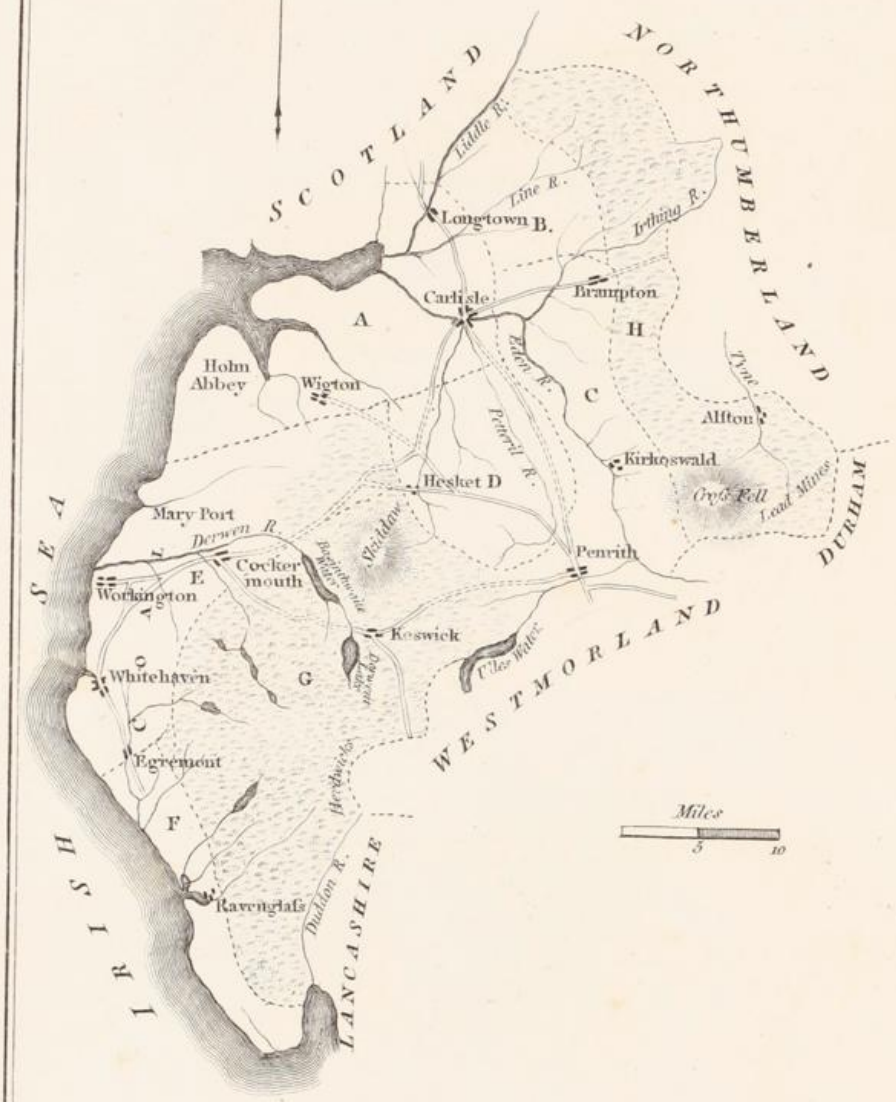
Public Farms—in every county, conducted by proper perſons, would tend more towards forwarding the perfection of Agriculture in all its branches, than any other meaſure that has ever been ſuggeſted; and as the gentlemen of large landed property would be the moſt intereſted in the reſults of ſuch an inſtitution, they certainly ought to be the guardians and ſupporters of it. The principal expence would be at its firſt inſtitution; when once got into a proper ſyſtem, it would require little, if any further aid.

If eſtates of 500l. a year, and upwards, were only to contribute 10l. per thouſand, yearly rent, it would, in this county, raiſe a ſum ſufficient for ſetting forward the undertaking. We ſuppoſe the farms to contain from 700 to 1000 acres, of various ſorts of land, ſome mountain paſtures, and an opportunity of converting a part of it into

watered meadows. We know ſituations of this ſort that might be rented for five or ſix hundred pounds a-year.

A farm of this kind would not only be a ſchool, where youth might be inſtructed in agriculture; but even experienced farmers might often viſit it with advantage, to learn the reſults of new experiments, and adopt thoſe that promiſed to be uſeful —It would be eaſy to enlarge on this ſubject, and ſuggeſt many uſeful appendants to ſuch an inſtitution, ſhould the gentlemen of landed property ever think of carrying a ſcheme of this kind into execution.

CUMBERLAND.



A.... *mostly a fertile clayey loam, with patches of turnip soil; no Coal nor Lime.*

B.... *moist Loam, no Coal, nor Lime.*

C.... *dry fertile Loam; no Coal. Limestone, on the east side & S.W. Corner.*

D.... *Soil various; Limestone about* D. *and to the westward.*

E.... *Dº in many places a light dry Loam; Coal & Lime in abundance.*

F.... *Dº a great portion of dry loam, no Coal nor Lime.*

G.... *mountainous rocky district, interspersed with beautiful romantic fertile Vales; soil mostly dry: no Coal nor Lime.*

H.... *Heathy Mountains. Soil mossy. Coal Lime, and Lead-mines.*

J.Bailey del. *Neale sc.*

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

CUMBERLAND,

WITH OBSERVATIONS

FOR THE MEANS OF ITS IMPROVEMENT;

Drawn up for the Conſideration of the

BOARD OF AGRICULTURE

AND

INTERNAL IMPROVEMENT.

BY

J. BAILEY AND G. CULLEY.

" Here ſtupendous Alpine mountains rear
" Their rocky ſides, and ruſhing torrents roar:
" There the ſmooth expanſive Lake, the fertile Vale,
" And cultur'd Fields, and Gardens ſmile around;
" And careleſs herds and flocks ſecurely ſtray."

AGRICULTURAL SURVEY

OF

CUMBERLAND.

CHAPTER I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I.—*Situation and Extent.*

THE county of Cumberland is ſituated between the latitudes of 54 deg. 6 min. and 55 deg 7½ min. North; and the longitudes of 2 deg. 13 min. and 3 deg. 30 min. Weſt from London. Its length from St. Bee's Head, in a N. E. direction, to Butter Burn, is 58 miles; and its mean breadth, in a N. W. direction, is 30 miles.

It is bounded on the eaſt by Northumberland, 51 miles
——————— Durham, - 7
on the weſt, by the Iriſh Sea, - 67
on the north, by Scotland and the Solway-Firth, - - 30
on the ſouth, by Weſtmorland, 48
———————and Lancaſhire, 21

Making the whole circumference, - - 224 miles

and contains 1516 ſquare miles, or 970240 acres.

SECT.

SECT. 2.—*Diviſions.*

This county is divided into five wards, viz.:—Cumberland Ward; Eſkdale Ward; Leath Ward; Allerdale Ward above Derwent; and Allerdale Ward below Derwent.

SECT. 3.—*Climate.*

In a county like Cumberland, enjoying ſuch an extent of ſea-coaſt, and where ſo large a portion is occupied by mountains, and thoſe reckoned amongſt the higheſt in the kingdom,* the climate muſt be various. Along the coaſt, and for a conſiderable way up the rivers, the ſnow ſeldom lies above twenty-four hours; but upon the mountains the ſnow will continue for ſix or eight months: of courſe, the lower parts of the county are mild and temperate, while on the higher grounds, and upon the mountains and their vicinity, the air is cold and piercing; but the whole is healthy, though ſubject to great and frequent falls of rain, particularly in the Autumn, which makes their harveſts very precarious and expenſive. This exceſs of wet, we believe, is more or leſs the caſe upon the whole of the weſtern coaſts of the iſland.

* The higheſt mountains in the kingdom, are

	Feet.	
Beneviſh in Scotland,	4,350	the higheſt in Scotland.
Benlomond, ditto	3,240	
Snowdon, in Wales,	3,456	the higheſt in Wales.
Croſs-fell in Cumberland,	3,400	
Helvellin, ditto,	3,324	the higheſt in England.
Skiddaw, ditto	3,270	
Saddleback, ditto,	3,048	
Blackhouſe heights, Selkirkſhire	2,370	
Ettrick-Pin, ditto,	2,200	
Carter-fell, Roxburghſhire,	1,602	
Whernſide, Yorkſhire,	1,350	
Ingleborough,	1,239	

We

We have been favoured with the following Table, ſhewing the perpendicular height of rain that has fallen at Keſwick, the laſt ſeven years; by the ingenious Mr P. Croſthwaite, owner of the curious muſeum there.

	1789	1790	1791	1792	1793	1794	1795
	Inch.	*Inch*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*
January	8,5	5,9	11,4	4,5	5,7	5,7	1,3
February	9,1	4,0	9,2	4,9	9,6	11,2	5,3
March	1,3	1,3	3,1	9,6	5,3	6,5	4,7
April	4,2	2,3	3,3	11,6	1,8	5,4	5,7
May	3,7	3,6	4,0	6,5	1,8	3,3	2,7
June	7,0	5,1	2,0	2,7	4,1	1,6	3,3
July	5,3	6,3	8,2	3,9	2,6	2,5	2,0
Auguſt	3,5	5,8	5,9	6,0	8,8	3,1	6,4
September	7,3	8,4	2,8	10,6	2,9	8,1	1,1
October	8,1	6,1	7,1	6,7	6,2	9,4	12,8
November	6,1	5,0	8,7	5,8	3,4	6,9	11,7
December	8,1	10,9	7,8	11,7	7,4	8,0	10,6
Total in each year	72,3	64,7	73,5	84,5	59,6	71,7	67,6

SECT. 4.—*Soil and Surface.*

The ſoil is various, but may be claſſed under four different heads.

1ſt. *Fertile clays*, or rather *rich ſtrong loams*, occupy but a ſmall portion of this county: formerly this kind of ſoil was generally employed in grazing, or the dairy; but ſince the introduction of growing wheat, it has been converted into tillage, and produces excellent crops of grain.

2d. *Dry Loams*, including the various degrees from the rich brown loam, to the light ſandy ſoils. This is the moſt prevalent, occupying a greater portion of the county than any other; not only the lower diſtricts, but the ſteep ſides of the mountains, are in general of this ſoil; and in many places, even their ſummits are covered with a dry ſound earth, producing green ſward, with little heath:

heath: we ſuppoſe at leaſt one half of the lower, or cultivatable diſtrict, is of this valuable ſoil, excellently adapted to the culture of turnips, artificial graſſes, the various ſpecies of grain, and of breeding and feeding the moſt improved kinds of ſtock, particularly ſheep, it being perfectly found, or ſafe from the rot.

3d. *Wet Loam*, generally on a clay bottom. The fertility of this ſoil is various, depending on the thickneſs of the ſtaple, and the nature of the clay below: it is dangerous for ſheep, but may be applied with advantage to keeping cows for the dairy, breeding young cattle and horſes, and to the culture of wheat, oats, clover, and ray graſs.

4th. *Black Peat earth*, is moſt prevalent on the mountainous diſtricts, particularly thoſe adjoining Northumberland and Durham: it is alſo found on moors or commons, in the lower parts of the county; in ſome places only a few inches thick, upon a white ſand, well known, by thoſe whoſe lot it has been to cultivate it, to be an ungrateful and unprofitable ſoil.

The ſurface is beautifully diverſified with level plains, and riſing eminences; deep ſequeſtered vales, and ſtupendous mountains; open, braky, heathy commons, and irregular incloſures, in ſome parts enriched with tufted groves and riſing plantations; the whole watered with innumerable ſtreams and extenſive lakes, abounding with fiſh of various denominations, which, with plenty of game, add to the recreation and luxury of the inhabitants.—It naturally divides into two diſtricts; the *mountainous*, incapable of being improved by the plough; and the *cultivatable*, or all ſuch parts as have been, or can be improved by tillage.

The mountainous diſtricts are ſeparated into two diviſions, one of which bounds the eaſt ſide of the county, and is the *higheſt part* of that ridge of mountains, that divide the eaſtern and weſtern coaſts of the iſland, from Derbyſhire in England, to Linlithgow in Scotland. Croſs-

fell,

fell, Hartſide-fell, Geltſdale-foreſt, and Spadeadam-waſte, are the names of that portion of the ridge which paſſes through this county. Theſe mountains are compoſed of ſtrata of different kinds of ſtone, and are rich in coal, lime, and lead-ore; but are no way remarkable for any ſtriking irregularities of ſurface.

The other diviſion of mountainous diſtrict occupies the ſouth-weſt part of the county, known by the names of Skiddaw, Saddle-back, Helvellin, Wreynoſe, Hardknot, Sca-fell, &c. &c. remarkable for their ſteep, broken, rocky ſides, and romantic ſhapes; and are in general one maſs of that kind of ſtone, which produces the beautiful blue ſlate, ſo much and ſo deſervedly eſteemed for covering the roofs of houſes. They are deſtitute of coal, lime, or metallic ores; but in ſome meaſure repay this defect, by affording ſuch valuable ſlates; and producing that ſingular mineral ſubſtance, *blacklead*, which is found in Borrowdale, and, it is ſaid, no where elſe in the ſouthern part of the kingdom.

The height, ruggedneſs, ſteepneſs of the ſides, (in ſome places ornamented with wood and projecting rocks) the varied forms, ſublime aſſemblage, and pictureſque beauty of theſe mountains, and the lakes they environ, form ſcenes that few other places, if any, in the iſland can equal; and have at different times exerciſed the pens of many deſcriptive writers:—it comes only within our province to remark, that this kind of flaty ſtone appears to be very friendly to vegetation: the ſoil which covers the ſteep ſides of theſe mountains, and found in conſiderable depth at their baſes, is in great part decayed ſlate; and the moſt fertile ſoils in the vales, we ſuſpect, have a large portion of this flaty matter in their compoſition; this is the caſe in the vale of Keſwick, and particularly at Mill-beck, and along the weſtern baſe of Skiddaw.

From a map of Cumberland, publiſhed by Meſſrs Hodgkinſon

kinſon and Donald, laid down from a ſcale of two miles to an inch, we calculate, that

	Acres.
The mountainous diſtricts contain, - -	342,000
Improvable common, - - - - - - -	150,000
Old incloſures, - - - - - - - - -	470,000
Lakes and waters, - - - - - - - -	8,000
Total quantity of acres in the whole county,	970,000

SECT. 5.—*Minerals.*

This county abounds with coal, lime, and lead-ore; it alſo produces blacklead, copper, gypſum, lapis caliminaris, and excellent ſlate.

Coal.—as obſerved in the laſt ſection, is found in many parts of the eaſtern mountains; and, with not many exceptions, all along that tract (extending in different degrees of breadth,) from Sebergham to Whitehaven, and along the coaſt to Maryport, forming a diſtrict of about 100 ſquare miles.—Cannel coal is got in large quantities in the pariſhes of Caldbeck and Bolton.

Limeſtone—abounds in moſt parts of the eaſtern mountains, and in the pariſhes of Grayſtock, Dacre, Penrith, Broadfield Common, &c. and in the neighbourhood of Egremont and Whitehaven.

Gypſum—is got in the pariſhes of Wetheral, and St. Cuthbert's, Carliſle; but has never been applied there as manure.

Lead-Ore—is got in great abundance in Alſton Moor; and, in a leſſer degree, in the pariſhes of Caldbeck, and Melmerby.—In the lead mines is alſo found the lapis caliminaris.

Copper-Ore—is found alſo at Caldbeck, Melmerby, and at

at Heſket, but at preſent not worked with that ſucceſs which formerly attended them.

Black-Lead,—is found only in Borrowdale, a few miles weſt of Keſwick.

Blue Slates—of an excellent quality, are gotten in Borrowdale, and inferior ſorts in ſome of the neighbouring mountains.

Freeſtones—abound in moſt parts of the county; ſome of which ſplit into good ſlate: but are more heavy, leſs durable, and require ſtronger timber to ſupport them, than the blue ſlate, and are alſo more ſubject to imbibe moiſture.

SECT. 6.—*Waters.*

Tho' this county enjoys an extent of 67 miles of ſea-coaſt, yet it cannot boaſt of its navigable rivers; the tide flowing not more than two or three miles up the greateſt part of them; even the Eden, by much the largeſt, is perplexed with ſhoals, and its navigation cannot be ſaid to reach beyond Sandsfield, though the tide flows a few miles further.

There are few places where water is ſo abundant and good, as this diſtrict is bleſſed with; for beſides the large rivers Eden, Derwent, Eſk, &c.—every village, and almoſt every farm, enjoys the benefit of a pure ſpring, or is viſited by a rivulet. The larger rivers abound with Salmon, Trout, and various other kinds of fiſh, and the ſmaller brooks with Trouts and Eels. It is alſo ornamented with many beautiful and extenſive lakes; which, with their pleaſing accompaniments, have of late years made the tour of the lakes a faſhionable amuſement, and from whence conſiderable emoluments have reſulted to the neighbouring inhabitants.

CHAPTER II.

STATE OF PROPERTY.

SECT. 1. —*Eſtates.*

THERE are probably few counties, where *property in land* is divided into ſuch ſmall parcels as in Cumberland, and thoſe ſmall properties ſo univerſally occupied by the owners; the annual value of theſe tenements, varies from 5l. to 50l. a year: but the generality are from 15l. to 30l. ſome few extend to 100l. or a little more.

The rental of the largeſt eſtate in the county, is ſaid to amount to about 13,000l. per annum.

SECT. 2.—*Tenures.*

By far the greateſt part of this county is held under lords of manors, by that ſpecies of vaſſalage, called *cuſtomary tenure;* ſubject to the payment of fines and heriots, on alienation, death of the lord, or death of tenant, and the payment of certain annual rents, and performance of various ſervices, called *Boon-days*; ſuch as getting and leading the lord's peats, ploughing and harrowing his land, reaping his corn, haymaking, carrying letters, &c. &c. whenever ſummoned by the lord.

We cannot pretend to be accurate, but believe, that two-thirds of the county are held by this kind of tenure, principally in thoſe ſmall tenements deſcribed in the laſt chapter.—The remaining part is moſtly freehold, which has increaſed with the incloſure of commons, and ſometimes whole pariſhes, or manors, have been enfranchiſed on theſe occaſions. Copyhold and leaſehold, are rarely met with.

CHAPTER III.

BUILDINGS.

SECT. 1.—*Houſes of Proprietors.*

DESCRIPTIONS of Gentlemen's ſeats, we preſume, come more under the notice of a topographical ſurvey, than an agricultural one; we therefore muſt refer to different touriſts, and more particularly to Hutchinſon's Hiſtory of Cumberland, now publiſhing.

SECT. 2.—*Farm Houſes, &c.*

Through the greateſt part of this county, the *farm-houſes* are remarkably well built of ſtone;* the blue ſlate roofs, and white daſhed walls, give them a look of neatneſs, that is peculiarly pleaſing, and prepoſſeſs a ſtranger with a favourable idea of the cleanlineſs of the inhabitants; an idea which he finds well-founded, on further inveſtigation.

Theſe houſes have, for the moſt part, a kitchen and a parlour in front, a toofall, back-kitchen, and milk-houſe behind, with four or five lodging-rooms above; the front contains five middle-ſized ſaſh-windows, two below ſtairs, and three above.

Where farms are ſo very ſmall, no great extent of farm-

* Except a ſmall diſtrict in the neighbourhood of Abbey-holm, and the north-eaſt extremity of the county, particularly in the pariſhes of Bewcaſtle, Stapleton, Kirklinton, Kirkandrews, and Arthuret, where they are moſtly built of mud or clay, and form a miſerable contraſt to the buildings in the other part of the county.

offices are wanted; a barn, a byer for houſing their cattle in winter, and a ſmall ſtable, are in general all that is neneceſſary: no regular plan for the form or ſcite, ſeems to have been adopted, every one building according to what he thinks the moſt convenient for his ſtock and ſituation; but they are moſtly built at each end of the farm-houſe. Fold yards, ſurrounded by proper offices, *with a ſhed for cattle*, are very rare in many parts of the county; we believe they are moſt prevalent in the pariſh of Heſket, and its vicinity; the beſt and largeſt we noticed was at Lord Muncaſter's.

We obſerved, in ſome parts of the county, a ſingular practice of covering the perpendicular walls of their houſes with blue-ſlate, to prevent (we ſuppoſe) any kind of moiſture from penetrating them.

Repairs are generally made at the joint expence of landlord or tenant; the former ſupporting walls, doors, and timber; and the latter thatch, ſlate, glaſs, &c.

SECT. 3.—*Cottages.*

Of this deſcription of buildings, there are not many purpoſely erected for labourers in agriculture, very few of that claſs being wanted in this county: as the farms are ſo ſmall, the occupiers and their families are generally ſufficient for the work without any foreign aid.

CHAPTER IV.

MODE OF OCCUPATION.

SECT. 1.—*Size of Farms.*

ON the large eſtates, there are ſome farms from 100l. to 150l. a year, few reach 200l. and we only heard of four or five, that got as high as 3 or 400l. a year, and one of 600l.; but the moſt general ſize of farms in this county, is from 15l. to 50l. a year.

Cumberland farmers may be divided into three claſſes: the occupiers of large farms; the ſmall proprietors, (provincially "*Lairds* or *Stateſmen*;") and the ſmall farmers.

It is to the firſt claſs, and the gentlemen farmers, that this diſtrict owes the introduction of any of the modern improvements in agriculture; and we were glad to find a ſpirit of enterprize ariſing amongſt them, for the adoption of new modes of culture, and improved breeds of ſtock.

To the ſmall Proprietors,—agriculture, we preſume, is little indebted for its advancement: theſe "ſtateſmen" ſeem to inherit with the eſtates of their anceſtors, their notions of cultivating them, and are almoſt as much attached to the one as the other: they are rarely aſpiring, and ſeem content with their ſituation, nor is luxury in any ſhape an object of their deſires; their little eſtates, which they cultivate with their own hands, produce almoſt every neceſſary article of food; and cloathing, they in part manufacture themſelves; they have a high character for ſincerity and honeſty, and probably few people enjoy more eaſe and humble happineſs.

The ſmall Farmer—is obliged to raiſe ſuch crops as will pay him beſt for the preſent, and avoid every expence, of which he does not receive the immediate advantage, by which means, his farm, and himſelf, are always kept in a ſtate of poverty: many of theſe ſmall farmers are alſo mechanics, and agricultural labourers, that farm from 5l. to 10 or 12l. a year.

SECT. 2.—*Rent.*

In the vicinity of towns, land lets from 2l. to 4l. an acre; farms at a diſtance from towns, from 5 to 30s. per acre; in general the average may be ſtated at about 15s. per acre; rent is almoſt univerſally paid in money.

SECT. 3.—*Tithes.*

Tithes are moſtly taken in kind; a few pariſhes pay a modus in lieu of tithes, and others are tithe-free, in conſequence of a portion of common being given to the impropriator.

SECT. 4.—*Poor Rates.*

At Carliſle, 2s od—Wigton, 2s. 6d—Aldſton, 3s. od—Harrington, 1s 6d—Kirkoſwald, 1s 8d.—And in many of the country pariſhes, they vary from 6d. to 10d. per pound.

SECT. 5.—*Leaſes.*

The *noblemen* and gentlemen who enjoy the moſt conſiderable landed property in this county, *let no leaſes*; ſome have verbal contracts for ſeven years, which are next to none; and of thoſe who let leaſes, the term is only for five, ſeven, or nine years; beſides the uſual reſervations of mines, wood, &c. the tenant covenants to pay the

the rent, ceſſes, taxes, and to keep all in repair; ſome are confined to a certain quantity of tillage, and to fallow one-fourth yearly; others are under no reſtraint of this kind; a few others are confined to lay on a certain quantity of lime, and to ſow with white clover and hay-ſeeds, the lands that are laid to graſs: theſe are the principal covenants that affect agriculture. To enumerate ſuch as are of a local nature, reſpecting the performance of cuſtoms, ſervices, grinding corn, payment of chickens, &c. would add little to the improvement of agriculture, or enlargement of rural Science.

SECT. 6.—*Expence and Profit.*

For the mode of inveſtigating this ſubject, we muſt refer to the Northumberland Report, page 33.

CHAPTER V.

IMPLEMENTS.

THE *Plough* of this county is the ſwing plough, uſed through all the northern counties, in which we obſerved no improvement.

To ſpend time in deſcribing the harrow, roller, &c. that have been uſed in almoſt every part of the kingdom for ſome centuries, would be augmenting this Report to little purpoſe.

The Carts, through the whole of this county, are drawn by a ſingle horſe, and probably originated through neceſſity, from the ſmall farmer keeping no more than one

horſe. In thoſe times, ſimplicity and cheapneſs were only conſidered: we recollect ſeeing ſome of thoſe "*tumble carrs*," without one piece of iron about them; the wheels were made of three pieces of wood, joined by pins of the ſame material. It is probable they had the name of *tumble carrs*, from the axle being made faſt in the wheels, and the whole turning, or tumbling round together: but this conſtruction has given way to the wheel with a nave and ſpokes, turning round a fixed axle; which is much more managable, in quick or ſhort turns.*

The advantages of ſingle horſe carts are ſo well underſtood in this county, that we did not ſee any other uſed.

Three ſingle horſe carts are driven, without any difficulty, by a man, or a boy, or even women and girls; along the coaſt, more than half the carts are driven by females, and many of theſe under twenty years of age, with as fine forms and complexions, as ever nature beſtowed on the ſofter ſex. We cannot help ſaying, we were diſguſted at ſeeing them put to this employment; and eſpecially, at their riding in ſo aukward a manner behind the cart-ſaddle.

Double mould-board Ploughs—are uſed by ſome farmers, to form the one-bout ridges for turnips and potatoes, and alſo for earthing them up.

Winnowing Machines—have been lately introduced, and are now become very general: twenty years ſince, corn was winnowed without any ſort of machine; and the farmer was under the neceſſity of waiting for a natural wind, ſufficiently ſtrong to blow the chaff from the grain; and very often had to take it to ſome eminence at a diſtance, where the breeze was more certain.

Threſhing Machines, Drills for ſowing the various kinds

* The price of a tumble carr is 5l.—the price of the other kind, 7l. ready for yoking.

of

of grain, and horſe hoes, have not yet found their way into this diſtrict.

CHAPTER VI.

INCLOSURES.

THE mountainous diſtricts are all open, and moſt probably will long remain ſo: the cultivatable parts are a mixture of old incloſures and commons, interſperſed through every part of the county.

The ſize of incloſures, in general, is in proportion to the ſize of farms: the ancient fields are ſmall and irregular; the fences of various conſtructions; walls, earth mounds, thorns, hazle, and other bruſh-wood, all lend their aid in a greater or leſs degree; and, in two or three places, we obſerved large tracts totally incloſed by whin-fences,* which have a very ragged, ſlovenly, and uncouth appearance, from the numberleſs gaps where the whins have been deſtroyed by froſt, an accident to which this plant is very liable; nothing but the greateſt neceſſity can juſtify the uſe of whin-fences.

The fields of thoſe commons that have been divided within the laſt thirty years, are laid out in ſtraight lines, and moſtly incloſed by quick fences, which in general have done very well.

The advantages that ariſe from incloſing, *in reſpect to increaſe of produce or value*, muſt entirely depend upon the modes of management, purſued after the incloſing takes place. From the abundant crops produced by land, which has never grown grain before, the occupier vainly

**Ulex Europeans.*—Furze.—Gorſe.—Whins.

thinks

thinks, that it will always continue to do ſo; and the deception is ſtill increaſed, by the ſtimulating effects of lime; but alas! after having got nine or ten crops, the golden proſpect vaniſhes! the farther they proceed, the more they are convinced of their error; and growing corn having become a loſing trade, the land is left to graſs: but what can it produce? already exhauſted by repeated corn crops, and over dozes of lime, it remains a ſpectacle of the bad effects of ſuch culture, and a warning to others to avoid the ſame courſe: even under this treatment, the increaſed value is in the ratio of three or four to one; had theſe lands been continued in tillage only three years at one time; the firſt year oats; ſecond, fallow, turnips, or rape; the third, wheat or oats, or (if the ſoil ſuited) barley, ſown up with clover and ray-graſs, and depaſtured with ſheep for three, four, or five years, according to circumſtances and ſituations, we will venture to ſay, the land would have gone on improving, from rotation to rotation; would have been more profitable, and put on a very different aſpect to what it does at preſent, and have been worth double the rent it now lets for.

The advantages ariſing from incloſing of commons, in reſpect to the *improvement of ſtock*, is obvious; while in a ſtate of common, every one turns on what he pleaſes; and there is generally double the quantity of ſtock that there ought to be. The conſequence is, they make no improvement; *they barely exiſt*; the yearly profits how ſmall! Should an enlightened breeder wiſh to improve his ſheep, how is he to effect it, while his ewes mix promiſcuouſly with his neighbour's flocks? If he had the beſt tup in the kingdom, can he be ſure that one of his ewes would be tupped by him, while there are probably not leſs than a ſcore of his neighbour's to conteſt the female with him? On the other hand, if the common were incloſed, every one would ſtint with that ſpecies of ſtock for

for which his allotment was beſt adapted, and in ſuch numbers as would inſure profit: when he can confine his ewes within his own incloſure, he can make whatever experiment he pleaſes, by putting a few, or many ewes, to any particular tup, without any fear or apprehenſion of having a ſpurious breed, by the interference of his neighbour's: he is alſo enabled to keep his flock from many diſorders: few commons but have ſome tracts of land liable to the rot: how are they to be prevented from depaſturing upon it? or if the ſcab, or other infectious diſorders, have taken place amongſt any flock on the common, how is he to avoid it?

To the queſtion put by the Board, "has incloſing commons decreaſed population?"—We anſwer, that we cannot conceive, how incloſing of commons can decreaſe population: unleſs an increaſe of corn and cattle, an increaſed demand for labourers and mechanics of various denominations, tend to decreaſe mankind; the contrary poſition muſt certainly hold good in an eminent degree.

The beſt account we could obtain of commons, divided by act of parliament, were,

Sowerby,	about	25	years ſince.
Sedbergham,	about	30	years ſince.
Stainton -		20	
Culgaith, -		22	
Carlton, -		15	
Skelton, -		25	
Brampton, -			
Irthington -		14	
Newby, -			
Farlam, -		12	

At the laſt four places, the lord of the manor had 1-12th for his conſent as lord of the ſoil, and making the allotments freehold: at moſt of the others the lord had 1-8th.

CHAPTER

CHAPTER VII.

ARABLE LAND.

SECT. 1.—*Tillage.*

TILLAGE-LAND is here commonly ploughed by horſes; a team of oxen, we believe, is not to be found in the county: the horſes are yoked double, and driven with cords by the ploughman. An acre is accounted a good day's work; and on light ſoils, an acre and a half.

The ridges are very narrow, from 5 to 7 feet, being the common breadth, whether in corn or in graſs.

Fallows for wheat or turnips,—are ploughed once in the Autumn, by the beſt cultivators, and four or five times in the courſe of the ſucceeding Summer.

Barley—is ſown on one ploughing after turnips: but after a white crop, (as in rotation firſt) they plough twice, and manure with 20 or 30 cart-loads of dung: ſome add lime.

Oats—are always ſown on one ploughing.

SECT. 2.—*Fallowing.*

Fallowing for wheat and turnips, is practiſed in many parts of this county; four or five ploughings and harrowings, is the general practice: we ſaw ſome very clean, and well managed, gathered up into neat narrow ridges, on which the wheat was looking very healthy.

SECT. 3.—*Rotation of Crops.*

The moſt prevalent ſyſtem, through a great part of this county, is, to have a crop of white corn every year

while

while in ploughing: ſuch cultivators make no fallows, except ploughing twice, and manuring for barley, can be deemed ſuch.

Where a field is ploughed out from graſs, they have oats —oats,—barley,—oats; or, oats,—barley,—oats,—oats, &c. &c. for nine or twelve years, and then left to graſs for ſeven or nine years. Some few ſow hay-ſeeds and a little white clover; but the greateſt part leave it to nature.*

Where they fallow for wheat, the rotation is,

1 Fallow
2 Wheat
3 Oats, or Barley
4 Oats,—for 3 or 4 rotations, and then left for graſs, for ſeven or nine years; ſome few ſow clover and hay ſeeds.

In thoſe places where the turnip culture is practiſed, the rotation is,

1 Turnips
2 Barley
3 Clover
4 Ditto
5 Oats.
6 Ditto.

Or,

1 Turnips
2 Wheat

* On aſking a farmer at Uldale why they ſowed no clover, or graſs ſeeds, he replied, "*we have no occaſion, for the land is naturally girs-proud.*" Thoſe that are experienced in cultivation, will readily admit, that after growing from ſix to twelve white crops in ſucceſſion, it can ſcarcely be otherwiſe than *graſs-proud.* There is certainly graſs in abundance; but of ſuch kind, as no good farmer would wiſh to be poſſeſſed of. This barbarous ſyſtem is practiſed upon many dry loamy ſoils; which, after being thus left to graſs, cover amazingly faſt with moſs, probably owing to the bad cultivation and exhauſting crops of corn more than to the wetneſs of the climate, to which it is generally attributed.

3 Barley
4 Clover
5 Ditto
6 Oats.

We are glad to find, that two or three individuals have adopted the idea of not taking two white crops in ſucceſſion, and purſue the excellent rotation of turnips,—barley,—clover two years,—then oats, or wheat.

SECT. 4.—*Crops commonly cultivated.*

Wheat is a modern production here; a general opinion uſed to prevail, that wheat could not be grown in many parts of this county. We were informed that it is not much more than 40 years, ſince Summer fallows for wheat were firſt uſed; and it is not twenty years ſince Lord Muncaſter introduced Summer fallows, and the culture of wheat, in the neighbourhood of Ravenglaſs, where it is now grown in great abundance, as well as all along the coaſt to Scotland, and in the neighbourhood of Carliſle. The wheat that is ſown after turnips or clover, is trifling, the main ſupply is from Summer fallows; they generally ſow two buſhels and a half per acre, in September or October, as the ſeaſon ſuits, and they reap from ſixteen to thirty buſhels per acre.

Barley and *Oats*, being the grains from which the bread of the inhabitants is made, were probably the firſt, and only corn, grown in this county for many centuries; *bigg* or *bear*, with four rows of grains on the ear, was the kind of barley formerly cultivated; but lately, the common early ſort, with two rows, has been introduced. They ſow two and a half buſhels per acre, in April or May, and reap twenty-one buſhels on an average.

The Common Oat, was the only variety grown in this county, and is now by far the moſt prevalent; but of late years,

years, a few enterprifing individuals have introduced the early varieties of this grain, with great advantage; they are diftinguifhed from the common oat by the name of *layland oat*, and are the Dutch or Friefland oat.*

The quantity fown,—is from four to fix bufhels per acre.

The time of fowing,—March or April.

The Produce—from 15 to 40 bufhels per acre; but the average of the county was ftated to us, to be only 20 bufhels per acre.

Peafe.—In a climate where fo much rain falls, and where the harveft is fo precarious, the culture of peafe would be attended with fo many chances of lofs, and fo few of gain, that we were not furprifed to find them fo generally neglected. The difficulty of harvefting them, has probably firft fuggefted the idea, of building their ftacks in the *cloughs*† of trees, and afterwards in ftender high pyramids round the boles of tall trees, to prevent them from blowing over: by this method, they can alfo lead and ftack them, in a damper or moifter ftate; and as they do not come near the ground by five or fix feet, they are feldom troubled with mice. The greateft diameter of the ftacks is not more than fix or feven feet; the height of many twelve or fifteen; if the tree has not a fufficiency of convenient branches to bear the bottom, they nail a ftick or two acrofs, to form a bafe. When finifhed, they have a very fingular appearance.

Turnips, were firft cultivated in this county, to any effect, for the ufe of cattle, by Philip Howard, Efq; of Cor-

* Laft year Mr Falder, near Roes Caftle, introduced the oat, known on the eaft borders by the name of *Church's Oat*, (a variety, and perhaps the beft variety known, of the Poland oat) and which will, no doubt, anfwer well on all the beft rich foils in the county.

† Where the main ftem divides into branches.

by

by, in the year 1755 : his firſt eſſay was drilled at four feet diſtance; the crop amazingly good; the weight on an average, 10 lb. each turnip; ſome weighed 25 lb; he afterwards continued to grow them at two feet, and two and a half feet diſtance, with conſtant ſucceſs, for eight or ten years, before any farmer followed the example; at laſt, Mr Collins, of Wetherall, made a trial, and ſucceeded; others ſoon followed him.

It is, therefore, about thirty years ſince a few farmers firſt began to cultivate turnips; and conſidering with what tardineſs new modes of practice generally make their way amongſt that uſeful claſs of ſociety, it is no wonder that the growing of turnips ſhould, in a great meaſure, be ſtill confined to the vicinity where their cultivation originated; and we ſuppoſe, by the mode of practice, that from this ſource may be traced the various patches of turnips we obſerved at Netherby, Burgh, Dalton, and a few other places.

The land, after being made ſufficiently fine by repeated ploughings and harrowings, is ſet up in one-bout ridges* at 30 inches diſtance; the dung is put in the bottom of the hollow intervals, and covered with earth by the plough; the top of the one-bout ridge is flattened by trailing a piece of wood over it, and on the *flattened top* the turnip ſeed is ſown by a drill, which a man puſhes before him like a wheel-barrow.

The drilled turnips are hoed, and ſet out at about eight or nine inches diſtance in the rows, which are ploughed between by a ſmall plough.

Hoeing broad-caſt turnips is not underſtood; if any are ſown this way, they go unhoed; and if too thick, are

* Provincially "*ſtitches.*"

hand-

hand-weeded. Meſſ. Williamſon and Monkhouſe paid 20s. per acre this year, (1793) for hand-weeding their broad-caſt turnips.

The value of this excellent vegetable is not ſufficiently underſtood in this county, otherwiſe it muſt have made a more rapid progreſs. Probably this may be owing to its being applied to feeding their *own breed of ſheep*. We ſaw ſeveral acres of turnips this year, that were ſold for, from 3l. to 3l. 10s. per acre, which a Northumberland grazier would have thought worth five or ſix pounds an acre, for feeding the *improved* breed of long-woolled ſheep.

Potatoes are cultivated in one-bout ridges, by almoſt every farmer, not only for the uſe of their own families, but for ſale, where the ſituation is not too diſtant from a good market. It is only upon the eſtate of Sir James Graham, at Netherby, that they are applied to feeding cattle and ſwine: and by Lord Muncaſter, to feeding cattle, who alſo gives them to his horſes; Mr Lamb and Mr Blalock favoured us with the following particulars:

Mr Blalock feeds cows, and ſays, that 120 buſhels of potatoes, with 16 ſtones of oatmeal, will fatten a cow in three months, equally well as turnips, of 3 or 4l. value.

The ſmall farmers apply potatoes to feeding ſwine: thirty buſhels of potatoes and ten of corn, made into meal, will fatten a ſwine of eighteen or twenty ſtones weight, equal to corn of 1l. 15s. value. The potatoes are *boiled*, and meal mixed with them.

From theſe data, the value of potatoes may be nearly eſtimated:

	£.	s.	d.
The expence of feeding a cow with potatoes and meal is - - - - - - - - -	3	12	0
from which deduct the value of 16 ſtones of oatmeal - - - - - -	1	12	0
leaves for 120 buſhels of potatoes - -	2	0	0

	£.	s.	d.
The expence of feeding a ſwine with potatoes and meal is - - - - - -	1	15	0
deduct the value of corn 10 buſhels, fire, attendance, &c. - - - - - -	1	5	0
leaves for 30 buſhels of potatoes - -	0	10	0

From the above it appears, that potatoes for feeding cows, or ſwine, are worth no more than 4d. per buſhel. They eſtimate a fair average crop of potatoes to be 240 buſhels per acre; the value at 4d. per buſhel, is only 4l. out of which the ſeed ought to be deducted, the other expences attending the cultivation of potatoes and turnips being much upon a par.

The land on which theſe potatoes are grown, is a moſt excellent turnip ſoil, and would produce turnips, almoſt any year, worth 5l. per acre for feeding cattle or ſheep.* From the above ſtatement it appears, that an acre of potatoes is of leſs value, than an acre of turnips for feeding cattle. Mr Lamb has been long convinced of this, and ſays, that the practice of applying potatoes to feeding cattle and ſwine, is every year loſing ground, and the culture of turnips, which was pretty general here twenty years ſince, (but gave way to potatoes) is now, in its turn, regaining the ſituation it ſo juſtly deſerves.

SECT. 5.—*Crops not commonly cultivated.*

Beans—we were informed are ſeldom cultivated with ſucceſs; the failure may probably be owing to their being ſown broad caſt, without manure, and not hoed: we would recommend, to ſome ſpirited cultivator, to try them in drills at 30 inches intervals, ſo as to admit of be-

* Mr D—— aſks, "how can turnips be worth 5l. per acre, for feeding cattle and ſheep?"—We reply, nothing is more common; they are frequently ſold for much more.

ing

ing horſe-hoed, and ploughed between; this mode we can recommend, on the ſucceſsful practice of ſeveral years.*

Cabbages—have been cultivated by Lord Muncaſter, Dr Harriſon of Penrith, and a few others in that vicinity.

Carrots—have alſo been tried by Lord Muncaſter, who found them a very troubleſome and expenſive crop, owing to the abundance of weeds, occaſioned by the great rains and moiſture of the climate.

Flax—is cultivated in ſmall quantities, on the northern extremities of the county, for family uſe; but much leſs now than formerly.

CHAPTER VIII.

GRASS.

SECT. 1.—*Natural Meadows and Paſtures.*

NATURAL meadows are generally found in narrow ſtrips by the ſides of rivers. "The largeſt tract of natural meadow, in this county, is in the pariſh of Scaleby, which lets for 28s. per acre: alſo between the lakes of Keſwick and Baſſenthwaite, there is a conſiderable extent of natural meadow.

Natural paſtures are not very numerous in the cultivateable diſtricts of the county; unleſs ſuch may be called natural paſture, which is left to nature to cover with herbage after having been exhauſted with growing corn. If by natural paſtures be underſtood ſuch as have

* See Northumberland Report.

never been disturbed by the plough, there will be found great abundance in this county; as not only all the commons in the cultivateable districts, but the mountains may come under that denomination.

Sect. 2.—*Artificial Grasses.*

Artificial Grasses, are here confined to a small number —red clover, *(trifolium pratense)* white clover *(trifolium repens)* common hay-seeds, with a little rib grass *(plantago lanceolata)* and ray-grass, *(lolium perenne.)*

We were informed, that in 1752, no person in the county had thought of sowing a field down with clover, or even hay-seeds; and that Philip Howard, Esq. of Corby, was the first who sowed a field with clover, and taught his countrymen the use of artificial grasses; yet it is but a few that have benefited by his laudable exertions.

Red Clover, is principally sown where the turnip culture, and summer-fallowing for wheat, are practised, and the land continues only two years in grass: it is generally mown the first year, and depastured the second. The great objection to growing this valuable grass, is the *hoving* of cattle, which may be obviated by depasturing it with sheep, or by a little caution in having the cattle pretty full, before they are turned into it, and to take care to put them to it on a dry day. Some object to it, because they have taken a fancy that it impoverishes the soil. Old Ellis says, "*Clover is the mother of corn.*" We believe that, could the Cumberland farmers be induced to make an experiment, they would be of the same opinion, and would find their profits so superior to what they are at present, that they would become converts to the cause. We hope we do not exaggerate when we say, that the profits of red clover for two years, would be double to that derived from the same quantity of ground sown with white

white clover, rib grafs, and hay-feeds; and that the profits of the fucceeding crop of corn would be nearly in the fame ratio.

White Clover, has many advocates, and is certainly a valuable plant, where land is intended to continue in grafs for a few years, which is generally the cafe here; and by thofe who fow any kind of grafs feeds, it is in great repute; it is feldom or never fown alone, but accompanied by what is here called *common hay-feeds*, which are generally harmlefs, from the heat they moftly get in the ftacks, and their vegetative powers thereby deftroyed: where that is not the cafe, we fear more weeds than ufeful plants would be the produce; for when it is confidered, that of the ufeful plants which compofe a good meadow, fcarce two of them flower and ripen at the fame period; and as the time of mowing is governed more by the weather, or other circumftances, than the collection of ufeful feeds, it may happen, that not one valuable plant may then have its feeds in that ftate of perfection, which is neceffary for the reproduction of its fpecies; at the fame time it is probable, that you may obtain the feeds of many plants, which you would wifh to avoid.

Rib Grafs, is fown in fome places where land is intended to continue in grafs.

Ray-grafs, has here but few advocates; a general prejudice againft this plant feems to have taken place, we think *unjuftly*, for we are convinced, from long experience, that under proper management, it is a valuable grafs; it grows in all foils, and in all fituations; early in the Spring, and late in Autumn; and even thro' Winter, on dry foils and in open weather: the only reafonable objection we know of, is the great propenfity it hath to run to feed; but this may be eafily obviated, by eating it bare with cattle, or by mowing the pafture juft before

it begins to flower, which increaſes the eatage, by the quantity of bottom graſs it ſends forth after the operation.

It is the propereſt graſs we know, to ſow along with red or white clover; and we would beg leave to recommend it, inſtead of *common hay-ſeeds*, ſo univerſally ſown in this county, with clover, both red and white.

SECT 3.—*Hay Harveſt.*

The hay harveſt is here in the months of July and Auguſt; the modes of management various, according to the nature of the graſs, weather, and notions of the farmer: we do not find any thing peculiarly excellent in their practice; the only ſingularity is, that the occupiers of ſmall farms, in ſome parts of the county, put the whole of their hay into barns; the larger farmers ſtack their's at the door.

SECT. 4—*Feeding.*

The moſt general ſyſtem of grazing is,—on the richeſt grounds, *cattle with a few ſheep;* on the leſs luxuriant, *ſheep only.*

The kinds of cattle uſually fatted are the native country breed, and Scotch cattle, both Kyloes and the Galloway kind. Of theſe, they find the Kyloes the quickeſt feeders, the Galloway next, and their own country breed of long horns the floweſt.

The profits of grazing cattle depend much on the ſkill of the buyer, in *ſelecting* the *quickeſt feeders;* and, when fat, in ſelling them for their *full value;* alſo, not unfrequently, on the ſtate of markets.

The beſt grazing lands we ſaw were at Pap Caſtle, near Cockermouth, let at 3l. per acre; and the holm lands on both ſides the Eden, near Carliſle, let at 2l. 10s. per acre, for the purpoſes of *grazing only*. Mr Toulſon, of the former

former place, buys in oxen and heifers in October, keeps them all Winter upon the paſtures out of which his fat ſtock has been recently ſold, and gives them a little hay in bad weather. After keeping them near twelve months, they leave, on an average, *a profit of* 5l. *each;* their weight, from fifty to ſixty ſtone. But this intelligent gentleman was candid enough to confeſs, that he thought ſheep, mixed amongſt cattle, a more profitable ſyſtem; and we were glad to find this mode practiſed by all the beſt graziers in the county.

Of Sheep-grazing, there are two branches; firſt, feeding wethers; and, ſecondly, ewes for fat lambs: they are both bought in the Autumn, are kept on graſs the whole time, and get no other food, except hay in ſtormy weather.

	£.	s.	d.
The profits are, a wether ſold fat in October,	1	0	0
Fleece 3½ lb. at 5d. - - - -	0	1	6
	1	1	6
Deducting prime coſt and expence of ſalving,	0	12	6
Average profit by feeding wethers, - -	0	9	0

	£.	s.	d.
Ewes, a fat lamb ſold in June, - -	0	8	9
Fleece 3½ lb. at 5d. - - -	0	1	6
Ewe fat, ſold in November, - -	0	10	6
	1	0	0
Deduct prime coſt and ſalving, - -	0	8	0
Profit by feeding ewe and lamb, - -	0	12	0

There are a few who buy in wethers, to feed upon tur-

nips, and ſell them in the Spring, to Mancheſter and Liverpool.

The kinds of ſheep grazed are, *the country breed*, *the true black-faced heath ſheep*, and *the Cheviot ſheep*. The moſt experienced graziers *all agreed*, that the true black-faced heath ſheep were *quicker feeders*, and a *hardier* race, than the Cheviot.*

CHAPTER IX.

GARDENS AND ORCHARDS.

GARDENS and Orchards in this county, are conſidered only as conveniences to private families; and not as objects of emolument, or commerce, as in ſome other diſtricts.

CHAPTER X.

WOODS AND PLANTATIONS.

THIS county is far from being well wooded. The Irthing, Eden, and Caldew, are the only rivers,

* We wiſh to be underſtood, as not ſtating this as an *aſcertained* fact, but as an *opinion* of the Cumberland graziers and farmers.

whoſe

whoſe banks produce any quantity of *natural wood*; and of theſe, the banks of the Caldew ſeem to have the largeſt proportion of old oak-timber. Of the value of the oak-timber proper for the purpoſes of ſhip-building we could obtain no ſatisfactory information, but ſuſpect, from what we ſaw, it is of ſmall extent: we fear, the oak is not ſuffered to attain a ſufficient age for this purpoſe; as we ſaw a wood near Weſt Ward (now felling) of upwards of two hundred acres, that was little more than thirty years old, the whole cut away, without leaving any to ſtand for ſhip timber.

Of late years, many plantations have been made near gentlemen's ſeats, which ſhew, by their vigorous growth, how well adapted the greateſt part of this county is for the production of wood. From the nakedneſs of the country along the coaſt, one would naturally conclude, that the ſituation was inimical to that production; but Lord Muncaſter's extenſive and thriving plantations near Ravenglaſs ſhew, that the nakedneſs of the land is owing to other cauſes.*

CHAPTER XI.

WASTES.

THE *extent of waſte lands*, in this county, is very great: —Of mountainous paſture, 342,000 acres, which we ſup-

* If a cuſtomary tenant plants wood, he cannot cut it without leave of the lord; in ſome caſes, the lord claims it as his own, which ſufficiently explains why the occupiers do not plant wood.

poſe

poſe not capable of improvement from the plough; yet many parts of theſe diſtricts might be applied to planting, with conſiderable advantage, and would probably in this way, make a better return, than if the ſoil had been in ſuch a ſituation as to admit of being converted into tillage. We were glad to ſee a large plantation of larches thriving exceedingly well, on the ſteep edge of the weſt ſide of Skiddaw, lately planted by Mr Story. We hope the example will be ſpeedily and extenſively followed, by every proprietor of ſimilar ſituations; but, unfortunately, the greateſt part of theſe diſtricts is in a ſtate of common, and no improvement of this kind can take place while they continue in that ſituation: of courſe, the firſt ſtep to improvement is a diviſion, and for every proprietor to know his own part. If this cannot be done, the only means of improvement then left is, to convert them from unlimited commons to ſtinted paſtures.

The preſent value per acre, of theſe mountainous diſtricts, may be nearly eſtimated from the following data:

Mr Greenhow, of Threlkeld, takes paſturage for his ſheep on Skiddaw foreſt for a year, at 5s. per ſcore, which is three-pence per ſheep; and ſuppoſing an acre keeps a ſheep, then will three-pence an acre be the yearly value of theſe mountains. They can ſcarce be in a leſs productive ſtate; an acre of wood, if it only grew broom-ſticks, would pay much better.

Of the Commons, in the leſs elevated parts of the county, there are many, with large tracts of excellent ſoil, capable of being improved by judicious culture, proper draining, and improved breeds of ſheep, to many times their preſent value; which is certainly very ſmall, probably not more than from one to two ſhillings per acre. In a county like this, that does not raiſe corn ſufficient for the conſumption of its inhabitants, and where it is always one-fourth or one-fifth dearer than in an adjoining county, it

is

is lamentable to see such extensive tracts of *good corn land* lying waste, of no value to its owners, and of no benefit to the community. Instead of the present scarcity of grain, large quantities might be yearly exported; and instead of the ill formed, poor, starved, meagre animals that depasture the commons at present, an abundant supply of good fat mutton would be had to *grace* the markets of the county, and also to send off large supplies to Newcastle, Liverpool, Manchester, and other populous manufacturing places.

It is difficult to say, what would be the increased value of such land, under proper management; we think we cannot be wrong in stating, that it would be at least from six to eight times the value to the proprietors.—But of what advantage would it be to the public?

	Acres.
We have already estimated that there are of improvable commons in the lower part of the county,	150,000
Out of this deduct for bankſides, proper for planting, and other unfertile places,	30,000
There will be left for cultivation, -	120,000
Suppose this be put into a rotation of three years tillage, and three years grass, then there will be in tillage yearly,	60,000

Suppose one-third for fallow, and of this, one half to be turnips, the other half naked fallow for wheat, then will there be yearly,

	Acres.	*buſh. per ac.*	*buſh. per an.*	*Price.*	*val. per acre.*
Oats,	20000	at 30 is	600000	at 2s. pr buſh. is	60,000l.
Wheat,	10000	at 20 is	200000	at 5s. pr ditto—	50,000
Barley,	10000	at 30 is	300000	at 3s. pr ditto—	45,000
Turnips,	10000			at 3l. pr acre.—	30,000
Naked Fallow,	10000				
Carried over	60000		1100000		£.185,000

And

	Brought over	£. 185,000
And ſuppoſe the graſs land would only keep *one ſheep* per acre more, then will there be an increaſe of 60,000 ſheep yearly; the profit of which cannot be valued at leſs than 14s each, the amount will be,		42,200
Total value of increaſed produce	-	£. 227,000

CHAPTER XII.

IMPROVEMENTS.

SECT. I.—*Draining.*

DRAINING, is one of thoſe improvements which has been introduced of late years into the northern counties; and where it is done with judgment, is, in many ſituations, of the greateſt conſequence.—Cumberland has not been behind its neigbours in adopting this beneficial meaſure: we were glad to obſerve, in many places, great advantages gained, both by hollow and ſurface drains; ſome done with great art, by one or more hollow drains running in the direction of the outburſt of water, and cut deep enough to get through the bed of ſand or gravel in which the water runs, and by that means arreſt the ſource, which drowns the land below it; but the like intelligence has not in all places prevailed, for we often ſaw the drains running in parallel directions, *perpendicular to the ſource*, and at ſuch diſtances, as the drainer thought the nature of the ſoil required; this is more particularly the caſe, where ſurface drains are uſed. The hollow drains are

filled

filled with ſtones when they can be got, otherwiſe with ſods.

SECT. 2.—*Paring and Burning.*

This operation is ſeldom performed in this county, except on heathy, or coarſe grounds: the expence about 15s. per acre.

SECT. 3.—*Manuring.*

Farm-yard dung, is here, as in moſt other places, the chief reſource of the farmer: where turnips are grown, it is wholly applied to their culture; where they are not grown, it is uſed for the various purpoſes of dreſſing graſs land, and for the barley and wheat crops.

Lime, is found in great abundance in many parts of this county, and of an excellent quality. The quantity laid upon an acre varies from ſixty to an hundred and fifty buſhels; we found it a general opinion, that lime did little good to land that had been long accuſtomed to it; and that thoſe who had uſed the large quantity of 150 buſhels per acre, found their lands greatly exhauſted, and were now fully convinced of their error in continuing it ſo long, eſpecially in ſuch large quantities. We have had many opportunities of obſerving the abuſe of lime, which, moſt probably, is one of the beſt manures known, for particular ſoils and ſituations, and under peculiar circumſtances, and proper reſtrictions; yet, like many other good things, a ſuperabundance may be prejudical; or rather, we are ſenſible, that too often repeated, and in large quantities, it becomes hurtful.

Lime is moſtly laid on, while the land is in a ſtate of fallow; but in ſome places, we found it laid upon the graſs land, *one* or *two* years before they intended to plough it out. We doubt the propriety of the latter mode.

Tangle,

Tangle, or Sea-Weed, is uſed along the coaſt, wherever it can be got; the quantity per acre is fifty or ſixty cart-loads. This is known to be a valuable manure, either for corn, turnips, or graſs, wherever it can be had.

Slake or Mud, left by the tide, is uſed in the neighbourhood of Ravenglaſs, with good effect, on the graſs lands, fifty or ſixty cart-loads per acre.

Muſcles, are alſo uſed in the neighbourhood of Ravenglaſs, for manure, after the rate of five or ſix cart-loads per acre; they are got on the ſands adjoining the coaſt.

Sea Sand.—An accidental experiment of Lord Muncaſter's ſhewed its utility in deſtroying moſs, but it is not uſed as a manure.

Compoſt.—It ſeems a general practice through every part of the county, to make a compoſt of lime and earth, in the proportion of one cart-load of lime, to four or five of earth; they uſe it as a top-dreſſing to their graſs lands, and find it very beneficial.

Sect. 4.—*Weeding.*

All kinds of grain are ſown broad-caſt; the only weeding it gets is by hand: hoeing a crop of corn, we believe, was never once practiſed in the county. Turnips and potatoes are the only crops in which weeds are deſtroyed by hoeing.

Sect. 5.—*Watering.*

The only attempts we ſaw of this ſpecies of improvement, that had the leaſt reſemblance to a watered meadow laid out by art, was at Bleatarn (about ſix miles eaſt of Carliſle,) belonging to Mr Richardſon of Rickerby, to whom his country is highly indebted, for the ſpirited example he has ſet in many other improvements. We were

ſorry

ſorry to find, there was little more water than what was collected by rains; the ridges narrow and long; the trenches ſmall, and inadequate to carry a ſufficient quantity of water, for the purpoſe intended. It is unfortunate, that the firſt attempt ſhould have been made in ſuch a ſituation, and under ſuch circumſtances, in a county ſo pregnant with favourable ſituations, and the water of ſuch an excellent quality, uncontaminated with mineral particles, or infuſions that are ſuſpected to be inimical to vegetation.

SECT. 6.—*Improving Heath Lands.*

The beſt mode of improving peat earth, being a deſideratum of great conſequence, the more facts that can be collected upon this head, the more light will be thrown on the ſubject, and the more likely we ſhall be to obtain the object ſought for.

At Bleatarn, Mr Richardſon has made great improvement, on a poor black moory ſoil, growing very ſhort heath, in its original ſtate, not worth ſixpence per acre. He ploughs in Autumn, and lets it lie till the Autumn following; then ploughs acroſs; and the next Summer makes a complete fallow, which he limes, after the rate of one hundred and fifty buſhels per acre; and in April or May following ſows it with graſs-ſeeds (without corn) in the following proportion per acre: white clover, 8 lb.; red, 4 lb.; rib-graſs, 4 lb.; ray-graſs, 1½ buſhels; and common hay-ſeeds, 6 buſhels.

Another mode is to plough up in the Winter, and leave it in that ſtate thro' the Summer, to rot, until next Spring, when it is ploughed acroſs, and made ſufficiently fine by repeated harrowings, ploughings, and burning of the ſods, to ſow with turnips in June: to the above quantity of lime is added 30 ſingle-horſe cart-loads of dung. On a part of the fallow this year, we ſaw ſome drilled turnips,

worth

worth 3l. an acre: in addition to the lime, they had fifty ſingle-horſe cart-loads of dung per acre: but as dung is rarely to be procured for improvements of this kind, we think, that a crop of rape might be got for Spring feed, without dung, which would certainly be better than a naked fallow as in the firſt mode. The lands that have been laid down two years, were full of graſs,* and excellent paſture for ſheep; but to make them thus productive, they are loaded with the following expences, which, according to Mr Richardſon's eſtimate, including the various ploughings, harrowings, lime, dung, graſs-ſeeds, intereſt of money, &c. amount to 11l. 11s. 6d. per acre: from which taking the value of the turnips 3l. leaves 8l. 11s. 6d. the expence per acre, on the graſs.

Near Naward Caſtle, Mr Ramſhay has made great exertions in reclaiming peat-moſs, *by throwing it up with a ſpade*, into round ridges ſeven yards wide; the top being from twelve to eighteen inches higher than the furrow, which is cut deep enough to act as an open drain. In this ſtate it lies all Winter: In the Spring following, he covers it nearly an inch thick, with a compoſt, formed of five loads of earth, to one of lime; and upon this dreſſing, ſows,

Common hay-ſeeds,	12 buſhels per acre.
Ray-graſs, - - -	2 ditto.
Rib-graſs, - - - - -	2 or 3 lb. ditto.

Where the land is dry enough, they plough; and, to the above quantity of graſs-ſeeds, add a few pounds of white clover.

Mr Ramſhay uſes few hollow drains. Thoſe that require to be three or four feet deep, he ſlopes off at the

* From many obſervations made on ſimilar improvements, we have always found the firſt and ſecond years graſs by far the moſt valuable; after this they decline in value, and in a few years return to their original heath, if not prevented by ploughing.

ſides,

ſides, into which the furrow drains empty. We ſaw ſome lands that had been done two years; the ray-graſs and rib graſs growing well; the woolly holcus *(holcus lanatus)* in abundance: it comes naturally on all ſuch ſoils; but is a graſs that few kinds of ſtock will eat, unleſs compelled by hunger.

Mr Ramſhay informed us, the expences of making theſe improvements amounted to 10l. an acre; of courſe, both this and Mr Richardſon's, to pay common intereſt for the money expended, ought to let at 10s. an acre for a term of 21 years.

CHAPTER XIII.

LIVE STOCK.

SECT. I.—*Cattle.*

THE *Cattle*, are a ſmall breed of long horns, with a few exceptions of the Galloway breed intermixed, particularly along the coaſt from Whitehaven to Carliſle.

This breed of long-horns is not diſtinguiſhed by any peculiar good qualities, which is not to be wondered at, when it is conſidered that, probably at this time, there is not one perſon in the county that pays any attention to its improvement. Twenty years ago Mr Hazle, of Dalemain, had made ſome progreſs in this buſineſs, and gained a very uſeful breed of long-horned cattle; but his ſucceſſors neglected them, and the labours of the good old man are totally loſt.

The long-horned, and the Galloway polled cattle, are probably the beſt adapted to this county of any other; but the kind of long-horns that occupy it at preſent, may certainly be much improved, by paying proper attention, to breed always from the beſt males and females that can be ſelected. This end would be the readieſt attained, by getting good bulls and heifers from the midland counties, where the long-horned breed are brought to great perfection.

The Dairies are ſmall, and moſtly employed in making butter, of an *excellent quality*. Thoſe that are ſituated in the vicinity of towns, ſell it weekly, by the pound, to ſupply the conſumption of the inhabitants. In other ſituations, it is put into firkins of 56 lb. each, and ſent to diſtant markets.

The average quantity of butter from one cow, is generally eſtimated from one to two firkins: ſome cows will give twelve quarts of milk at a meal, and make ſeven pounds of butter per week; but the moſt general average is, ſeven or eight quarts of milk at a meal, and from 3 to 5 pounds of butter per week, through the Summer.

Skimmed milk *cheeſe*, is the principal kind made here, and chiefly conſumed at home.

On thoſe farms that have a right of common, the graſs lands are employed through the Summer in growing hay, depaſturing their cows, and ſometimes young cattle; but the latter are more generally ſummered on the commons, and in Autumn brought into the old incloſures, till the approach of Winter, when all the cattle are houſed.

SECT. 2.—*Sheep.*

The ſheep bred in this county are only of *two kinds*, and

A HERDWICK RAM

0 1 2 3 Feet

and theſe two are probably ſomething related; one of them is peculiar to that high, expoſed, rocky, mountainous diſtrict, at the head of the Duddon and Eſk rivers, more particularly known by the names of Hardknot, Scalefell, Wrynoſe, &c.

Of this breed of ſheep, (commonly called *Herdwicks*,) the ewes and wethers are all polled or hornleſs, and alſo many of the tups; their faces and legs ſpeckled; but a great portion of white, with a few black ſpots on thoſe parts, are accounted marks of the pureſt breed, as are alſo the hornleſs tups; they have fine, ſmall, clean legs. We were told that the lambs, when dropt, are well covered; the wool is ſhort, and form as thick matted fleece, much finer than that of the black-faced heath ſheep; with which variety they ſeem to have been croſſed, as we ſuſpect, from ſome of the rams having ſpiral horns, and from ſome *kemps* or *hairs* being intermixed amongſt ſome fleeces of the wool: they are a lively little animal, well adapted to ſeek their food amongſt theſe rocky mountains, in many places ſtony and bare; and where covered, the ſoil is thin, but the herbage moſtly green, though heath is found on their ſummits. They have no hay in Winter, and ſupport themſelves in the deepeſt ſnows, by ſcratching down to the heath, or other herbage; indeed it ſeldom happens, but that ſome parts of the mountains are blown bare, which the ſheep find out. They do not face the coming ſtorm as reported, but, like other ſheep, turn their backs on it; and, in ſuch weather, they generally gather together, and keep ſtirring about; by which means they tread down the ſnow, keep above it, and are rarely over-blown.

The loſs per cent. per ann. is of *hogs** from 5 to 10.—
Ditto ditto of old ſheep——2 to 5.

* Provincial term for ſheep, from ſix months old, till being firſt ſhorn.

The ewes are kept as long as they will breed lambs, and are often from ten to fifteen years of age before they are fold: the wethers go off at four and a half years old. Both ewes and wethers are fold from theſe mountains, and killed without being put on any better paſture: we ſaw a carcaſe of one of the wethers at Ravenglaſs, very good mutton, which weighed 11 lb. a quarter, and had 10 or 12 lb. of tallow. The ewes weigh from 6 to 8 lb. a quarter; the fleece weighs 2 lb. and ſold laſt year at 6d. per lb. which we think much below its value.

The mountains on which theſe ſheep are bred, happen not to be common, but belong to Lord Muncaſter; as do alſo the ſtock that depaſture them, which have, time immemorial, been farmed out to *herds*, at a yearly ſum. From this circumſtance, theſe farms (three or four in number) have obtained the name of *Herdwicks;* that is, the diſtrict of the *herds;* and the ſheep, the appellation of *Herdwick ſheep*. They have obtained ſuch a character for *hardineſs* of *conſtitution*, that Mr Tyſon,* who farms the principal flock, ſells a number of tups every year into various parts of the county, to *improve the hardineſs of other flocks*; the price is often as high as two guineas and a half.

The ſheep, through the whole of this county (except the *Herdwicks*) have been deſcended from the *black-faced, coarſe-woolled, heath ſheep*; but by croſſing with ſome other kind, (probably the *Herdwicks*) many of them have acquired a large portion of *white* on their *faces* and *legs*; ſome have thoſe parts ſpeckled, and others totally black; they are in general horned, high ſhouldered, narrow backed, flat ſided, ſtrong boned, and many with thick, rough, hairy legs. The *wool* is coarſe and long, but falls ſhort in

* We were told by Lord Muncaſter's agent, that the family of Tyſons have lived in this ſequeſtered ſpot above four hundred years.

both

both theſe reſpects to what is produced by the black-faced ſheep from Moffat and Linton in Scotland, and the Kentmore ſheep in Weſtmoreland; the fleece weighs from 3 to 4 lb. which ſold in 1793 for 5½d. per pound.

The management of ſheep, over all this county, is very ſimilar; through the Summer the whole flock is depaſtured on the commons, and range at large without any perſon to look after them: in November, the whole are gathered together and ſalved;* the old ſheep are turned again upon the common, but the hogs are kept in the old incloſures; ſome part of which has been kept uneaten, to ſupport them through the Winter: on the approach of ſnow, the old ſheep are brought to the incloſures, or to ſome part of the common adjoining, and are daily foddered with hay, while the ſtorm continues. Thoſe who have not a ſufficiency of incloſed ground for wintering their hogs, take wintering for them, in thoſe parts of the low country where they do not breed ſheep; the price, 2s. per head, to have hay in bad weather.

In Eſkdale and Mitredale, they formerly kept their hogs in the houſe all Winter on hay, and drove them to water once a day; but this practice is now laid aſide, and they winter them upon the incloſed grounds, which are previouſly kept freſh for that purpoſe. They give no hay to their ſheep here, which are a good deal of the *Herdwick blood*.

The ſheep are ſold in Autumn, to graziers. The price of thoſe from the eaſtern part of the county, are,

Wethers at 3½ years old,	- -	11s. to 13s.
Ewes from 6 to 8 ditto,	- -	6s. to 7s.

* The ſalve is compoſed of butter and tar, in the proportion of ſixteen pounds of the former to four quarts of the latter. This quantity will ſalve forty ſheep.

From the ſouth-weſt;

Eſkdale wethers at 4½ years old,	-	10s. to 13s.
Ewes from 6 to 10 ditto,	-	4s. to 6s.
Skiddaw wethers at 4½ ditto,	- -	13s. to 14s.
Ewes from 5 to 6 ditto,	- -	6s. to 8s.

We have no heſitation in ſaying, that the breeds may be improved, for there are few places where they have been more neglected. At Penruddock we obſerved ſome ſingularly rough legged, ill-formed ſheep; on aſking an old farmer, from whence they had that breed, or where they got their tups? He innocently replied, *Lord, Sir! they are ſik as God ſet upon the land, we never change any!* The latter part of this ſimple ſtatement we readily believe; but that God *ſet upon the land* ſuch ill-formed, unprofitable animals, we cannot ſo readily aſſent to; and rather think, they have acquired their preſent ill-form, and bad properties, by the indolence and ignorance of the owners. We wiſh we could avoid adding, that the ſame practice which guides the men of Penruddock, is too prevalent in every part of the county.

We found, in general, that the ſheep breeders here, like thoſe in moſt other countries, are very much attached to their own breed. As they have never tried any other, they cannot be admitted as proper judges, of the comparative merit of different kinds of ſheep; but ſuppoſing, for the preſent, their own breed to be well adapted to their ſituation, why not improve them, by ſelecting the beſt males and females, and rear a better offſpring of their own kind? or, by hiring, or buying, ſome of Mr Tyſon's BEST FORMED and FINEST WOOLLED Herdwick tups, inſtead of getting tups from Kentmore in Weſtmoreland, which appeared (from what we ſaw) to have nothing to recommend them, (in our opinion) but *ſize and coarſeneſs*. The ſhape of theſe ſheep is, in every reſpect, the reverſe of what it ought to be; the back narrow,

row, the carcaſe long and thin, ſupported upon large rough legs, with coarſe hairy wool hanging down from their throats all the way to their breaſt, which, on a wet day, gives them as much the appearance of goats as ſheep.

Within the laſt three years, a few long-woolled ſheep have been introduced into this county, from the Yorkſhire Wolds, by Lord Muncaſter; from Northumberland, by Mr Blacklock, of Corby; Mr Richardſon, of Rickaby; Mr Porter, Carliſle; Mr Falder, near Roes Caſtle; Mr Lamb, Netherby; and probably a few others:—and ſince our viſiting this county in 1793, to the above names we are happy to add thoſe of Mr Graham, of Barrock Lodge; Mr Loſh, of Woodſide; Mr Stalker, of Lambsknow, &c.; who have not only hired tups at conſiderable prices, but even purchaſed ewes at as high prices, as from 4l. to 5l. each.

SECT. 3.—*Horſes.*

The Horſes are middle ſized, from fourteen to fifteen and a half hands high, of various colours; but bays and cheſnuts ſeem the moſt prevalent; for a ſmall farm, where horſes muſt anſwer for both draught and riding, they are probably moſt ſuitable; but certainly might be improved, by ſtallions from the North-Riding of Yorkſhire, the beſt breed of horſes we know for the double purpoſe abovementioned.

About 70 or 80 years ſince, teams of oxen, or oxen yoked with horſes, were very common; from that period, draught oxen gradually decreaſed; and for ſome years paſt we were informed, there has not been an ox team in the county.

Almoſt every ſmall farmer breeds his own horſes, and generally more than are neceſſary, for the cultivation of his farm; theſe are often purchaſed by dealers, for the purpoſe of ſupplying the light horſe regiments.

SECT. 4.—*Swine.*

Swine are bred and fed here in conſiderable numbers; every farmer fattens one or more of theſe animals, and moſt labourers and mechanics rear and feed each a pig; at about 10 months old they are confined in the ſty for the purpoſe of fatting on barley or oatmeal, and potatoes: their weight is from 15 to 20 ſtone.

SECT. 5.—*Rabbits.*

Some narrow tracts of light ſandy ground along the coaſt, from Harrington to Abbey-holm, are occupied by rabbits. There are alſo warrens in the pariſhes of Wyberthwaite, Drig, and Heſkit.

SECT. 6.—*Poultry.*

The minute diviſion of landed property occaſions abundance of poultry: the numerous waters, lakes and commons, facilitate the keeping of large flocks of geeſe; which are fed on the ſtubbles, and ſupply the market plentifully, from the latter end of October, to Chriſtmas.

SECT. 7.—*Pigeons,*

Are rarely found with the farmers; they are principally kept and bred by gentlemen of property, as articles of luxury.

SECT. 8.—*Bees,*

Are found thro' every part of the county, and in ſome ſituations are very profitable. It is a prevailing opinion, that they thrive beſt in the vicinity of Heath (*erica vulgaris*) Hence it would appear, that this plant abounds with their favourite food; but as it is late of flowering, they ſhould alſo be in the neighbourhood of a ſheltered early

early ſituation, to enjoy the benefit of the Spring flowers: where theſe cannot be united, it would probably be right to remove them from one to the other, to ſuit the ſeaſons.

CHAPTER XIV.

RURAL ECONOMY.

SECT. I.—*Labour.*

FROM the number of ſmall farms, there is an uncertainty of a day labourer meeting with conſtant employment; as the occupiers want aſſiſtance only on particular occaſions.

On this principle we account for the high wages given in this county; through the whole of which, there is an univerſal cuſtom of giving the labourers *victuals*, both men and women; the wages are,

For men, per day, 10d. and victuals; in harveſt, 1s. and victuals—- For women, hay-making, 8d. and victuals; ——harveſt, 10d. and victuals.—The hours from 6 to 6.

The victuals are eſtimated at 8d. per day for men, and 6d. for women. Servants kept in the houſe, are only hired for half a year, to prevent gaining ſettlements.—Their wages for that time are, a man, from 5l. to 7l.——Women, 2l. to 3l —Maſons, without victuals, are from 1s. 8d. to 2s. per day; Carpenters, 1s. 6d.

When work is done by the piece, the prices are as follows:

	s.	*d.*
Threſhing wheat per buſhel - - -	0	2

barley

	s.	d.
——— barley ditto - - - -	0	2
——— oats ditto - - - -	0	1¾
Ploughing per acre, - - - -	5	0
Reaping per acre, - - - - -	5	0
Mowing ditto - - - - -	2	6
Walling per ſquare yard, - - - -	0	8

SECT. 2.—*Proviſions.*

Grain of all kinds is generally very high; the average price in 1793, was,

	s.	d.	
For wheat, - -	6	6	per buſhel.
Barley, - -	3	8	ditto.
Oats, - - -	2	8	ditto.
Butchers' meat from -	0	3	to 4d. per lb.
Butter, from - -	0	6	to 8d. per lb.
Skimmed milk cheeſe -	0	3	per lb.
Potatoes - -	1	0	to 1s. 4d. pr. bu.

Poultry.—A ſtubble gooſe, 2s.—duck 8d. a fowl 6d.—eggs from 3d. to 6d. per dozen.

Fiſh—Salmon, 6d. per lb.—trout 3d.

We ſuſpect the butchers' meat, through all the markets of the county, is not overloaded with fat: what we ſaw at Carliſle and Whitehaven was lean indeed!—At the latter place, we did not ſee one carcaſe of decent mutton,—the greateſt part of it would not have been ſuffered to appear in Newcaſtle, and many other markets, that are accuſtomed to ſee good mutton; a joint of lean Whitehaven mutton, is dearer at 3d. per lb. than the ſame joint of a good fat ſheep is at 5d. on account of the greater proportion of bone to eatable meat, in the former, to what it is in the latter.

The bread, generally uſed in this county, is made of barley, or a mixture of barley and rye; oatmeal is made into haſty-

haſty-puddings, and eat with butter, treacle, milk, or beer, for breakfaſt, and often for ſupper.

Potatoes, for ſeveral years, have been in general uſe, as a principal article of food; few families dine without them; and we believe many a dinner and ſupper are made of potatoes, with a little butter, or cream, for ſauce; and in many caſes, only milk, or, where this cannot be had, a little ſalt.

SECT. 3.—*Fuel.*

Coals are cheap and plentiful in moſt parts of the county; in ſeveral places from 15s. to 30s. will procure a year's fuel, for a ſmall family.

Peat and turf alſo abound, and are uſed inſtead of coals in ſome diſtricts.

CHAPTER XV.

POLITICAL ECONOMY.

SECT. 1.—*Roads.*

THE *roads* are in general very good, both parochial and turnpikes, except the road from Carliſle to Newcaſtle; ſome parts of which are very bad, and very different to what the ſame road is, immediately on entering Northumberland.

The materials are excellent; in general lime-ſtone; but, in almoſt every inſtance, not broken ſmall enough by one half. If theſe hard ſtones were broken ſo ſmall,

as

as to pafs through a ring two inches in diameter, and the roads made wider, and flat, or very nearly fo, few counties in the kingdom would be able to vie with Cumberland for excellent roads.

Sect. 2.—*Canals.*

There are no canals in this county; in 1795, one was projected from Maryport by Carlifle, to Newcaftle, but did not take place; owing to a difference of opinion, whether the canal from Newcaftle, fhould pafs on the North or South fide of Tyne.

Sect. 3.—*Fairs.*

February.

20th.——*Wigton*,—for horfes.

April.

5th.——*Wigton*,—for cattle.

24th.——*Penrith*,—for cattle.

25th.——*Boon Wood*,—for cattle.

May.

Firft Wednefday, and every fortnight till Michaelmas.——*Cockermouth*,—for cattle.

1ft, 2d, and 3d Fridays.——*Hefket-New-market*,—for cattle.

28th.——*Aldfton*,—for cattle.

June.

8th.——*Ravenglafs*,—for cattle.

Tuefday before Whitfuntide.——*Abbey-holm*,—for cattle and horfes.

Whitfun Monday, the Monday fortnight, and Monday month after.——*Rosfley-hill*.—A very great fair for cattle and horfes: and cattle are fhewn here every fortnight after, till Michaelmas.

Whitfun-

Whitſun-Tueſday: and every fortnight after.——*Penrith*,—for cattle.

Second Wedneſday after Whitſuntide.——*Brampton*,—for cattle, horſes, and ſheep.

AUGUST.

4th.——*Ravenglaſs*,—for cattle.

26th.——*Carliſle*,—for cattle and horſes.

SEPTEMBER.

2d. Wedneſday.——*Brampton*,—for cattle, horſes, and ſheep.

18th. ——— *Egremont*,—for cattle.

19th. ——— *Carliſle*,—for cattle and horſes.

26th, 27th. ——— *Penrith*,—for cattle.

OCTOBER.

10th.——*Cockermouth*,—for cattle and horſes.

1ſt, 2d, 3d Saturdays, after Old Michaelmas.——*Carliſle*,—for cattle and horſes: theſe are called *Emptons*, probably from the cattle being bought to drive to the great fair of Hempton Green, in Norfolk, held the 22d of November.

29th.——*Abbey-holm*,—for cattle and horſes.

DECEMBER.

21ſt.——*Wigton*,—for cattle and Chriſtmas cheer, from whence it is commonly called "*Wallet-fair*."

SECT. 4.—*Markets*.

Monday.——*Cockermouth*,—for corn, butchers' meat, &c.

Tueſday.——*Penrith*.—A large market for corn, and all kinds of proviſions.

Wigton,—for corn, butchers' meat, &c.

Brampton.—A ſmall market for corn and other proviſions.

Wedneſday.

Wedneſday.——*Workington.*—A large market for all kinds of proviſions.

Thurſday.——*Whitehaven,*—for corn and proviſions: a large market.

Longtown,—butchers' meat and butter; no corn.

Kirkoſwald.——A ſmall market for butchers' meat, &c.

Friday.——*Maryport,*—for proviſions all kinds.

Heſket-New-market.—A ſmall market for corn, butcher's meat, &c.

Ravenglaſs.—A ſmall market for proviſions.

Saturday.——*Carliſle.*—A very large market for corn, cattle, ſwine, butchers' meat, and proviſions of all kinds.

Keſwick.—A ſmall market for butchers' meat, butter, &c.; and a few oats and barley.

Egremont,—for corn, and other proviſions.

SECT. 5.—*Commerce.*

The Commerce of this county conſiſts, principally, in the exportation of coals from Whitehaven, Workington, and Maryport, to Ireland, &c. The number of veſſels employed in this trade amounts to upwards of 300, from 60 to 120 tons burden. This lucrative trade has ariſen to its preſent importance, within the laſt hundred years; it originated at Whitehaven, from the exertions of Lord Lonſdale's anceſtors, to whom the coal in that neighbourhood principally belongs.

Mr Curwen is the principal coal-owner at Workington, and Mr Senhouſe at Maryport. At all thoſe places, coal cannot be wrought faſt enough to ſupply the demand; veſſels have frequently to wait ſix or eight weeks before they

they can get a loading; a certain ſign of an increaſing trade.

" We have not been able to aſcertain at what period navigation was advanced in Cumberland. A ſurvey was taken by commiſſion from the crown, in the year 1566, of the trade and ſhipping of this county, (*inter alia*;) Whitehaven was then ſo far from promiſing it would ever arrive at its preſent wealthy and flouriſhing ſtate, that it conſiſted only of *ſix cottages*, ſcattered on the beach, and hidden in the creek from the eye of an enemy, and to this dejected port one ſmall bark only belonged, of nine or ten tons burthen. Nay, it is not more incredible than true, that there was at that time only one veſſel appertaining to the whole county, that was of ten tons burthen. The whole exports of this extenſive county, were nothing but a ſmall quantity of *herrings and cod fiſh*; and the inhabitants knew ſo little of the luxuries and enjoyments of life, that the whole of this great coaſt received no other *imports* than a little ſalt.

About the year 1582, the Earl of Lincoln being Lord High Admiral, cauſed an account to be taken of the ſhips and mariners within this county; when all the veſſels amounted only to twelve, and not one carried eighty tons. The number of mariners and fiſhermen were 198, of whom many had never navigated a veſſel ſuperior to an open boat.

In 1607, *Workington* was the chief haven, and the place from whence certain criminals, ſentenced to baniſhment, were exported to Ireland.*"

Maryport, in the year 1752, conſiſted of only one farm-houſe; in that year another houſe was built. It is now a neat, well built, middle-ſized market-town, with a ſmall and good harbour, incloſed by two piers; and in

* Hutchinſon's Hiſtory of Cumberland.

1793, contained 3445 inhabitants, which increaſe about 100 yearly. The ground upon which the town is built, belonged to Humphry Senhouſe, Eſq. To encourage ſettlers, he ſold off houſe and yard ſteads, reſerving a ground rent. The land around it lets for 2 or 3l. an acre, which would not have been worth more than 1l. had things remained as they were in 1752.

The quantity of coals exported from theſe ports, taken on an average of 11 years, (from 1781 to 1792) is as follows:

	Chaldrons.
From Whitehaven -	81940
Workington, Harrington, and Maryport	70870
	152810

The receipt of cuſtoms at Whitehaven, from 17th June 1794, to 5th January 1795, (29 weeks) was 19832l. 17s. 8d.

The duty on coals exported from theſe ports, is 1s. 2d. per chaldron to Ireland, and 5s. to foreign ports.

Butter, bacon, and hams of an excellent quality, form a part of the commerce of this county. The article of butter, is ſaid to amount to 30000l. per ann: the whole chiefly for the London market; to which place, alſo, conſiderable quantities of freſh ſalmon are ſent from Carliſle.

SECT. 6.—*Manufactures.*

The Manufactures are not extenſive: printing cottons at Carliſle, and a check manufacture (on a ſmall ſcale) in moſt of the market towns, with four or five cotton mills, erected of late years near Carliſle, Dalſton, and Corby, with a ſmall factory of corduroys at the latter place, is all this county has to boaſt of.

Whether

Whether the coal trade and manufactures have occaſioned any improvements in the agriculture of the county, is doubtful; but they certainly have encouraged it, by making a very increaſed demand for its produce.

The lead mines on Aldſton-moor affect the agriculture of this county very little, being more intimately connected with Northumberland.

SECT. 7.—*Poor.*

In moſt of the country pariſhes, the poor-rates are low, from 6d. to 9d. per pound; which, we believe, is partly owing to a ſort of pride exiſting amongſt the lower claſſes, of not applying for parochial relief, till they cannot poſſibly ſubſiſt without it; and alſo to the number of *Friendly Societies*, which have been eſtabliſhed, and we hope are ſtill increaſing. Such uſeful inſtitutions are deſerving of encouragement, by every perſon whoſe property is chargeable with poor-rate.

SECT. 8.—*Population.*

In Meſſrs Nicholſon and Burn's Hiſtory of Cumberland, publiſhed in 1777, the number of houſes are eſtimated at 20,000, and the inhabitants at 100,000: by Houſeman's notes, in Hutchinſon's Hiſtory of Cumberland, now publiſhing, they amount to 97,200.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT.

ONE great obſtacle to improvement, ſeems to ariſe, from a laudable anxiety, in the cuſtomary tenants, to have their little patrimony deſcend to their children. Theſe ſmall properties (loaded with fines, heriots, and boon-days,* joined to the neceſſary expence of bringing up and educating a numerous family) can only be handed down, from father to ſon, by the utmoſt thrift, hard labour, and penurious living; and every little ſaving being hoarded up, for the payment of the *eventful fine*, leaves nothing for the expences of travelling, to ſee improved modes of culture and to gain a knowledge of the management and profits of different breeds of ſtock; and be convinced, by ocular proofs, that their own ſituations are capable of producing ſimilar advantages. And even ſhould they be half inclined to adopt a new practice, prudence whiſpers, that, ſhould the experiment fail, it would require the ſavings of many years to make good the deficiency.

The *cuſtomary tenure* is allowed, on all hands, to be a great grievance and check to improvement. Would not this be beſt done away on the diviſion of commons, as was the caſe at Brampton, &c. where Lord Carliſle had 1-2th for his conſent as lord of the ſoil, and for enfranchiſing the allotments. There are other lords who aſk 1-4th

* See Tenures, page 178.

for

for their conſent and enfranchiſing.* The yearly value of the various cuſtoms, fines, &c. might be eaſily ſettled by commiſſioners; and twenty-five years purchaſe, on *this value*, be the price of enfranchiſement, which might be allowed out of the allotment, upon the diviſion of a common; or paid in money, at the option of the tenant.

On theſe terms, neither party would have reaſon to complain; but where a tenant cannot enfranchiſe, under forty years purchaſe, it would be a humane act of the legiſlature to relieve theſe bondagers, by law; or laudable in the Board of Agriculture, to induce ſuch lords of manors, to accept a fair equivalent for theſe dregs of vaſſalage.

Letting no Leaſes, or leaſes for five or ſeven years, is another great obſtacle to improvement. To ſuch proprietors of land we would beg leave to hint, that no tenant will ever make improvements under the uncertainties of a *ſhort leaſe*, much leſs where there is *none*. A tenant may be well convinced, that by proper culture, draining, improved breeds of ſtock, &c. he could make his farm, in a few years, worth *one third* more than it is at preſent; but this cannot be done without laying out money: ſuppoſe 100l. and ſuppoſe, by this means, the increaſed yearly value of his crop is 20l. Now it is clear, it will be ſix years before he can be repaid the principal and intereſt of the ſum expended. Should his leaſe expire in the fifth year, he would be a loſer; and ſhould he have no leaſe, he might be turned off his farm at the end of the ſecond year. Under ſuch circumſtances, the chance of loſs is much greater than the proſpect of gain. By reaſoning in this manner, he concludes, that it is ſafer to have his 100l. at intereſt at 5 per cent. than riſk it in

* The portion given to the lords of manors, for their conſent as lord of the ſoil, in moſt parts of the kingdom, is one-ſixteenth. The part to be allowed for enfranchiſing will depend on the nature of the tenure.

improving his farm under ſuch uncertainties; and that it will be the ſureſt game, to take *every advantage* of the farm in his power.

On the other hand, if his leaſe had been for twenty-one years, he would have foreſeen, that, by laying out his 100l. he would gain 200l. and, as "the hope of reward ſweetens labour," he would have doubled his exertions, and gone on from improvement to improvement; and at the expiration of his term, his landlord would have the ſatisfaction of ſeeing his tenant had acquired a competency, his farm increaſed in value, and the community benefited by the increaſed produce. We have heard, it is true, ſome arguments urged in favour of letting *no leaſes*; ſuch as would have been uſed by a feudal lord, and which, we are perſuaded, cannot long be held by liberal and benevolent minds, enlightened by ſcience, or anxious to promote the true intereſts of their country.

The payment of Tithes in kind, is univerſally agreed to be a material obſtacle to the advancement of agriculture: according to the preſent mode of collecting tithes, it is not a tenth of the *natural produce* of the land, but a tenth of the *capital employed in trade*. If a man employs 100l. in trade, he receives his profits, without any deduction; but if he ſhould lay out this 100l. on a ſpeculation of improving a piece of land, (ſay, draining a bog) he finds, if his ſcheme ſucceeds, that the produce is not all his own; the tithe owner comes, and takes away *one tenth*, (which is probably *all the profit*, after deducting common intereſt for the money expended;) and this, from off land that never afforded any tithe ſince the creation, nor *ever would have done*, had not this ſpirited improver laid out his 100l. on improving this bog, rather than employing it in trade, where he could have received at leaſt 10 per cent. for his money. The bog would then have continued unprofitable, and the tithe owner would have received

no injury; for neither he, nor any of his predeceſſors, had ever reaped any advantage from it.—This obſtacle certainly might be removed, by giving a fair equivalent for tithes.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. 1.—*Agricultural Societies.*

THERE are none in this county, nor we believe has any attempt ever been made to form any.

SECT. 2.—*Weights and Meaſures.*

The ſame confuſion in weights and meaſures prevails here, as in many other parts of the kingdom.

A Carliſle buſhel, is 96 quarts.*

A Penrith buſhel, is 64 ditto, for wheat and rye.
80 ditto, for barley, oats, and potatoes.

A ſtone of tallow, wool, yarn, or hay, is 16 lb.

Ditto of butcher's meat 14 lb. but in many places 16 lb.

The pound is 16 ounces; by which butter, and various other articles are weighed.

* A Wincheſter buſhel is 32 quarts.

CONCLUSION.

MEANS OF IMPROVEMENT.

THE firſt that preſents itſelf, is a reform in the culture of the arable lands. To thoſe who have been accuſtomed to take two, three, four, five, &c. white crops in ſucceſſion, we would recommend, to continue their lands in tillage *no more* than *three years at one time;* and in the ſecond year to fallow for turnips, or wheat, according as the ſoil ſuits; after turnips, barley, or wheat; and on the barley or wheat, ſow red clover, white clover, and ray-graſs;* and continue in graſs, two, three or more years, (according to ſituation and circumſtances.) Where neceſſity urges, the clover may be mown for hay the firſt year; but would recommend to depaſture it as much as poſſible with ſheep, which of all other ſtock are the moſt profitable, and the moſt improving for land that has been exhauſted by tillage.

It would probably be right, in moſt ſituations, to have one-third or one-fourth of the farm in old graſs, for the purpoſes of the dairy, and the ſheep ſtock in Winter; and we would obſerve, that where land is worth 40s. per acre in graſs, it would be a dangerous experiment to plough it up, in ſuch a climate as Cumberland poſſeſſes.

We know that in ſome parts of the kingdom, lands are let at higher rents, for the *purpoſes of tillage only*; but then, their ſoil, climate, and ſituation, are peculiarly good; and it is a queſtion, whether, if theſe lands had been in old graſs, they would not have been worth more for grazing, than they are at preſent for growing corn;

* To theſe may be added, hop-medic, and rib-graſs, according to circumſtances.

probably

probably as good as the land at Pap Caſtle, let at 3l. an acre, for grazing only,

The live Stock next offers itſelf for conſideration. Of the propereſt breed of horſes, and horned cattle, we have before given our ſentiments: it only remains to ſuggeſt, what improvements may be made in the ſheep; of which there ought to be at leaſt two, if not three, diſtinct breeds; that is,

For the lower diſtricts, a breed of *improved* long-wooled ſheep:

For the mountainous, a breed of mountain ſheep, adapted to the *herbage* and *ſituation*.

For the high, heathy ridge of mountains, on the eaſt ſide of the county, the *true black-faced heath ſheep* are probably the beſt adapted; as we think them the hardieſt, and beſt calculated, for living *altogether upon heath*, of any other breed we know; of courſe a little attention to the improvement of the preſent breed, by good tups, of the *true heath ſheep*, is all that is here wanted.—But for thoſe mountains, on the ſouth-weſt part of the county, which have ſo large a portion of ſound green ſward, we think a fine-woolled ſheep might be kept to advantage; probably the South Down, or at leaſt a croſs betwixt the *South Down* and the *Herdwick ſheep*; from the known inclination theſe breeds have to make fat, the carcaſe would certainly be as good, and the fleece would as certainly be of *double value*, as that of the preſent breed.

	£.	s.	d.
The fleece of the South Down ſheep is 2½ lb. at 2s. per lb - - - - -	0	5	0
Ditto, of the Skiddaw ſheep, 3½ lb. at 5d. ditto	0	1	6
Increaſed value of the fleece, -	0	3	6

But it is probable the wool may be deteriorated, by croſſing with the Herdwick ſheep. If on this account we al-

low 1s. 6d. there will ſtill be an increaſed value of 2s. a fleece.

For the lower diſtricts, a breed of *improved* long-wooled ſheep, of 18 or 20 lb. a quarter, would undoubtedly be far more profitable than thoſe that are now bred and depaſtured upon it; and from the great portion of excellent turnip ſoil, diſtributed through every part of the county, almoſt every breeder would be enabled to fatten his own, if he purſued the rotation above recommended; and he would find, that his wethers at 1¼ or 1½ year old, would be much fatter than the preſent breed are at 4 or 4½ years old; and that they would be ſold for the following prices:

	£.	s.	d.
A wether at 1½ year old, - -	1	5	0
Wool, 1 fleece 8 lb. at 9d. per lb. -	0	6	0
	1	11	0
Deduct for wintering on turnips 20 weeks at 4d. per week, - - - - -	0	7	0
Produce of a long-woolled wether at 1½ year old, after deducting the expence of wintering on turnips, - - - - -	1	4	0
At Aſpatria they feed their own ſheep, and ſell their wethers at 4½ years old to the butchers for - - - - - - -	1	0	0
Wool, 4 fleeces at 1s. 6d. each, - -	0	6	0
	1	6	0
Deduct for ſalving 4 years - -	0	2	0
Produce of a country bred wether 4½ years old	1	4	0

From

From hence it appears, that the preſent breed of ſheep are kept three years for nothing, or that the improved breed of long-woolled ſheep will leave as much profit in one year, as the preſent do in four; or a flock of 25 of theſe long-woolled ſheep would leave as much profit as 100 of the preſent race, and that for graſs only, as the expence of wintering on turnips was deducted in the above ſtatement.

Incloſing of Commons,—we have already pointed out, would be a great ſource of improvement in this county, could it be done at a moderate expence, and on equitable terms; the charges of obtaining an act of parliament, and the various additions made thereto by the practitioners of the law, are in ſome caſes three or four times more than all the other expences put together. Surely this might be avoided by a general act. The Houſe of Commons has already laid a foundation, by the ſtanding orders reſpecting ſuch bills.—If two-thirds of the proprietors requeſt a diviſion, we ſee no reaſon why they ſhould be put to the expence of obtaining an act of parliament, becauſe two or three, or poſſibly only one, ignorant or ill-natured perſon or perſons, are abſurd enough to oppoſe it.

Watered Meadows—is another ſource of improvement, from whence great advantages may be derived; the ſtreams are not confined to any particular diſtrict: they are found equally pure, whether they have their ſource from the limeſtone rocks, on the eaſtern and middle parts of the county; or from the immenſe mountains of blue ſlate rock, in the ſouth-weſt diſtrict. Numberleſs are the rivulets that might be employed, with the greateſt advantage in watering, and in moſt places would be turned over the land at the leaſt expence; being obliged at preſent, to be kept within their bounds by proper fences, and ſeem to ſolicit their indolent owners to employ them, for their own emolument, and the benefit of the public.

There

There are alſo many fine opportunities for employing the larger rivers; ſome hundred acres of the flat tract of land below Keſwick, to the top of Baſſenthwaite-lake, might be irrigated, and prevented from being overflowed by embanking; a large portion near the foot of the lake, is capable of the ſame improvement. In Eſkdale, Lord Muncaſter has a fine opportunity of watering an extenſive tract.*—Near Carlton, on the Pettril, on the Ellen, and at many other places, we obſerved, where irrigation might be applied to great advantage.

We made an excurſion to the Biſhop of Llandaff's, at Colgarth Park, where that reſpectable prelate has a moſt admirable ſituation for watering.—He purpoſes to have a man from thoſe parts where the practice is beſt underſtood; a plan we highly approve; and from his known ſcientific acquirements, enlarged ideas, activity, and perſeverance in every good purſuit, we have no heſitation in ſaying, that future improvers will revere his memory, and admire the man, for adding to the character of a *good biſhop*, that of a *good farmer*; and for bleſſing theſe northern regions, by the introduction of a practice, from which ſo many, and ſuch great benefits are to reſult.—To this place, we hope, the Cumbrians will reſort, to be taught the moſt improved modes of irrigation; and by introducing the practice into their own country, will reap the rewards which it is ſo highly capable of affording, from this ſource of improvement.

Draining,—has been practiſed with great advantage, by a few enterprizing individuals; but much remains yet to be done, in almoſt every part of the county:

* We are glad to find that his Lordſhip has taken the hint, and brought an experienced perſon from near Cirenceſter, in Glouceſterſhire, with a view of introducing this ſpecies of improvement into this county; he purpoſes irrigating about 200 acres, in different ſituations, and upon different ſoils, and with water of different qualities.

to

to thoſe who are unacquainted with the benefits of draining, we beg leave to recommend it to their particular notice, as the firſt of improvements.

By Embanking, great advantages might be gained, eſpecially on the marſhes of Burgh, Rowcliff, Abbey-Holm, and at the mouth of the Duddon. To point out the mode by which this could be beſt accompliſhed, would require a more particular ſurvey; it is ſufficient, on this occaſion, to hint, that it may be done, and that conſiderable benefits would acrue from it, not only to many individuals, but to the public at large.*

To the Notice of other Diſtricts,

We would beg leave to recommend the uſe of *ſingle-horſe carts*; having been long convinced of their utility, we are glad to have an opportunity of ſtating to the public a few facts, which will fully evince their ſuperior advantages.

The horſes of Cumberland are not of a large ſize, one fifteen hands high, of a light form, that will anſwer either for riding or drawing ſeldom draws leſs in a ſingle-horſe cart than - - - - - - - 12 *cwt.*

The common load for a *draught horſe* of the above ſize is, - - - - - - 15

The carriers from Brampton to Newcaſtle, over a hilly country, carry frequently, - 18

We met a carrier's boy driving five carts from

* The ſouth-weſt part of Cumberland is in a manner inſulated, and cut off from all eaſy, ſafe, and ready communication with the ſouthern and weſtern parts of the kingdom; on the one hand, by the barrier of mountains which ſtretch from Kendal and Ulverſtone, to Penrith and Keſwick; and on the other, by the flow of the tides over the Lancaſter, Cartmel, and Duddon ſands; by which the paſſage is not only interrupted for ſeveral hours twice a day, but alſo rendered very unſafe and dangerous: all which might be avoided, by proper embankments, and at the ſame time a great quantity of land gained from the ravages of the ſea.

Longtown

Longtown to Newcaſtle; in which were four ton; or on each cart, - - 16 *cwt.*

A ſingle-horſe cart carries ten pigs of lead, of twelve ſtone each, which is - - 15

From the above it may be fairly concluded, that the common load for a ſingle-horſe cart, will be about 15 cwt.

In moſt countries, a two-horſe cart ſeldom carries more than, - - - - - 20 *cwt.*

Nor a three-horſe cart more tha , - - 30

Here a boy or a girl drives two ſingle-horſe carts, which carry - - - - - 30

Of courſe, *two horſes*, yoked in *ſingle-horſe carts*, will draw as much as *three horſes* yoked in *one cart*.

A common carrier at Carliſle, who many years employed a waggon, has laid it aſide, and now uſes *ſingle-horſe carts only*; as he finds he can, by that means, carry much greater weights.

There are few articles which may not be carried on a carriage of two wheels, equally as well as upon one of four, except long timber; and as waggons are ſo deſtructive to roads,* why ſhould their uſe be longer perſiſted in, as it is clear that the ſame number of horſes yoked in ſingle-horſe carts, will draw more than when yoked ſix or eight together;—they are eaſier loaded and unloaded, are much more handy, for almoſt every purpoſe; and ſix or eight may be driven by a man and a boy, which is a trifling additional expence. If a middle-ſized Cumberland horſe

* The ſuperior goodneſs of the roads in Cumberland may, in a great meaſure, be attributed to the univerſal uſe of ſingle-horſe carts.—Wherever waggons are uſed, they are the deſtruction of roads, eſpecially in hilly countries, where they are obliged to lock the wheels; the banks are in a manner ploughed up with them, and the nine inch wheels are, in reality, no more than three inch wheels, by the artful mode of laying on the middle courſe of tyre, which is *raiſed an inch above the reſt*; inſtead of being nearly exempted from tolls, every *horſe* drawing in a *waggon*, ought to pay *treble* to what ſhould be exacted from a *horſe* drawing in a *ſingle-horſe cart*.

draws

draws 15 cwt. a large ſtrong waggon horſe will as eaſily draw 20 cwt. and which is done in ſome parts of the kingdom.

For deſtroying Moles,—a moſt excellent practice is prevalent here, for every pariſh to let the taking of their moles, for a *term of years*, at a certain yearly ſum; which is raiſed in the ſame manner as the parochial taxes, and does not now exceed a halfpenny an acre; which, they juſtly obſerve, was much cheaper than they could have the ground *ſcaled for*, were the moles not deſtroyed in this manner. It is a pity but there was *a law* to oblige every pariſh in the kingdom, to deſtroy their moles in the ſame manner; which is done ſo effectually here, that we ſcarce ever ſaw a mole-hill upon the incloſed grounds of moſt parts of Cumberland.

WESTMORLAND

AAA. *Range of Mountains, Heathy, Coal, Lead, and Lime.*

B. *fertile Vale, of various Soils, chiefly moist, Loam & strong Clay, Lime, & Freestone.*

C. *light moorish Soil, Lime and Freestone.*

D. *Soil various, some rich grazing Land, Lime, Freestone, & a bed of poor Coal.*

E. *Mountainious District, interspersed with beautiful fertile Vales, no Freestone nor Coal, some black Lime stone, and plenty of the best blue Slate.*

F. *A fertile Vale, chiefly a good lime stone Soil, no Coal or Freestone.*

G. *Soil various, on the East Mountainous & Heathy, the rest partly a light sandy Soil, & partly a strong & rich Loam, plenty of Lime & Freestone, & some beds of poor Coal.*

J. Bailey del.

Neale sc.

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

WESTMORELAND,

WITH OBSERVATIONS

FOR THE MEANS OF ITS IMPROVEMENT;

Drawn up for the Conſideration of the

BOARD OF AGRICULTURE

AND

INTERNAL IMPROVEMENT,

BY

MR A. PRINGLE,

OF

BALENCRIEFF.

INTRODUCTION.

GREAT Britain had long availed herſelf of her naturally fortunate poſition for commerce, which, encouraged by every means that the wiſdom of the legiſlature could deviſe, had been carried to an extent hitherto unequalled in the univerſe; and the induſtry of her inhabitants, aſſiſted by the foſtering hand of government, had brought many branches of manufactures to the higheſt ſtate of perfection; while the cultivation of her fields was left to the feeble exertions of the huſbandman, aided only by bounties on the raiſing of flax, and on the exportation of corn It was reſerved for our days, to behold a Board, compoſed of the firſt officers of the ſtate, and of perſons equally reſpectable for high rank, diſtinguiſhed abilities, and independent fortune, eſtabliſhed to fix the attention of a great nation on the improvement of its ſoil, and to direct and aſſiſt in the ancient and moſt important of all arts, that of providing food for man.

The eyes of all Europe are already turned to this Board, which, it is believed, is the firſt national eſtabliſhment, on a great ſcale, that ever exiſted in any country in favour of agriculture, and the advantages of which now appear ſo obvious that it is a matter of aſtoniſhment that ſuch an inſtitution was not ſooner erected.

At the time of the landing of the Romans on this iſland, corn was raiſed only on the coaſts, and even ſo late as the expedition of Severus, tillage was altogether unknown in thoſe parts which lay between his wall and that of Antoninus. But, under the dominion of that wonderful

people, it ſoon came to be conſidered as the granary of the weſtern Empire, and immenſe quantities of corn were annually exported for the uſe of the armies in Germany and in Gaul; and in the year 359, when there happened to be an extraordinary demand upon the continent, Julian ordered eight hundred ſhips to be built, larger than the common barks, and ſent them to Britain for grain. It is not poſſible to aſcertain the capacity of theſe veſſels, but it is probable, from privileges that were granted to thoſe who built ſhips above a certain ſize, that many of them would contain more than ten thouſand Roman modia, or upwards of three hundred Engliſh quarters.

Conſidering the change of manners, it is not to be expected, that the days of ancient Rome will be revived, when the moſt diſtinguiſhed citizens united the culture of the liberal arts with the tillage of their fields, and when the higheſt Officers of the State, having left the helm of government, did not diſdain to lay hold of the ſtilts of the plough. When, however, we contemplate the rapid progreſs which agriculture made in this iſland, in the rude days of that ſuperſtitious people, who were governed in their time of ſowing by the age of the Moon, and the ſetting of the Pleiades, what may not be hoped for from the ſpirit of an enlightened nation, fully excited and directed to its proper objects by the newly eſtabliſhed Board, under whoſe auſpices, were but the ravages of war to ceaſe for a century, Great Britain would attain to an incredible degree of wealth and cultivation? Enjoying a ſoil of great original fertility, and a climate favourable to the growth of moſt branches of the vegetable kingdom, its craggy mountains and verdant hills would be cloathed with lofty timber, or bleat with innumerable flocks, its meadows would rear the ſtately bullock, and its fruitful plains would wave with the richeſt crops of every grain that the influence of a Britiſh ſun can pour into the lap of plenty. The perſe-

vering

vering hand of induſtry would even teach trees and plants to flouriſh that at preſent are ſickly and droop, and can hardly exiſt through the ſeverity of an inclement winter. In a few centuries more, others might be cultivated with ſucceſs, which, if directly tranſplanted to our climate, would immediately periſh. When peaches were firſt raiſed in Italy, all the world was ſurpriſed that they could be brought to perfection out of Perſia. What would Cæſar and Diodorus Siculus ſay, were they told that the moſt eſteemed wines of Europe are produced in Gaul, Germany, and Hungary, where they imagined that vines would not grow? Or Strabo, if he knew that figs can be propagated in the north of Scotland? Or Lucullus, that cherries will grow almoſt any where, which in his time were known only in Ceraſus, and the milder climates of Europe?

Trees and plants, being altogether paſſive, accommodate themſelves very ſlowly to a change of climate; but the idea has been already* thrown out, that even thoſe of the torrid zone *may* be made to flouriſh in northern regions, *may* become gradually inured to the climate, that the climate itſelf *may* be changed for the better, and that ſome thouſands of years hence, repoſing under their own olive trees, future Britons *may* quaff their own wine, or ſip their own tea, ſweetened with the juice of their own ſugar cane.

* No apology is due to the author of J. W. Spencer's travels for the freedom that is here uſed with them.

PRELIMINARY OBSERVATIONS

BY

THE BISHOP OF LANDAFF.

Extent of the County.

THE county of Weſtmoreland was ſurveyed in 1768, and a map of it, upon a ſcale of an inch to a mile, was engraved by Thomas Jeffreys, geographer to his Majeſty, in 1770. It appears, from this map, that the greateſt breadth of the county, from its ſouthern boundary, near Burton, to its northern one, near Penrith in Cumberland, is thirty-two miles, and that its greateſt length, from eaſt to weſt, is forty miles.

I covered this map very exactly with fine writing paper, except the Eſtuary near Millthrope and Windermere lake; I then cut out a ſlip of the paper of an inch in breadth, and of ten inches in length, and weighed it accurately; from another part of the ſame paper I cut another ſlip, two inches in breadth and five in length, and found it to be preciſely of the ſame weight as the firſt ſlip; and hence, as the ſurfaces of the two ſlips were equal, we may collect that the paper was of an uniform thickneſs. The area of each of theſe ſlips was ten ſquare inches, and conſequently covered a ſpace on the map equal to ten ſquare miles; I then weighed the whole of the paper which had covered the map, and by comparing the weight of the whole with the weight of what had covered ten ſquare miles, I found

the number of ſquare miles in the whole to be 844; now there are 640 ſtatute acres in a ſquare mile, and conſequently 540,160 acres in the whole county.

I meaſured this map in the ordinary way by reſolving it into triangles, and found its area to be equal to 636 ſquare miles, or 407,040 ſtatute acres.

Templeman, in his ſurvey of the globe, makes the area of the county of Weſtmoreland equal to 633 ſquare miles, and conſequently, according to him, it contains 405,120 acres. The medium of theſe three different eſtimates (though I am moſt diſpoſed to rely on the firſt) is 450,772.

Profeſſor *Zimmerman*, in his political ſurvey of Europe, eſtimates England and Wales at 54,112 ſquare miles, amounting to 34,631,680 ſtatute acres. *Templeman*, in the work above-mentioned, ſays that England and Wales contain 49,450 ſquare miles, or 31,648,000 ſtatute acres; the mean of theſe two gives 33,139,840 ſtatute acres for the whole ſurface of England and Wales, and hence the county of Weſtmoreland may, in ſuperficial content, be eſteemed a ſeventy-third part of England and Wales.

Proportion between the Cultivated and Waſte Lands in the County.

In 1689, when a bounty was firſt granted on the exportation of corn, one-third part of the land in England and Wales, or about eleven millions of acres, was ſuppoſed to lie in uncultivated commons; if this was then a juſt proportion between the cultivated and waſte parts of the kingdom, we may ſafely conclude, that much above one-third part of Weſtmoreland was then waſte land; as it is evident, from a bare view of the county, that few, if any counties in England, have, in proportion to their whole extent, ſo much uncultivated land as this has. The many incloſures which have taken place, during the laſt

laſt hundred years, have leſſened in ſome degree, the waſte land of the whole kingdom; but no incloſures of much conſequence have taken place in Weſtmoreland. Inſtead of one-third, I am diſpoſed to conjecture that three-fourth parts of Weſtmoreland conſiſt of uncultivated land: I will ſtate my reaſons for this conjecture, being as ſenſible as any perſon can be of the objections which may be made to it; but in a matter where there are no *data* to proceed upon, a conjectural argument may be allowed.

It appears, by the return made by the overſeers of the poor to the Houſe of Commons, that the ſum raiſed by aſſeſſment in all the pariſhes and townſhips of the county, at a medium of three years, ending in 1785, amounted to 5,757l.. The town of Kendall, including Kirkland, is the only large town in the county; it is found, by an actual ſurvey made this year, to contain 8089 inhabitants, having experienced an increaſe of 518 inhabitants ſince the year 1784; of the preſent number 143, or about one fifty-ſixth part of the whole, are *paupers* living in the workhouſe. The poor rates of this town amounted, according to the ſame return, to 1125l. a-year; this ſum being ſubducted from the annual amount of all the poor rates in the county, leaves 4632l. for the ſum raiſed from all the eſtates in the county, excluſive of Kendall. From particular inquiries in various pariſhes, I am of opinion, that the poor rates do not, in this county, exceed a ſhilling in the pound in the actual rental of all the lands; but a ſhilling in the pound (ſuppoſing the ſum annually raiſed to be 4632l.) will give a rental of 92,640l. All the land in Weſtmoreland, which can either be ploughed or mown for hay, is worth at leaſt a rent of a pound a ſtatute acre on an average; and hence it may be inferred, that 100,000 acres of ſuch land, or leſs than one-fourth part of the whole, would yield a rental equal to, if not exceeding, the rental of the county. The high incloſed rough

paſtures are let from one to five ſhillings an acre. But whether the uncultivated land in Weſtmoreland be equal to three-fourths, or one half of the whole, it cannot be queſtioned, that there is ſo much of it, as to render its improvement a matter not only of individual concern, but of national importance.

Improvement of Waſte Lands.

The uncultivated lands in Weſtmoreland are of various ſorts, with reſpect to ſoil and ſituation, and capable of different ſorts of improvement. Some of them conſiſt of extenſive commons in low ſituations, and are of an excellent ſoil; theſe might be improved by incloſures, without any riſk of loſs by the undertaking. Others conſtitute extenſive mountainous diſtricts, called by the natives *fells* and *moors*; the ſoil of theſe is, generally ſpeaking, an hazel mould. In its natural ſtate, it produces little elſe than a coarſe benty graſs, heath, and fern; or, in the language of the country, *ling* and *brackens*. Many of theſe fells are, in their preſent ſtate, of ſo little value, that the liberty of keeping ten ſheep on them may be hired for ſixpence a-year. Suppoſing ſix acres to be ſufficient for the maintenance of ten ſheep, the rent of ſuch land is a penny an acre; and the price of the fee ſimple of it, at twenty-four years purchaſe, two ſhillings. Whilſt there is an acre of ſuch waſte, improveable land in Great Britain, it may be hoped that, when the legiſlature ſhall turn its attention to the ſubject, no inhabitant of the iſland will be driven by diſtreſs, to ſeek a ſubſiſtence in Africa or America.

Above forty years ago an experiment was tried in Spain, with reſpect to the cultivation of waſte lands. Several thouſands of poor and vagabond people were ſettled on them at the expence of the government. If this experiment has ſucceeded (which may be eaſily known,) ſo far, as that the land has been made productive,

tive, that the ſettlers have been increaſed, and that the government has been reimburſed the whole or a principal part of its expence, it may induce other governments to adopt the ſame or a ſimilar plan. The giving a cottage, and a few acres of land, under a ſmall reſerved rent, and perhaps under other uſeful reſtrictions, to a poor man, is certainly a good way of improving the land. When a man has lands of his own, he and his family will exert in its cultivation, a quantity of labour which would not otherwiſe be brought into exiſtence. The value of this, otherwiſe non-exiſting labour is, in one reſpect, nothing; it ought not to be reckoned as a part of the expence attending the improvement of the land; and, on that account, many thouſands of acres of land might be brought into cultivation, which would not, in any other way, pay the expence of improvement. The manner of improving moor-land, by paring, burning, liming, &c. is well underſtood by ſome few individuals, and the advantage reſulting from it aſcertained, by what has been recently practiſed in ſome parts of the county on private eſtates.

There are many barren mountains in this county which do not admit improvement by paring and burning, and which are incapable of being profitably converted either into arable or good paſture land: yet the higheſt and moſt craggy parts, two acres of which do not afford ſuſtenance for ſix months in the year to one ſheep, might, with a great proſpect of ſucceſs, be planted with larches; I ſay with a great proſpect of ſucceſs, for I do not ſpeak with certainty, not knowing whether there are in Great Britain any plantations of larch made on ſuch expoſed and rocky ſituations as are here ſpoken of: But, on the other hand, it is known, that the larch grows in Italy on higher mountains than any that we have in this iſland; and not only that it grows in Italy, where the climate is

leſs

leſs ſevere than in Great Britain, but that it grows in the north of Ruſſia, where it is much more ſevere; for at Archangel, in the latitude of 64°, ſhips are built of larch growing in that climate.

It may be of uſe to ſtate the probable profit which would attend planting the land in queſtion with larch. A thouſand acres of this ſort of land might be incloſed with a circular wall ſix feet in height, (where the ſtones can be eaſily gotten, as they may in moſt parts,) after the rate of ſix ſhillings an acre, or 300l for the whole; five hundred larches, two feet in height, (ſo as to enable them to reſiſt the long graſs,) might be planted on each acre for fourteen ſhillings; hence a plantation of 500,000 larches might be made for 1000l. Now 1000l. improved at compound intereſt, at the rate of 4l. per cent. would, in ſixty years, amount to the ſum of 10,519l.; this is the accumulated loſs attending the incloſing and planting 1000 acres of rocky land in ſixty years. The rent of 1000 acres, at one penny an acre, is 4l. 3s. 4d. a-year; in eight years the larches would be out of all danger from ſheep, ſo that the loſs of rent ought only to be eſtimated for eight years; but 4l. 3s. 4d. a year, though improved after the ſame rate of compound intereſt, would not amount to 40l. in eight years; ſay, however, that it would amount to 81l. which is allowing more than two pence an acre for the annual rent of the land, then would the whole expence attending the plantation in ſixty years be 10,600l. If the amount of 81l for 52 years, be taken into conſideration, the expence of the plantation in 60 years will be 11,222l. I have here ſuppoſed ſheep to be ſhut out of the plantation for eight years; if it ſhould be found, that ſheep will not crop the larch, and from more than one obſervation, I have reaſon to believe that they will not, they need not be ſhut out at all; nor, on diſtricts, where nothing but ſheep are depaſtured, need

any

any fence be made. I know the advocates for close planting, instead of 500, would require 5000 larches for each acre; I am not convinced of the utility of such close planting, except where it is intended to nurse up oaks, or other kinds of wood; but if that mode should be adopted, the thinnings, after twenty years growth, would pay the expence of it. At the expiration of sixty years, suppose that only 250 larches remained on each acre, or that one half had perished; the probable value of them may be thus estimated. From a great many experiments made by myself and collected from others, I find the annual increase in circumference of the larch, at six feet from the ground, to be one inch and one half on an average of several years; and this inference has been drawn from the actual admeasurement of larches in different parts of England and Scotland, and of different ages, from ten years old to fifty. On this supposition, the larches would measure, one with another, ninety inches in circumference, at six feet from the ground. A larch which measures ninety inches, at six feet from the ground, would measure above seventy at twenty feet from the ground; but supposing seventy inches to be the circumference at twenty feet, and the length of the tree to be forty feet, neglecting the remaining top; then will its solid content be eighty-five cubic feet, and the value of the tree, at ninepence a foot, above three guineas. But as the trees are supposed to be planted in an high, bleak, barren situation, their annual increase may not be so great as is here supposed; instead of being worth, at sixty years after planting, three guineas a piece, admit that they are worth only ten shillings each, then would the whole plantation be worth 125,000l. and deducting the whole expence, 10,600l. as before estimated, there would remain a profit of 114,400l. The present value of 114,400l. to be received sixty years hence, is above 10,000l. (interest of money

money at 4l. per cent.) Ten thouſand pounds at 4l. per cent. purchaſes an income of 400l. a year: by planting then, a barren eſtate, of a thouſand acres, is improved from 4l. 3s. 4d. to 400l. a year, reckoning the value of a reverſion as a preſent certainty. Sixty years is a great part of the life of a man; but it ought to be conſidered as nothing in the exiſtence of a nation, or even of a family, which is a little nation. The waſte lands in this and other counties, are a public treaſure in the hands of private perſons; all of them ought to be converted into arable, meadow, or paſture land, which are capable of admitting, with profit, that kind of improvement: and ſuch of them as will not pay for that mode of improvement, ought to be covered with wood; the high parts, and eſpecially the ſheltered dells in the high parts, with larch, and the lower with oak, aſh, &c. When a ſpirit of agricultural improvement is fully excited, the individuals to whom ſuch uncultivated lands belong, will be prompted, by an attention to their own intereſt, to forward every judicious plan which may be propoſed, for rendering them more uſeful to the proprietors and to the community; their preſent application to the Summer-maintenance of a few miſerable ſheep, ought not to be perſevered in, if any other uſe can be made of them.

Coppices.

In ſome parts of Weſtmoreland, conſiderable portions of land are covered with coppices, conſiſting principally of oak, aſh, alder, birch, and hazel. Theſe underwoods are uſually cut down every ſixteenth year: The uſes to which they are applied are chiefly two—hoops and charcoal. The hoops are ſold in the wood at 5l. a thouſand; they are generally manufactured in the country, and ſent by ſea to Liverpool; the charcoal is ſent to the iron furnaces in the neighbourhood. The value of a ſtatute acre

of

of coppice-wood, of ſixteen years growth, is variable from 10l. to 15l.; and if it conſiſts altogether of oak, its price may amount to twenty guineas; 6l. for the charcoal, and 15l. for the bark; it being the cuſtom here to peel the bolls, and all the branches of the oak, which are equal to the thickneſs of a man's thumb.

It is an extraordinary thing, to ſee any trees left to ſtand for timber in theſe underwoods, the high price of bark being a temptation to cut the whole down. Fine ſaplings, from nine to twelve inches in circumference, at five feet from the ground, and with bark as ſplendid as poliſhed ſilver, are felled by the unfeeling proprietor, with as little regret as if they were thorns or briars. Of late, indeed, ſome few owners of underwoods have left ſtandards, and if they conſult their intereſt, the practice will become general. As this is a point denied by many proprietors of coppices, it may be of uſe to explain the principles on which the obſervation is founded.

Suppoſe a ſtatute acre of underwood to be, in the ſpring of 1794, ſixteen years old, and that the whole is then cut down and ſold for 14l.; this ſum will, in ſixty-four years, (reckoning compound intereſt at 4 per cent.) amount to 172l. In 1810 another fall of underwood, of the ſame value, will be made; the 14l. then ariſing, improved for forty-eight years, in the ſame way, will produce 91l. In 1826 another 14l. will ariſe from another fall of the underwood; this ſum, improved for thirty-two years, will amount to 49l. In 1842, another fall will produce 14l. which, in ſixteen years, will become 26l. And laſtly, in 1858, or in ſixty-four years from 1794, another fall will produce 14l. The amount of the value of the five falls, thus eſtimated and improved, will be 352l. Let us now calculate the profit which would reſult, in the ſame time, from the ſame acre of underwood, if it was managed in a different way. Inſtead of cutting the

the whole down in 1794, let us ſuppoſe that 150 of the beſt young oaks are left to ſtand for timber; the then value of theſe, at 2d. a tree, is 25s. this being ſubducted from 14l. the value of the whole coppice, leaves 12l. 15s. This ſum, improved as before, will amount, in ſixty-four years, to 156l. (ſhillings and pence in theſe calculations being neglected.) The next fall in 1810 ought not to be valued at more than 10l. as 150 trees, then of thirty two years growth, will do ſome injury to the underwood: 10l. in forty-eight years will amount to 65l. The next fall in 1826 may be valued at 8l. and at that time ſeventy five trees ſhould be taken down; theſe trees will then be forty-eight years old, and worth 15s. a tree, or 56l. in the whole; this added to 8l. the value of the then underwood, makes 64l. which, in thirty-two years, will produce 224l. Without eſtimating the underwood in 1842, and in 1858, at any thing, or the value of the paſturage for thirty-two years at any thing, let us ſuppoſe the ſeventy-five remaining trees to be cut down in 1858, being then eighty years old, and that they would, one with another, be worth 4l. a-piece, or 300l. in the whole: The ſum of the profits, thus ariſing, is 745l. or more than double the other amount.

It is a general opinion in this, and, I believe, in other countries, that it is more profitable to fell oak wood at fifty or ſixty years growth, than to let it ſtand for navy-timber to eighty or one hundred. According to the price which is now paid for that commodity, either by the Navy-Board, or the Eaſt India Company, I believe the opinion to be founded in truth. The following obſervations contain the reaſon for this belief.

If profit is conſidered, every tree of every kind ought to be cut down and ſold, when the annual increaſe in value of the tree, by its growth, is leſs than the annual intereſt of the money it would ſell for:—this being admitted

mitted, we have only to inquire into the annual increaſe in the value of oaks of different ages.

In the Philoſophical Tranſactions, for 1759, there are ſome uſeful tables reſpecting the growth of trees, by Mr Marſham; from theſe tables the two following inferences may be drawn:—

1. That it is highly profitable to let young thriving oaks, which are not worth above 30s. a tree, continue ſtanding.

2. That it is not profitable to let oaks of 80 or 100 years growth, continue ſtanding.

Three oaks, marked in the tables, No. 8, 11,—12, in April 1743, before they began to ſhoot, contained eleven and one half feet of wood, and were altogether worth, at eighteen pence a foot, bark included, 17s. 3d. The ſame trees, ſixteen years afterwards, contained thirty-four and one half feet, and were worth 2l. 11s. 9d. Now, if 17s. and 3d. had been improved at the rate of 7 per cent. at compound intereſt for ſixteen years, it would not have amounted to 2l. 11s. 9d.; and of conſequence the proprietor, by letting ſuch oaks ſtand, improves his property in as high a degree, as if he put out his money to intereſt at near ſeven and a half per cent.

Three oaks, No. 2,—3,—5, in 1743, contained 100½ feet of timber, and were worth 7l. 10s. 9d. The ſame trees, ſixteen years afterwards, contained 132½ feet, and were worth 9l. 18s. 6d. Now, 7l. 10s. 9d. the value of the trees in 1743, improved, at the low rate of intereſt of 2l. per cent. would, in ſixteen years, amount to a ſum exceeding 9l. 18s. 6d. The proprietor, then, by letting ſuch trees ſtand, does not improve his property at the rate of 2l. per cent.

The oak, No. 1, in the third table, was worth 1l. 2s. 6d. in 1757, it gained in one year one foot, or 1s. 6d. in value; if it had been worth 30s. and had gained one foot, there

there would have been no profit in letting it ſtand, as the intereſt of 30s. at 5 per cent would have produced 1s. 6d. in the year; and it is for this reaſon that I have fixed upon 30s. as the value of trees which ſhould be cut down; if they are cut ſooner or later, the proprietor will be a loſer. It muſt not be ſuppoſed, however, that great preciſion can attend this obſervation; ſince particular ſoils, or the greater or leſs thriving condition of the wood, may render it uſeful to cut down trees before they are worth 30s. or to let them ſtand a while longer. It ought to be remarked alſo, that large trees ſell for more per foot than ſmall ones do, yet the uſual increaſe of price, is not a compenſation to the proprietor, for letting his timber ſtand to a great age. This may be made out from the following experiment:

On the 27th October 1792, I meaſured, at ſix feet from the ground, the circumference of a very fine oak, of eighty-two years growth, from the time of its being planted, and found it to be 107 inches: On the ſame day of the month, in 1793, it meaſured 108 inches.—There is not one oak in fifty (at the age of this) which gains an inch in circumference, in one year. The length of the boll of this tree was about eighteen feet; it contained about eighty-four feet of timber, and was worth, at 3s, a foot, 12l. 12s. It gained in one year very little more than a foot and one half of timber, or 4s. 6d. in value; but the intereſt of 12l. 12s. at 4l. per cent. amounts, in one year, to above twice the value of the increaſe, even of this tree, which is a ſingularly thriving one.

I have been the more particular on this ſubject from a public conſideration. Many men are alarmed leſt our poſterity ſhould experience a ſcarcity of oak timber for the uſe of the navy; and various means of increaſing its quantity have been recommended with great judgment.

In

In addition to theſe means, the making a much greater than the ordinary increaſe of price on timber of a large ſcantling, might be not improperly ſubmitted to the conſideration of thoſe who are concerned in the buſineſs. If the Navy-board would give 8l. or 9l. a load for timber trees containing 100 cubic feet or upwards, inſtead of 4l. or 5l. every man in the kingdom would have a reaſonable motive for letting his timber ſtand till it became of a ſize fit for the uſe of the navy; whereas, according to the preſent price, it is every man's intereſt to cut it down ſooner.

In the neighbourhood of Ambleſide there is found a ſtratum of gray limeſtone, which, though it contains a little clay, might be as ſerviceable as the pureſt ſort for agricultural purpoſes; but, unfortunately for the improvement of this part of the county, coal is ſo dear, that very little of this limeſtone is burned. The lime which is uſed in the culture of the lands being either fetched from Kendall, or brought up Windermere lake, at a great expence. As there is great plenty of coppice wood in the diſtrict here ſpoken of, it may be uſeful for the farmers and land-owners to conſider, whether the burning of lime with fagots in a flame-kiln, as is practiſed in Suſſex, may not be a more beneficial application of the underwoods than the converting them into charcoal. Even the ſpray-wood, here called *chats*, which is too ſmall to be made into charcoal, and which is now ſold for ſixpence a cart, or more generally left on the ground, might be made into fagots, and mixed with wood of a larger ſize, ſo that no part of the coppice would be loſt. In Suſſex they uſe 600 fagots, cut in the Winter, and weighing, when dry in the Spring, thirty-ſix pounds each, for the burning of 480 Wincheſter buſhels of lime.

May I be permitted to hazard another conjecture, reſpecting the uſe to which coppices might be applied,

without injuring either the quantity or the quality of the charcoal obtained from them? Pit coal yields, by diſtillation, about a twenty-fourth part of its weight, of a thick tenacious oil, reſembling tar. All ſorts of wood yield a ſimilar oil by the ſame proceſs: I do not know whether the oil from wood be of an inferior, or of a ſuperior quality to that from pit coal; but I ſuſpect it to be fitter for cordage, &c. In the ordinary way of making charcoal, the whole of this oil is diſperſed in the form of ſmoke; may it not deſerve to be inquired, whether this oil might not be ſaved with profit? The proceſs which is uſed in America, for extracting tar from the pine tree, is little different from that by which charcoal is made in England. Whether the quantity of oil which might be obtained from a pit of wood, when converted into charcoal, would exceed in value the expence of procuring it, can only be decided by experiment. The reader may form ſome gueſs at the quantity, from the following ſtatement: The black part of guiacum wood yields a tenth, the ſappy part a thirteenth part of its weight, of thick black oil. Saſſafras wood, oak, aſh, alder, birch, &c. give by diſtillation, (and making charcoal is a ſpecies of diſtillation) from a twenty-fourth, to a twelfth part of their reſpective weights, of this oil. The difference in quantity ariſes from a diverſity in the texture, age, and dryneſs of the woods. I ſuppoſe that a cord of coppice wood would weigh a ton, and that four cords would make one dozen of ſacks of charcoal, and that wood of this ſort would yield a twentieth part of its weight of oil; on theſe ſuppoſitions there is diſſipated in making one dozen of charcoal, 448 lbs. of oil, or one ton in every five dozen.

CHAPTER I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. 1.—*Situation and Extent.*

WESTMORELAND is ſituated between 54° 11′ 30″, and 54° 42′ 30″, N. lat. and between 2° 20′, and 3° 12′, long. W. from London. It is an inland county, bounded on the N. by the biſhopric of Durham and Cumberland, on the W. by Cumberland and Lancaſhire, on the S. by Lancaſhire and Yorkſhire, and by Yorkſhire and Durham on the E.; and contains, according to the Biſhop of Landaff's Preliminary Obſervations, about 844 ſquare miles, or 540160 ſtatute acres: three fourth parts of which, he conjectures to conſiſt of uncultivated land.

SECT. 2.—*Diviſions.*

Weſtmoreland is divided into Eaſt Ward, Weſt Ward, Kendall, and Lonſdale Wards; and conſiſts of 26 pariſhes.

SECT. 3.—*Climate.*

The climate of this county, as may be expected from its vicinity to the weſtern ocean, over which the ſouth-weſt winds blow for eight months of the year, and bring the exhalations to deſcend in rain on the mountains, is remarkably moiſt. The quantity of rain that falls in the weſt part in a year has been aſcertained by rain-gages

kept at Kendall, and on the banks of Windermere. In the wet year, 1792, it amounted to eighty-three inches. In ordinary years it amounts to forty-five or fifty inches, the loweſt of which is twenty inches above the medium quantity that falls in Europe. The air, however, is pure and healthful, the Winters rather long and ſevere. In the Winter 1791—92, thirty-ſix pounds were paid for cutting only a horſe track through the ſnow upon leſs than ten miles of the road from Shap to Kendall.

SECT. 4.—*Soil and Surface.*

The county in general is ſo mountainous and hilly, that a great proportion of it muſt for ever remain undiſturbed by the plough. Between theſe mountains there are ſeveral very pleaſant and fertile vallies, that want only trees and hedge-rows to be truly beautiful. The moſt prevailing ſoil in Weſtmoreland, is a dry gravelly mould; ſand and hazel mould appear in various parts, but chiefly in the E. and N.; clay is found on a few farms towards the Eden and Eaſtern mountains, and a heavy moiſt ſoil on others in the N. parts of the county. Peat moſs makes its appearance in ſmall patches in many of the vales, and abounds on the tops of ſeveral high mountains, which, however, are in general covered with a dry ſoil, upon a hard blue rock, provincially called *rag*. The ſoil that lies upon a limeſtone bottom is uniformly eſteemed the beſt.

SECT. 5.—*Minerals.*

Notwithſtanding its mountainous ſurface, no valuable mines have yet been diſcovered in Weſtmoreland. Some trifling veins of lead-ore, have been found in the Eaſtern mountains; coal is wrought only in the S. E. extremity of the county, and in the neighbourhood of Shap, where a baſtard or crow coal is got.

Limeſtone

Limeſtone, in almoſt inexhauſtible abundance, is to be found in moſt parts of the county, except among the Weſtern hills, which afford an excellent kind of blue ſlates, well known over almoſt all England.

Gypſum is got at Acron-bank, near Kirkby-Thore, and a few other places: it is uſed for laying floors, but not at all as a manure.

Free-ſtone is found in the Eaſtern parts of the county, and at Hutton-roofe, about 10 miles from Kendall.

On the river Kent, about 3 miles below Kendall, a vein of beautiful marble was diſcovered, about four years ago, in the lands of Daniel Wilſon, Eſq; of Dallam-Tower, by ſome workmen who were building a barn, and the main quarry has been opened on the eſtate of that gentleman. It has lately been found on the oppoſite ſide of the river, in the property of —— Strickland, Eſq; of Syzergh.

SECT. 6.—*Water.*

Rivers.—Of the numerous ſtreams that ruſh from the mountains and water the vallies beneath, there are only three that preſerve their names to the ocean. The Eden, which ſprings in Mallerſtang, and having received in its courſe the Eamont and the Lowther, and many little rivulets, enters Cumberland, and running the whole length of that county, empties itſelf into the Solway Firth below Carliſle. The Kent riſes in Kentmere, waſhes the vale of Kendall, and loſes itſelf in the Eſtuary near Milthrope, the only ſeaport in the county. The third is the Lon or Lune, which has its ſource in Ravenſtonedale, and flows through the vale to which it gives its name, till it enters the county of Lancaſter, below Kirkby-Lonſdale.

Betwixt the mountains ſeveral extenſive lakes are formed, the beautiful verdure of whoſe banks, with their ſhady groves, limpid waters, and pebbly bottom, are par-

ticularly deſcribed in *the Guides to the Lakes*, offered to every traveller who viſits this part of the kingdom.

The rivers and lakes abound with many different kinds of fiſh, great part of which is now carried to Lancaſter and Liverpool.

CHAPTER II.

STATE OF PROPERTY.

SECT. 1.—*Eſtates and their Management.*

A Large proportion of the county of Weſtmoreland is poſſeſſed by a Yeomanry, who occupy ſmall eſtates of their own from 10l. to 50l. a year. The remainder conſiſts of larger eſtates belonging to Noblemen and Gentlemen, ſeveral of whom are reſident in the county, and take the management into their own hands. Others entruſt the care of their affairs, in a great meaſure, to ſtewards.

SECT. 2.—*Tenures.*

The larger eſtates in Weſtmoreland are commonly freehold, and the ſmall tenements, mentioned in the laſt ſection, are generally held under the lord of the manor, by *cuſtomary tenure*, which differs but little from that by *copyhold*, or copy of *court roll*. In ſome manors the tenant pays only a heriot, and fine certain, on death of the lord or tenant; in others the fine is arbitrary, on death or purchaſe. On cuſtomary eſtates, the wood is generally claimed by the lord of the manor.

CHAPTER III.

BUILDINGS.

SECT. 1.—*Houſes of Proprietors.*

FROM the ſhort reſidence the Author of this Report made in Weſtmoreland, he cannot pretend even to enumerate the various ſeats of the great proprietors throughout the county, and the neat ſnug boxes, belonging to gentlemen of moderate fortune, that adorn the banks of its beautiful lakes.

SECT. 2.—*Farm Houſes, Offices, and Repairs.*

The lands of the *ſtateſmen* and farmers in this county lie ſo intermixed that their habitations and offices, which are often built together in little ſtraggling villages, muſt of neceſſity be very inconvenient for farming purpoſes; but convenience has been little ſtudied even on thoſe farms whoſe fields lie unmixed. The principal ſtructure is a barn, which, at the ſame time that it has a ſtable and cow-houſe underneath, is frequently large enough to contain the whole crop of both corn and hay, ſo that it is rare to ſee a ſtack of either. Theſe barns are often twenty yards in length, five in width, and five yards in height in the ſide walls. The expence of bringing all the materials from a moderate diſtance, and of building a barn of ſuch dimenſions with a ſlated roof, may be about ſeventy guineas. The houſes are generally covered with ſlates, which are found in ſeveral parts of the county.

The ſlates are not nailed on boards, but hung with oak pegs on laths, and plaiſtered in the inſide of the roof. A few houſes are ſtill thatched with wheat ſtraw, which is ſold from 1s. 2d. to 1s. 8d. a threave of twenty-four ſheaves.

The expences of repairs are, for the moſt part, defrayed by the landlord.

SECT. 3.—*Cottages.*

There are very few mere cottages in the county; the labourer and mechanic generally reſide in a ſmall farm-houſe, and occupy more or leſs land.

CHAPTER IV.

MODE OF OCCUPATION.

SECT. 1.—*Size of Farms—Character of Farmers.*

FARMS in general are ſo ſmall, that it is rare to meet with one of 100l. a year of rent, though there are ſome of even 200l. or 250l. a year.

It might be uſeful to know what proportion of the lands in the county is poſſeſſed by that numerous and reſpectable Yeomanry already mentioned as occupying ſmall eſtates of their own from 10l. or 20l. to 50l. a year. Theſe men, in contradiſtinction to farmers, or thoſe who hire the land they occupy, are uſually denominated *ſtateſmen*. They live poorly, and labour hard; and ſome of them, particularly in the vicinity of Kendall, in the intervals

tervals of labour from agricultural avocations, buſy themſelves in weaving ſtuffs for the manufacturers of that town. The conſciouſneſs of their independence renders them impatient of oppreſſion or inſult, but they are gentle and obliging when treated by their ſuperiors with kindneſs and reſpect. This claſs of men is daily decreaſing. The turnpike roads have brought the manners of the capital to this extremity of the kingdom. The ſimplicity of ancient times is gone. Finer clothes, better dwellings, and more expenſive viands, are now ſought after by all. This change of manners, combined with other circumſtances which have taken place within the laſt forty years, has compelled many a *ſtateſman* to ſell his property, and reduced him to the neceſſity of working as a labourer in thoſe fields, which perhap he and his anceſtors had for many generations cultivated as their own. It is difficult to contemplate this change without regret; but conſidering the matter on the ſcale of national utility, it may be queſtioned whether the agriculture of the county will not be improved as the landed property of it becomes leſs divided.

It is painful to one, who has in his compoſition the ſmalleſt ſpark of knight errantry, to behold the beautiful ſervant maids of this county toiling in the ſevere labours of the field. They drive the harrows, or the ploughs, when they are drawn by three or four horſes; nay, it is not uncommon to ſee, ſweating at the dung-cart, a girl, whoſe elegant features, and delicate nicely-proportioned limbs, ſeemingly but ill accord with ſuch rough employment.

A judgment of the refinement and civilization of a people has been often formed from their treatment of the fair ſex, and in this reſpect France was formerly held up to the world as a model. Unfortunately the manners of nations are too often painted by thoſe who have been

been converſant only with perſons in what may be called high life; but were it allowable to apply this rule even to France, and to look for ſpecimens into the lower orders of ſociety, (and it is there ſurely that the moſt faithful repreſentatives of national character or manners are to be met with) it would be found that the women, even in the boaſted days of her monarchy, were doomed to the ſevereſt labour, to load the dung-cart, to ſaw the wood, and to threſh the corn.

The common people of both ſexes wear, eſpecially in the winter ſeaſon, inſtead of ſhoes, *cloggs*, which differ from ſhoes in this, that the bottom part is made of wood. The wood is generally either birch, alder, or ſycamore; it is about an inch in thickneſs, and a rim of iron is nailed round the bottom of it. A pair of *cloggs* coſts 3s. 6d.; they keep the feet warm and dry, and, with good care, will laſt a twelvemonth.

SECT. 2.—*Rent.*

The rent of the land varies with its ſituation and fertility. In all ſituations, and of all qualities, it has encreaſed greatly in its value within theſe few years. This may be owing partly to the advance in the price of its productions, and partly to improvements in the art of farming. At Shap, Ambieſide, and in Troutbeck, the beſt hay-meadows are let at about 50s. the cuſtomary acre. Near towns the rent of the beſt fields to be mowed may be, at a medium, rather above 3l. per acre. At Kirkby-Stephen and Appleby they are not quite ſo valuable. Near Kendall, Burton, and Milthrope, ſome fields are let at 4l.; and at Kirkby-Londſdale there are a few which fetch above 5l. Lands of inferior kinds may be hired for paſture at all varieties of price. In Ravenſtondale, where no tithes are paid, and where the land derives no part of its value from its ſituation, there are between 2000 and 3000 acres

acres incloſed; four fifths of theſe are let from 4s. to 11s. the ſtatute-acre, and the remaining fifth from 20s. to 40s.

In the bottom of Weſtmoreland a farm of an hundred acres of incloſed land may be hired upon leaſe for 150l. A farm containing much coarſe paſture-land may be had for 20s. or 24s. per acre. It is not always known whether theſe coarſe paſtures have been meaſured, they being ſometimes eſtimated by the number of cattle they can maintain.

Beſides the rent, the farmer is ſubjected to the payment of tithes, poor rates, and road money

Sect. 3.—*Tithes.*

In ſome parts of Weſtmoreland, tithes are taken in kind; in ſome, each farmer has an opportunity of taking his own tithes; in others, the land is tithe free, or pays a ſmall preſcription in lieu of tithes.

Sect. 4.—*Poor Rates.*

From the beſt information he has been able to collect, the Biſhop of Landaff, in the Preliminary Obſervations, has ſtated the average of poor rates, not to exceed a ſhilling in the pound, in the rental of all the lands in the county.

Sect. 5.—*Leaſes.*

The mode of farming is nearly the ſame throughout the county; and the courſe of crops is often pointed out to the farmer in his leaſe, which is generally for ſeven or nine years, ſometimes only for five or three years, at others for fourteen, and in a few inſtances for twenty-one years. Some principal land-owners grant no leaſes.

Sect.

SECT. 6.—*Expence and Profit.*

A long and intimate acquaintance with the management of farmers, would be neceſſary to ſtate any thing with preciſion, upon this part of the ſubject. It has been ſaid, that the general œconomy of a farm of 100 acres, at a rent of as many pounds, does not differ widely from the following ſtatement: 15 acres, under crops of barley and oats, 35 acres in hay, and the remaining 50 acres in paſture; that 10 dairy cows kept on the beſt of this paſture, might probably yield 20 firkins of butter, and that the profit would be 60l. or 23l. per cent, upon 260l. the capital employed.

CHAPTER V.

IMPLEMENTS.

IT has long been known what angle the ſail ought to form with the keel to make the ſhip move in the water with the greateſt velocity; but, to the preſent day, was reſerved the diſcovery of the angles which the component parts of the plough ought to form with one another, and with the line of draught, in order that that inſtrument might meet with the leaſt poſſible reſiſtance in the performance of its operation. Agriculture cannot but advance with haſty ſtrides, when the principles of philoſophy and the powers of mechaniſm are directed to its improvement.

Ploughs.—The ploughs of Weſtmoreland are light, and, although

although not neatly conſtructed, they are perhaps not ill ſuited to the ſoil they are deſtined to cultivate; ſome of them have a wheel at the extremity of the beam, which, it is imagined, ſerves to keep the furrow of an equal depth. They are drawn moſt commonly by two, but ſometimes by three horſes. The turnwriſt plough has been introduced into the county by the Biſhop of Landaff, and may be of great ſervice in ploughing the ſides of the hills, which are very numerous and ſteep in the arable lands.

Carts.—The carts are of various deſcriptions and ſizes. Thoſe moſt commonly uſed may be fifty-two inches in length, thirty-ſix in breadth, and fourteen and one half inches in depth, containing leſs than ſixteen cubic feet. They are mounted in ſome places upon clog-wheels, and have two-thirds of their length before the axle, which is of wood. There is ſcarcely a farming waggon to be met with in the county; it being a general opinion that four horſes in four ſeparate carts will draw a greater weight than if they were yoked together in a waggon.

The winnowing machines, which are here very common, and the harrows, are both of the ordinary kinds. The drill huſbandry being yet in its infancy, there are few inſtruments for hoeing or drilling.

CHAPTER VI.

INCLOSING FENCES—GATES.

EXCEPT a very few open fields on the eaſt ſide of the river Eden, the whole cultivated land in the county is divided, by hedges or ſtone walls, into incloſures, many of which

which do not contain half an acre; there are a few of 8 or 10 acres, and in general they may contain from 3 to 5 acres.

The gates are of the moſt ordinary kind, being often made by the farmer himſelf, of ſuch wood as happens to be upon the eſtate.

CHAPTER VII.

ARABLE LAND.

SECT. I.—*Tillage, Fallowing, Rotation of Crops, and Crops commonly cultivated.*

Courſe of Crops.

WHEN a field of graſs is overgrown with moſs, which commonly happens in ſeven or ten years, it is broken up with the plough in the beginning of March, and ſown about the firſt of April with oats, at the rate of ſeven and one-half Wincheſter buſhels upon the cuſtomary acre of 6,760 ſquare yards. The crop is reaped about the middle of September, and ſixty buſhels are reckoned a tolerably good return.

Second Crop.—The land is ploughed for the ſecond crop as ſoon after Candlemas as the weather will permit, and eighty or a hundred cart-loads of ſtable-yard dung are laid upon the acre. It is ploughed again in April, and ſown with four buſhels of barley or bigg. The harveſt is earlier than that of the oats, and fifty-four buſhels are reckoned a good crop. Some farmers plough three times for barley, but it is the general practice that is here deſcribed.

Third

Third Crop.—After the barley the land is ploughed in April, and eight buſhels of oats per acre are immediately ſown upon it. The harveſt is commonly in September, and the crop is uſually as good as the firſt was.

This is the moſt ordinary ſucceſſion of crops, though it is ſometimes broken through by taking two crops of oats before the barley, which, in that caſe, is followed by another of oats. The land is then left to itſelf, and the firſt year it produces a light crop of hay of bad quality. In the third year the crop is at the beſt with regard to both quantity and quality. In ſeven or in ten years it is again moſſed over, and is again ploughed up to undergo a ſimilar treatment.

Exceptions.—*1ſt.* To this general mode of management there are ſeveral exceptions, which perhaps it would be improper to omit. From Kirkby-Steven to Brough and Appleby, and from that town to Temple-Sowerby, the ſoil is a deep ſand, which, by cultivation, becomes more compact, and more retentive of moiſture. The fields of graſs, moſs over ſooner or later, according to the quality of the ſoil; ſome, where the ſoil is thinneſt, and the ſubjacent ſtratum the pooreſt, it is judged neceſſary to break up after an interval of only four or ſix years. In this part of the county there are particular farms, where, after the ſecond crop, which is oats generally inferior to the firſt, the land is ſummer fallowed, planted with potatoes, or ſown with turnips, which laſt are given to the wintering ſtock of cattle and ſheep. Dung is always laid upon the fields deſigned for turnips and potatoes, and the remainder upon the fallow, which is likewiſe invariably and always ſucceſsfully limed at the rate of ſeventy-five Wincheſter buſhels per acre. What is ſo fallowed is ſown, in the middle of September, with two and one-half buſhels of rye per acre. The crop is reaped before a year goes round, and thirty buſhels are reckoned a good return.

In

In the month of May, graſs-ſeeds are ſown amongſt the rye, but are never covered either by the harrow or the roller. Thoſe fields which were turnips and potatoes are ſown with barley or oats, and graſs-ſeeds, in the following quantities to an acre: eight pounds narrow-leafed red clover ſeed, which is preferred to the common broad-leafed clover, becauſe it remains longer in the ground; four pounds white clover, four pounds hop clover, four pounds of rib-graſs, and from five to ten buſhels of hay ſeeds ſhaken from the crop of the former year. Theſe conſiſt chiefly of *Bent* graſs, which ſeems to be a ſpecies of rye-graſs, of the great *Poa*, or oat graſs, and *Dark* graſs, or Flanders hay-ſeeds. The firſt year, whether it be hayed or paſtured, the crop is far more valuable than that of any natural graſs in the neighbourhood upon ſoil of an equal quality; and the cattle, eſpecially the horſes, uniformly prefer theſe artificial graſſes to thoſe which the land produces of its own accord.

Exception 2*d*.—In the immediate neighbourhood of Kendall, where the ſoil is gravelly or ſandy, it is not unuſual to take potatoes for the ſecond crop, and barley for the third; the land is then ſometimes left to itſelf, but for the moſt part the barley is followed by a crop of oats. A great many potatoes are grown and conſumed in the county. The price, at the time of taking them up, is commonly 1s. 4d. per Wincheſter buſhel; in the Winter and Spring it often riſes to 2s. The produce is variable, from 250 to 350 Wincheſter buſhels per ſtatute acre. They are cultivated in various ways, but chiefly by the plough. The inhabitants think that potatoes from freſh ground are of the beſt quality, but the product is uſually the greateſt from an oat ſtubble. Sometimes the farmer grows the potatoes at his own riſk; at others he manures the land with 100 cart-loads of dung per cuſtomary acre, ploughs it once, and lets it in this ſtate at 2s, the perch

to

to the manufacturers and labourers of Kendall, who furniſh the plants and the reſt of the labour. The price they pay is high, but reckoning little for the work they beſtow upon it, which is conducive to their health, they are often well ſatisfied with their crop which is ſometimes very great, the land being well adapted for the cultivation of this root.

Exception 3*d.*—From Millthrope to Burton, and from Burton by Farlton to Kirkby Lonſdale, both the farms and incloſures appear to be ſomewhat larger than in moſt other parts of the county, and it is not quite ſo rare to ſee a few acres of wheat. The land deſigned for this crop is ſummer-fallowed after the firſt or ſecond year from the ley, and is well manured with dung or lime, or with both. It is ſown in September, with wheat ſoaked in brine, or waſhed with chamberlye, and dried with lime, at the rate of four buſhels per cuſtomary acre. Forty-five buſhels are reckoned a good crop; and the harveſt may be ten days earlier than it is in the northern parts of the county. If the land is again manured, it is ſown with barley after the wheat; if not manured, it is ſown with oats.

SECT. 2.—*Crops not commonly cultivated.*

It is painful to be obliged, in this ſection, to mention peaſe, beans, turnips, clover, and rye-graſs; but it is hoped the time is not far diſtant, when they will be cultivated on every farm. Cabbages have been tried in the fields near Kendall, and rape has lately been ſown in ſmall quantities, in different parts of the county, with great ſucceſs.

Flax and hemp are now rarely ſeen growing here, though, 50 years ago, a little hemp was ſown by almoſt every cottager and ſtateſman.

CHAPTER VIII.

GRASS.

SECT. I.—*Natural Meadows, and Paſture.*

EVERY occupier of land, whether *ſtateſman* or *farmer*, having it in his power to keep any number of cattle, through the months of Summer, upon *joiſted* fields where they may be kept at a cheap rate, or upon commons where they may be kept almoſt for nothing, it is a principal object with him, to provide for them plenty of Winter food. Hence his attention is chiefly directed to his crop of hay. It has been already ſtated, that the quantity of land, at preſent under culture, does not exceed one-fourth part of the whole county, or 135,000 acres. Had all the arable land in the county been cropped with corn three years out of twelve, there would have been preciſely one-fourth part of the whole in tillage; but there are many paſtures of an inferior ſort, which are very ſeldom ploughed, and in the high parts there is a much ſmaller proportion of the land in corn than there is in the low parts. In the very extenſive manor of Ravenſtondale, although there are between 2000 and 3000 acres incloſed, there are not ſixty acres of corn; and it is probable that there are not in the county more than 20,000 acres under crops of corn in one year. The remaining 115,000 acres are cut for hay, or depaſtured with fattening beaſts and riſing ſtock, or with cows applied to the purpoſes of the dairy. From ſuch an inſpection of the county as was had with a view to the framing

framing of this Report, the proportions uſed for theſe different purpoſes cannot be even gueſſed at; but that for hay is perhaps the moſt conſiderable. A prejudice againſt the artificial graſſes prevails ſo generally over all the county, that it may be almoſt literally ſaid, they are never ſown. When the land has produced a few crops of corn, and it is judged that the moſs is quite deſtroyed, it is left to itſelf; and ſuch is the humidity of the climate, and ſo ſtrong is the vegetation of weeds and natural graſſes, that the very firſt crop has, by actual experiment, been found to produce 120 ſtones of hay per acre, weighed from the field. As every perſon who expects to have occaſion for hay, hires a field to ſupply him with that commodity, it is not often that hay is ſold in large quantities; and it is ſtill ſeldomer that the quantity raiſed upon an acre is exactly aſcertained. When ſold, it may bring from 4d. to 6d. a ſtone in Winter and Spring, or from 4s. to 5s. a cubic yard. A cubic yard in the lower part of a well-preſſed mow may contain twelve ſtones of hay, and has been known to ſell as high as 7s. or 8s. In the ſouthern and in the eaſtern parts of the county, much attention is paid to the making of compoſt dung-hills, which, with the dung that remains after manuring for the barley crop, are always laid upon the hay grounds, and are thought conſiderably to retard the progreſs of the moſs. At Kendall and other places, where dung can be purchaſed, they are manured after the firſt crop, and every third year while they continue in graſs.

SECT. 2.—*Artificial Graſſes.*

It was mentioned in the laſt ſection of the former chapter, that crops of clover, and rye-graſs, had not yet entered into the general courſe, and therefore nothing can here be ſaid upon this part of the ſubject, except that they have been tried on ſeveral farms, where they

have fully anſwered the expectations of thoſe who made the experiment. Some hints concerning the advantages of this practice may be ſeen in the concluſion to this little Work.

SECT. 3.—*Hay Harveſt.*

Although this is the principal harveſt in moſt parts of Weſtmoreland, nothing worthy of notice occurs upon the ſubject, except, perhaps, the celerity with which the crop is got, it being generally carried into the barn, if the weather is good, within three or four days after being mown.

SECT. 4.—*Feeding.*

Fattening Cattle.—The young cattle are kept on the lands of inferior quality in Summer, and have ſtraw and a little hay given them in Winter. When three years old, if barren, they are either fattened in the paſtures, or ſold to the graziers of Yorkſhire and Lancaſhire from 5l. to 8l. a piece; if with calf, from 7l. 10s. to 10l.

Ten thouſand Scotch cattle are annually ſold at Broughhill fair in the end of September. Though numbers of theſe are carried off by drovers to the ſouth of England, and many are brought by graziers from other counties, great quantities remain in Weſtmoreland. They are wintered on the coarſe paſtures, and in the ſtraw yard; in May following the young ones are ſent to the commons; and thoſe of an age proper for feeding are put upon the beſt grounds, and are ready for the ſhambles in October.

Heifers are *joiſted* upon tolerably good paſture from 10th May to Michaelmas, at from 1l. 1s. to 1l. 7s. a head. Horſes are grazed among fattening cattle for 3s. 6d. a week. Young horſes are kept from Michaelmas to 5th March

March on the inferior kinds of land, and have ſtraw given them in bad weather for 2s. a week.

Fattening Sheep.—Almoſt all the ſheep in the county, except the wedders after the firſt year, are brought from the mountains on the approach of Winter, and kept in the incloſed grounds till the month of April. Some graziers ſtock part of their paſtures with wedders, or with ewes and lambs. The mutton and lamb, which remain after ſupplying the conſumption at home, are ſent to Lancaſter and Liverpool.

CHAPTER IX.

GARDENS AND ORCHARDS.

ALMOST every family in Weſtmoreland has a ſmall garden for ſupplying them with the common pot-herbs.

There are ſeveral orchards in the county, which are ſaid to be flouriſhing and profitable. The common fruit trees ſucceed well in the low and warm vales, but their culture is little attended to.

CHAPTER X.

WOODS AND PLANTATIONS.

AT Whinfield Foreſt, and at Lowther-hall, the ſeat of the Right Honourable the Earl of Lonſdale, there are

very extenſive plantations, where many of the trees have grown to an uncommon ſize. Several of the oaks at Lowther-hall, have been valued at ſixty pounds a piece. There are many ſmaller plantations, and various clumps of trees throughout the county, where the wood ſprings with a degree of vigour, hardly to be expected in ſuch bleak and expoſed ſituations as many of them are planted in.

On the diviſion of Kendall common, part of a very high and rocky hill, not being capable of any other improvement, was planted with Scotch fir, larch, oak, aſh, &c. &c. all of which are very thriving.

The banks of the lakes are likewiſe adorned with very beautiful coppices.

The Biſhop of Landaff has planted, on ſome high ground near Ambleſide, above an hundred acres with oak, aſh, elm, beech, ſycamore, Scotch fir, and larch. He is doubtful whether the climate be not too cold for any ſort of wood, except the fir and larch; the other kinds, after ſeven years growth, are alive, but ſtunted; they ſhoot a little in the Spring, but that ſhoot periſhes, as to its greateſt part, in the Winter. Some of them have been cut down, but the new ſhoots do not promiſe well. The firs and larches, but eſpecially the larches, thrive as well as he could wiſh.

CHAPTER XI.

WASTES.

THE Waſtes in this county are very extenſive and valuable. They are depaſtured chiefly with ſtocks of ſheep,

ſheep, which are managed in nearly the ſame way, whether the ground be in common, or in ſeveralty.

In Winter, all the ſheep are brought down to the incloſed fields, except the wedders, which, being thought able to endure the ſeverity of any ſtorm or fall of ſnow, are left to ſhift for themſelves upon the waſtes, where they remain till they are four years and a half old, when they are ſold from 9s. to 13s. a head. Having dropped their lambs, the ewes, in the end of April, are ſent back to the waſtes, where the whole flock paſtures indiſcriminately without an attendant. The lambs are ſometimes ſuffered to wean themſelves; at others, the teats of the ewe are faſtened up to her udder by a plaiſter of coarſe paper and pitch. The value of the wool, and the expence of ſalving, are the ſame with thoſe mentioned, ſect. 2.—chap. 13.

Scotch Sheep.—Great numbers of Scotch hogs and dinmonds are annually bought at Stagſhawbank fair in the month of June, and grazed on the waſtes of this county. On ſome they are found to anſwer very badly; on others they thrive well, and are ready for the grazier a year earlier than thoſe of the native breed. There is here a ſtrong prejudice in favour of theſe coarſe-woolled ſheep, which there is every reaſon to believe is ill founded, the ſort now known under the name of the *Cheviot* breed being equally hardy, and much more profitable from the ſuperior value of their fleece.

Black Cattle.—In addition to all theſe ſheep, numerous herds of black cattle are likewiſe to be ſeen upon the commons. A few of theſe are of the breed of the county, and the reſt are Scotch, either bought at Brough-hill fair in the end of September, and wintered on the low grounds and in the ſtraw-yard, or purchaſed in the Spring from drovers, who fetch them from Galloway and Dumbarton. In Autumn, they are either ſold to the

ſouth-country drovers, or wintered and fattened in the county.

Ponies.—A few ponies of the Scotch breed are reared upon the commons; but the practice not being general, it need not be dilated upon.

Geeſe.—Great numbers of geeſe are bred upon the commons, and ſold to the Yorkſhire drovers at about 1s. 4d. a head.

It is generally underſtood that no perſon ſhall ſend to graze on any common more ſtock than he can winter upon his eſtate or farm, in right of which he has a title to paſturage on that common. This regulation, however, is little attended to, and the commons are almoſt always overſtocked to ſuch a degree, that many perſons do not think it worth while to avail themſelves of their right of commonage.

On ſtinted paſtures, it is very ordinary to hire out the right of keeping both cattle and ſheep. A Summer's graſs for an ox, or for ten ſheep, on Foreſt Hall, and Moſley common, is let at 4s.; on a part of Troutbeck common, where no ſheep are allowed to feed, an ox may be kept for 3s. 6d. and on another part of the ſame common, *an ox or ten ſheep may remain all the year for ſixpence.*

CHAPTER XII.

IMPROVEMENTS.

SECT. 1.—*Draining.*

THE importance of having the land lie dry, and of preventing the water, which, in wet weather, breaks out upon the declivities of the hills, from chilling the fields below, is well known in Weſtmoreland. The method of draining is faſt improving, and the practice is daily gaining ground. The drains are generally walled in the ſides, and covered with large ſtones out of the reach of the plough.

SECT. 2.—*Paring and Burning.*

The operation of paring and burning is much practiſed in Weſtmoreland, both in improving moor lands, and in reclaiming rough paſtures, that have been allowed to return almoſt to a ſtate of nature It produces excellent crops at firſt, but the effect is diminiſhed every repetition, and farmers are too apt to exhauſt the land by repeated crops of oats without any manure.

The expence is ſaid to be from 15s. to 20s. per ſtatute acre.

SECT. 3.—*Manuring.*

Dung.—To increaſe the quantity of his manure, and to apply it to the greateſt advantage, are by no means the leaſt important of the various branches of the farmer's

mer's avocation. In thoſe parts of Weſtmoreland where ſummer-fallowing is not practiſed, the land deſigned for barley and poratoes always receives the ſtable yard dung at the rate of 60, 80, or 100 ſingle-horſe cart-loads an acre; and in Autumn, what remains is laid upon the hay-grounds, at a rate per acre conſiderably leſs.

On ſome few farms in the neighbourhood of Appleby, where ſummer-fallow and crops of turnips may almoſt be ſaid to enter into the general courſe, the dung is carried in Winter from the yard to the fields, and laid down in a heap, which is turned over two or three times, with a view to accelerate putrefaction. Twenty cart-loads per acre are laid upon the turnip land and the fallow, and its operation is always aſſiſted by the addition of ſeventy-five Wincheſter buſhels of lime. Dung is ſold at Kendall and at Milthrope for 1s. a cart load.

Lime.—In moſt parts of Weſtmoreland, limeſtone is found in inexhauſtible plenty; but coals to burn it muſt be carried from ſuch a diſtance, that its application to the purpoſes of agriculture has not yet become general. When, by the projected canal to Kendall, coals ſhall be brought into the heart of the county, its uſe muſt ſoon become univerſal.

It is ſometimes laid upon the land when it is in tillage, but for the moſt part it is ſpread upon the ſurface of graſs fields; and it has been found to ſweeten ſuch as are coarſe and benty amazingly.

In whatever way it is applied, and in whatever quantity, varying from 75 to 480 Wincheſter buſhels an acre, it is always attended with wonderful effect. The price at the kilns is 3d. or 4d. a buſhel.

Compoſts.—Much attention is paid to the making of compoſt dung hills in many parts of Weſtmoreland. They are moſt commonly ſpread upon graſs, and experience has ſhewn, that they at once improve its quality, and

check

check for years the progreſs of the moſs. One hundred cart-loads of earth, rakings of the roads, mud, or rotten leaves, and fifty of dung, carefully mixed with 300 Winchester buſhels of lime, are laid upon three acres with great advantage.

Marl.—This valuable manure was ſcarcely known in Weſtmoreland, till about three years ago, when a ſpecies of rock marl was diſcovered on Bolton Common. It is eaſily come at, and has been applied with advantage, upon a ſmall ſcale, at the rate of 80 ſingle horſe cart-loads to an acre. It is more than probable that, if properly ſought for, *ſhell marl* might be got in many of the low grounds and marſhes, with which Weſtmoreland abounds.

SECT. 4.—*Weeding.*

The weeding of turnips and potatoes, is practiſed in Weſtmoreland; but the hoeing of turnips is in general ſo ill executed, that a gentleman of fortune in the county has recommended to the Board of Agriculture, to ſend ſome turnip-hoers from thoſe diſtricts, where this ſimple operation is better underſtood.

The larger weeds are taken out from amongſt the growing corn; but it is very ſeldom that docks, ragweeds, &c. &c. are deſtroyed on the meadows and paſtures.

SECT. 5.—*Watering.*

The fertility attending the overflowing of the Nile, and other muddy rivers, has been long known and well explained, from their depoſiting the earthy, oleaginous, ſaline, putreſcent ingredients, with which, in their courſe from the mountains, they become impregnated; but it is a late diſcovery in philoſophy which teaches us, that pure water

water is itſelf compounded of two principles, and that one of its component parts is, by the proceſs of vegetation, converted into the ſubſtance of vegetables. This diſcovery enables us to account for the utility of irrigating land, even with the cleareſt water, which long experience has ſhewn to be a moſt efficacious mode of improvement.

Thoſe who have opportunities of applying water, and are not converſant in the practice, would do well to imitate the example of the Biſhop of Landaff, who is making great improvements by watering, at Calgarth Park. It is practiſed on a ſmall ſcale in many other parts of Weſtmoreland, and always with great ſucceſs.

CHAPTER XIII.

LIVE STOCK.

SECT. I.—*Cattle.*

THE attention that was formerly paid to the breed of black cattle has rather diminiſhed of late years. They are long-horned, very much reſemble the Lancaſhire breed, and, when kept to a proper age, grow to a great ſize. As a heifer of three years old can be ſold for as much as an ox would fetch at four, it is rare to ſee a bullock of the country breed; but to judge from thoſe of all ages in the paſtures at Lowther-hall, they are excellent feeders, and poſſeſs, in an eminent degree, the very deſirable property of laying the fat upon their backs and other valuable parts. The heifers and barren cows,

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if well choſen, are confeſſedly good thrivers, and are in great requeſt among the graziers of Yorkſhire and Lancaſhire. Not many years ago there was killed, at Lowther-hall, a bullock of the country breed, whoſe carcaſe weighed one hundred and thirty-two ſtones.

Dairy.—There are few counties in England, in which there is no great manufacturing town, where more milch cows are kept in proportion to its ſize, and where the produce of the dairy forms a greater part of the profits of the farmer. It may be naturally ſuppoſed that he is particular in the choice of his cows, and that they are remarkable for giving a great quantity of milk. Neither ſuppoſition, however, is founded in truth. The farmer keeps juſt ſuch cows as he has bred, and they by no means yield ſo much milk as would be expected from thoſe of the Dutch, or even the Scotch breed,* upon a paſture of the ſame quality. Farmers in the country generally eſtimate the expence of keeping a milch cow at five pounds a-year, and the produce at eight pounds. Cows in the country are kept for the ſake of making butter, of which great quantities, of an excellent quality, are ſent yearly to the London market in firkins of 56 lbs net, at from 30s. to 35s. each. In the immediate neighbourhood of Kendall, the dairy turns out to better account by ſelling the new milk, which is contracted for all the year at 1½d. a quart, being the ſame price which the London cow-keepers receive. The ſkimmed milk is ſold at one third part of that rate. The ordinary price of a good milch cow may be about ten pounds.

* The Ayrſhire breed is reckoned the beſt for milch cows in Scotland, particularly in the neighbourhood of Dunlop. The comparative value of all the different breeds, in regard to quantity of milk, &c. the Board of Agriculture propoſes to aſcertain.

SECT. 2.—*Sheep.*

The breed of ſheep, kept on the mountains and commons of Weſtmoreland, is either native or a croſs with Scotch rams. No attempt has yet been made to improve either the carcaſe or the fleece. They are horned, dark or grey faced, thick pelted, with coarſe, ſtrong, hairy wool. The whole flock upon a farm is herded together, which is different from the practice in thoſe counties where ſheep farming is thought to be the beſt underſtood.

Wintering.—Thoſe ſtore-maſters who have not upon their own farms paſtures ſufficient for the wintering of their young ſheep, ſend them to the low grounds from the 1ſt November to 6th April, and pay 2s. a-head for thoſe that return. They are ſo ſubject to the *Black water (Sickneſs, or Midding-ill)* that, at an average, ten out of an hundred die before Chriſtmas. After that, being very hardy, they ſeldom die, and never of that diſeaſe.

Price.—The wedders are ſold in October, when four years and a half old, from 9s. to 13s. each; the barren ewes at Lammas, from 8s. to 10s; and the old ewes about 6s. to be wintered in the incloſed grounds, and fattened with their lambs the enſuing ſummer.

Salving.—In October, or the beginning of November, the whole flock is ſalved ſo heavily, that a gallon of tar and 16 lbs. of butter are expended upon thirty-five ſheep. A man may be hired for this work at 1s. 8d. a-day, in which time he will not ſalve above ten or a dozen; or he will undertake to ſalve them at 2d. a-head. The whole expence is about ſixpence a-piece. It has been repeatedly tried to ſubſtitute tobacco-liquor for the butter and tar, but it is generally imagined that the wool is better for the ſheep having been ſalved. Near Kirkbyſteven, this

operation

operation is performed with oil and tallow, at an expence of 4d. a head.

Wool.—The wool is worth, on an average of years in time of peace, 5d. a pound. Part of it is ſold to the manufacturers of Kendall, and part of it to thoſe at Bradford, and other places in Yorkſhire. The ewes are ſaid to bear the beſt wool; and on an average of a flock ſix fleeces weigh a ſtone.

Silverdale Breed.—Silverdale, a ſmall diſtrict in the neighbourhood of Millthrope, gives its name to the breed of ſheep in this part of the county. The ſoil is good, and on a limeſtone ſtratum, and a branch of the ſea is nearly contiguous to it. They are horned, white faced, and cloſe woolled. They are ſaid to be native, and are much ſuperior to the common ſort, in regard both to fleece and carcaſe. At the ſale of a farmer's ſtock, in October 1793, the lambs of this breed brought 10s. 7d. a-piece, the dinmonds 17s. 1d. and the ewes at the age of three years and a half, 17s. 6d. or 17s. 8d. In the townſhips of Burton and Holme, where this breed is kept, five ſheep at an average yield a ſtone of wool, which is worth 8d. a pound. At a medium of the whole pariſh of Burton for eight years, from 1772 to 1779 inclusive, it required ſix fleeces to weigh a ſtone.

It is not unuſual for the proprietor to be owner of the ſheep upon the farm. In this caſe the farmer is to be conſidered as little better than a ſhepherd. The flock is valued at the time of his entry, and again at his removal, and the difference between theſe valuations is ſettled in money.

Experiments.—1ſt, Twenty Lincolnſhire *Mugg* ewes, that had been tupped by a ram of Mr Bakewell's breed, were brought into Weſtmoreland in the month of December 1789, and lambed in February 1790. Theſe *Mugg* ewes were tupped in 1790 by a common Weſtmore-

land

land ram, and the dinmonds produced by this croſs have turned out the beſt ſheep in the county, and weigh from 18 lbs. to 20 lbs. a quarter, and are thought to be ſuperior to thoſe of the firſt breed.

2d. Six of the lambs produced from the tup of Mr Bakewell's breed and the *Mugg* ewes, were rams. Four of theſe rams were put to ewes of the common breed in the county, and the lambs ſprung from this croſs are much of the ſame ſize as the ordinary breed; but they are broader on the back, and finer in the wool. As the experiment has not yet been long tried, it muſt be left to time to ſhow what the reſult will be.

3d. The lambs produced by the Lincolnſhire ewes, and their own lambs of February 1790, are not ſo ſtrong as theſe lambs of 1790, which the ſhepherd is diſpoſed to attribute to a ſcarcity of food in the Spring, rather than to any defect in the breed.

4th. Thirty of this breed were left unſalved in 1791; they were in good condition, and had no ſcab. Theſe ſame were again left unſalved in 1792, and broke out in ſcab early in 1793. It muſt be remarked, that the ſheep at the time of ſalving in 1792 were not in ſuch condition as in 1791; ſo that it does not appear, from this experiment, that there is any neceſſity for ſalving ſheep in good condition.

5th. The Lincolnſhire ewes do not carry ſo much wool, nor is it of ſuch a good quality, as when they were brought into the county.

SECT. 3 —*Horſes.*

As there is but a ſmall portion of the county under crop, the horſes are not numerous, nor has any conſiderable attempt been made to improve the breed of theſe uſeful animals. They are ſmall, not exceeding fourteen hands and a half in height, are ſaid to be hardy, but they

are

are neither ſtrong nor handſome; ſixteen or ſeventeen pounds are reckoned a good price for a horſe at five years old. Moſt commonly two, tho' ſometimes three, and in the weſtern part of the county even four, are yoked together in a plough. They are often turned upon the commons in the intervals of labour, which, as the farmer very probably has neither turnips nor fallow, are very frequent in the ſummer months.

There being only one perſon in Weſtmoreland who uſes ox teams, it may be juſtly inferred, that the general opinion of farmers in the county is in favour of horſes. The writer of this Report has not ſuch information upon the ſubject, as to be able to draw the deſired compariſon between theſe uſeful animals.

Sect. 4.—*Hogs.*

The ſwine of Weſtmoreland, though not large, are good in their kind. Farmers, butchers, and others, who kill ſwine, often diſpoſe of the hams to perſons who make a trade of curing them for ſale. Perhaps there may not be any thing peculiar in the mode of making hams in this county: but it is believed that a detail of the proceſs may be entered here without impropriety.

The hams are firſt rubbed very hard, generally with bay-ſalt; by ſome they are covered cloſe up, by others they are left on a ſtone bench to allow the brine to run off. At the end of five days they are again rubbed as hard as they were at firſt, with ſalt of the ſame ſort, mixed with rather more than an ounce of ſaltpetre to a ham. Having lain about a week, either on a ſtone-bench, or in hogſheads amongſt the brine, they are hung up by ſome in the chimney amidſt the ſmoke, whether of peats or coals; by others, in places where no ſmoke ever reaches them. If not ſold ſooner, they are ſuffered to remain

there till the weather becomes warm. They are packed in hogſheads with ſtraw or oat-meal ſeeds, and ſent to London, Lancaſter, and Liverpool, in ſuch quantities as to form one of the principal branches of export from the county.

In 1792, neat hams of 16 or 18 lbs. weight were ſold as high as 5½d. per pound when green; when cured, in 1793, they were ſold at 7½d. a-pound. It has been found by experiment that hams loſe twenty per cent. of their weight in the curing.

SECT. 5.—*Rabbits.*

A few rabbits are kept in the neighbourhood of Brough and Orton, and there is a ſmall warren in Ravenſtonedale, but it is rare to ſee them in any other part of Weſtmoreland.

SECT. 6.—*Poultry.*

Conſiderable quantities of geeſe, ducks, and common dunghill fowls are reared in Weſtmoreland. The two laſt are generally diſpoſed of in the market towns in the county, or carried to Lancaſter; but great numbers of the firſt are ſold to drovers from Yorkſhire.

Turkeys are ſeldom reared here, except in the farm-yards of men of fortune.

SECT. 7.—*Pigeons.*

The few pigeons that are to be ſeen in Weſtmoreland belong generally to men of fortune. When ſold, they often bring 6d. a-piece.

SECT.

SECT. 8.—*Bees.*

Bees are common in Weſtmoreland, but there is nothing worthy of remark in the way in which they are managed.

CHAPTER XIV.

RURAL OECONOMY.

SECT 1.—*Labour, Servants, Labourers, Hours of Labour.*

LABOUR is dearer in Weſtmoreland than it is in almoſt any of the counties either to the north or ſouth of it. This probably is owing to the great number of ſmall landholders, or *ſtateſmen* above-mentioned, who doing the work upon their own eſtates, with their own hands and thoſe of their families, are perhaps diſinclined to labour for other people.

Servants by the year.—A hind may be hired by the year at twenty pounds, a houſe, a garden, and a patch of ground to grow potatoes; and an unmarried man at from ten to twelve guineas a-year, and board and waſhing.

By the day.—The wages of an ordinary labourer are from 1s. 4d. to 1s. 8d. a-day; he begins to work between ſix and ſeven, reſts an hour at dinner, and leaves it off between ſix and ſeven in the evening.—The labourers on the highway from Shap to Kendall receive

1s. 9d. a day for nine months in the year, and 1s. 6d. a-day for the other three months.

By the month.—On the large farms, in the ſeaſons of hay and harveſt, it is not unuſual to hire labourers by the month of four weeks, at the rate of 1l. 12s. 6d. and victuals. They breakfaſt on milk pottage, and bread and cheeſe, receive a pint of good beer in the forenoon, and another in the afternoon; they dine on meat boiled, baked, or roaſted, and potatoes or pudding; ſup on cold meat, and have plenty of common beer to drink through the day. They begin in the morning as ſoon as the corn is dry, reſt none but while at meals, and continue as late as they can ſee to work. Four men may cut, tie, and ſtook a cuſtomary acre in a day, leaving a ſtubble from nine to fourteen inches in length.

Cutting of corn per acre.—When done by the piece, the cutting of an acre by the ſickle, the ſcythe not being uſed in the reaping of any ſort of grain, may coſt 9s. and if the crop be very heavy, 10s. or even 10s. 6d.

Cutting of hay per acre.—The price of mowing a cuſtomary acre of graſs varies from 2s. 6d. to 3s. 6d. and a man uſually mows an acre in a day.

Per day.—When hired by the day, a mower's wages may vary from 1s. 4d. to 1s. 10d. and victuals.

Maſon's wages.—Maſons in ſummer have from 2s. 2d. to 2s. 6d. a-day, or 1s 2d. or 1s. 6d. and victuals; and in winter 4d. or 6d. leſs. At Millthrope a few are hired all the year at 1s. 10d. a-day, wet or dry. When they do their work by the piece, and furniſh every thing, they are paid 2s. or 2s. 6d. a ſquare yard for a wall of two feet in thickneſs built with lime; if materials are furniſhed to their hand, they are paid 8d. or 10d. a-yard. Seven yards and a half in length of a dry ſtone wall, five feet and a half in height, coſt 1s. 6d. or 1s. 8d. in building.

Carpenter's

Carpenter's wages.—The wages of a carpenter or common country wright, differ very little from thoſe of a maſon.

Threſher.—A farmer's own ſervants generally threſh out the corn. When perſons are hired for this purpoſe, they receive about 1s. for threſhing a load of ſeven and a half buſhels of oats, and 1s. 3d. for that of barley; and from 4d. to 8d. a boll of rye, conſiſting of two Wincheſter buſhels.

Miller.—Farmers commonly have their meal made from oats of their own growing. The miller receives 4d. a-load for drying the oats. If they are good in quality, a load of ſeven and a half buſhels will yield 176 pounds of meal, beſides paying the miller his toll for grinding, which is gueſſed to be about four per cent. Wheat is made into flour for 4d. a-buſhel. Numberleſs ſtreams rendering the precarious aſſiſtance of windmills unneceſſary, there is but one in the county, and it is employed in grinding bark for the tanners at Kendall.

Thatcher.—A thatcher receives about 1s. 4d. a-day and victuals, or 2s. 4d. without victuals.

Slater.—Slating is meaſured by the rood of forty-two and one-fourth ſquare yards, and coſts in the workmanſhip 12s. or 13s. a rood: In the vicinity of the ſlate quarries, the ſlater will find all materials and labour for 45s. or 50s. a-rood.

Tailor.—A tailor gets in ſome places 10d; in others 1s. a-day and board.

Mole catcher.—The mole-hills are carefully ſpread in moſt parts of the county, and the fields are cleared of moles at the rate of 3d. an acre where they have not been catched before; 2d. an acre are paid the ſecond year, and a penny or three half-pence yearly thereafter.

Maid-ſervants by the year.—In ſome farmers' families, where they are hard worked, maid-ſervants receive 6l. a-

year. Their ordinary wages in other families maybe about 4l. 10s. or perhaps 5l. When they do not change their ſervice, if ſtrangers in the pariſh, care is taken to vary their wages every ſix months, to prevent them from acquiring a ſettlement, to which they would be entitled were they hired for a year, or were their wages to continue the ſame for that period.

By the month.—In hay-time and harveſt, when hired for a month, they get from 16s. to 24s. and board.

By the day.—When hired by the day in harveſt and hay-time, they receive 8d. or 10d. and victuals, or 1s. 3d. or 1s. 6d. without victuals. At other ſeaſons they are paid with 8d. 10d. or 1s. a-day. Their times of entry, and of leaving off work, their hours of labour and of reſt, are very various.

SECT. 2.—*Proviſions.*

It is not unuſual to hear people exclaim againſt the encreaſe of luxury, and the alteration that has taken place in the mode of living in their time. The labourer lives as well now as the farmer did forty or fifty years ago; the farmer as well as the man of ſmall landed property; and ſo on: And is this in any reſpect to be regretted, or is it not much better for them all? But perſons generally cry out moſt loudly againſt the rank immediately beneath them, without recollecting that their own mode has been changed in nearly the ſame proportion as the one which they are ſo ready to condemn.*

Fifty years ago the price of butcher-meat at Martinmas was from 1¼d. to 2d. a pound in Burton market, and eighty beaſts were ſometimes ſlaughtered in a day, and bought to be ſalted for winter proviſions. From that time, except a few at Chriſtmas and at Eaſter, no cattle were killed

* Spencer's Travels.

there

there till they were fattened upon the paſtures in ſummer. Farmers, in thoſe days, ſeldom eat any butcher-meat; they lived on bread and butter, and what other little matters the farm afforded. Now labourers generally breakfaſt on that very ancient food pottage, with the help of a little cheeſe and bread; they dine on butcher-meat and potatoes, or pudding; and ſup on potatoes, or pottage, or bread and cheeſe.

The bread generally eaten in the county is made from oat-meal. Water and oat-meal are kneaded together into a paſte without any leaven; this paſte is rolled into a circular cake of about twenty inches in diameter, and is placed upon a thin flat plate of iron, called a *girdle*, under which a fire is put, and the cake thus baked goes by the name of *clap*-bread, and is to be ſeen at almoſt every table in the county. This very particular deſcription of baking cakes may appear too minute, or altogether unneceſſary, and it owes its place here to the requeſt of ſome perſons of rank who wiſhed to ſee it recorded ſomewhere. The meal is moſtly ground to ſuch a degree of fineneſs that a meaſure of ſixteen quarts will weigh ſixteen pounds. Farmers, labourers, and manufacturers uſually have fifteen cakes made from ſixteen pounds of meal, and as many baked in a day as will ſerve their families for a month. Such of the gentry as eat this ſort of bread, moſt of them now eating bread made from wheat, have it baked much more frequently, and alſo much thinner. A labouring man will eat ſixteen pounds of meal made into bread in a fortnight; the price of ſixteen pounds of meal is variable from 1s. 6d. to 2s. 6d.; the medium is 2s. which gives 1s. a-week for each labourer for bread; his cottage and his fuel coſt at leaſt as much more. His wages for three-quarters of a-year are 9s. a-week, and 8s. a-week for the other quarter; but making allowance for broken days, 8s. a-week may be conſidered as the full amount of

the price of his labour; and indeed a good labourer may be hired by the year at that rate. Hence there will remain 6s. a-week for the labour of the man, for the remainder of his own ſuſtenance, the ſuſtenance of his family, and the cloathing of them all.

The difference in the price of proviſions in a county ſo ſmall as Weſtmoreland, cannot be very great. They are, however, ſomewhat cheaper in the north and eaſt parts than they are in the ſouth parts, which are more within the reach of the markets of Lancaſter and Liverpool. Beef in Kendall market, in the month of October 1793, was ſold at 3d. or 4d. a-pound, and a choice cut at 4½d.; in ſpring it often riſes to 6d. a-pound. Mutton, which in ſpring often riſes to 7d. a-pound, was ſold at 3d. 3½d. or 4d. Pork was ſold at 3d. or 4d. As all the bull calves are carried to market, veal is for the moſt part cheaper than the other kinds of butcher meat, and yet in ſpring it is ſometimes ſold as high as 5d. a-pound. Potatoes brought 1s. 4d. a buſhel, or 5s. 6d. or 6s. a-load; in ſpring they are often ſold at nearly the double of theſe prices. Oat-meal is bought in ſome places by a meaſure of ſixteen quarts, at a price which fluctuates from 1s. 4d. to 2s. 6d.; in others by a peck of 20 quarts, which in ſummer 1793 was worth 3s. Butter was ſold from 7d. to 9d. a-pound; in winter the price ſeldom riſes above 11d.; a ſtone of 16lbs. of 20 ounces, coſts 11s. 6d. and a firkin of 56lbs. neat, from 30s. to 35s. Cheeſe in the country coſts 3d. a pound, and new milk 1d. a-quart, which in Kendall is contracted for all the year at 1½d.

A turkey coſts 3s. 4d. or 5s. according to its ſize; a gooſe 1s. 6d or 2s. or when ſold by weight 3d. a-pound; a hen from 7d. to 10d. and a chicken from 4d. to 8d. Eggs fluctuate in their price from 2½d. to 6d. or even to 9d. a-dozen. Ducks are ſold from 1s. 4d. to 2s. a-pair,

teal

teal at 4d. a-piece, woodcocks at 4s. or 5s. a-brace, and pigeons from 4s. to 6s. a-dozen.

Salmon catched in the Lune is ſold from 4d. to 8d. a-pound; that which is brought from Carliſle from 3d. to 1s 2d. Char are ſold at about 7s. a-dozen, trouts at 4d. a-pound, muſſels at 2d. or 3d. a-quart, flounders from 1d. to 6d. a-piece, eels at 2d. a-pound, and rabbits, without the ſkins, at 1s. the pair. Honey in the comb coſts 1s. a-pound.

SECT. 3.—*Fuel.*

The eaſtern parts of the county are ſupplied with coal from Stainmore, Blackburton, and Ingleton, in Yorkſhire, but in other parts the moſt common fuel is peat.

It is a queſtion deſerving the conſideration of the Legiſlature, whether the duty of coal, carried coaſtwiſe, might not in certain diſtricts be taken off, with great advantage to the ſtate. The value of the improvements in agriculture and manufactures which would attend ſuch a meaſure, in counties ill ſupplied with fuel, cannot be eſtimated, but it is preſumed that it would very far exceed the loſs ſuſtained by the removal.

CHAPTER XV.

POLITICAL OECONOMY, AS CONNECTED WITH, OR AFFECTING AGRICULTURE.

SECT. 1.—*Roads.*

THE great roads leading through the county are kept in excellent repair by the ſums collected at the turnpike gates,

gates, and when these prove insufficient, by a portion of the labour of the parish, or of the pound-rate, which may be levied in its aid.

The parochial roads are made and kept in repair by six days labour of the parish, and by a rate not exceeding sixpence in the pound, which the surveyors may levy with the consent of the quarter-sessions; some of these are tolerably good, and others are annually improving. Many of them scarcely exceed the smallest legal breadth allowed by statute, which is eight feet.

Sect. 2.—*Canals.*

There is not at present any canal in the county; but one of great magnitude has been projected from Wigan to Kendall. It is now executing, and when finished, by introducing the coal of Lancashire into the heart of Westmoreland, will be of the greatest service to its manufactures and agriculture. If the coal can be afforded by the proprietors of the canal, at a cheap rate, the town of Kendall may then emulate, in the cloth manufacture, Leeds itself. Another canal, from the bottom of Windermere water to the sea, a distance of about 4 miles, is wanted; if this should ever be cut, the town of Ambleside would rise to considerable importance; it would then be as well, or better situated for trade, than Kendall is now.

Sect. 3.—*Fairs.*

There is a great fair for cattle, horses, &c. at Broughhill, on the 30th September;—there is a fair at Ambleside on the Wednesday after Whitsunday, and on the 29th of October,—at Appleby on Whitsun Eve, Whitsun Monday, 2d Wednesday of June, and 21 August,—at Kendall, April 27, and November 8 and 9,—at Kirkby Lonsdale, on Holy Thursday, and 21 December,—at Kirkby-Stephen,

Stephen, on the Monday before the 20th March, October 2d, 27th, and 29th,—at Millthrope on 12th May,—at Shap, on the 4th May,—at Orton, on the 2d May, the Friday before Whitſunday, and ſecond Friday after Michaelmas,—and at Old Town, on the 5th and 6th October.

Sect. 4.—*Weekly Markets.*

There are weekly markets at eight different towns in Weſtmoreland; but the only one of any note, is held at Kendall. The next in point of conſequence is held at Appleby, the county town.

Sect. 5.—*Commerce.*

The commerce of Weſtmoreland is not yet ſo extenſive as to have any ſenſible effect upon its agriculture: Its exports are coarſe woollen cloth, manufactured at Kendall, ſtockings, ſlates, tanned hides, gunpowder, hoops, charcoal, hams, wool, ſheep, and cattle. Its imports are chiefly merchant goods, wheat, oats, with a little barley, cattle and ſheep.

Millthrope is a very trifling port, and the only one in the county.

Sect. 6.—*Manufactures.*

The manufactures of Weſtmoreland are not of much greater importance than its commerce. They conſiſt chiefly of coarſe woollen cloth, called *Kendall Cottons*, properly, it is ſaid *coatings*, gunpowder, ſtockings, ſilk and worſted, waiſtcoat pieces, flannels, and tanned leather.

Moſt beautiful ſtockings, and carpets of ſtrength and luſtre, little inferior to thoſe of Perſia, are manufactured at Lowther for behoof of the Earl of Lonſdale. A few of theſe have been ſold from 63l. to 105l.; but as they are wrought

wrought ſolely for his own uſe, or to be given in preſents to his friends, perhaps they do not enter with propriety into an enumeration of the manufactures of the county. What is now the manufactory, was originally a college, but, being only in its probationary ſtate, was diſcontinued by the late Lord Viſcount Lonſdale. The Earl of Selkirk, and the late Duke of Athol, were educated here; and an aſh-tree, planted by his Lordſhip, is ſtill pointed out.

Sect. 7.—*Poor.*

Weſtmoreland not being a manufacturing county, and landed property being there, in general, minutely divided, the number of poor who apply for parochial aid, is comparatively ſmall. The poor rates in the pariſh of Kendall are 3s. 8d. in the pound of the actual rent, which is very near four times the average of the rate throughout the county. Were it not unfair to draw a general concluſion from one example, it might be inferred that the poor are moſt numerous in manufacturing counties and towns.

Sect. 8.—*Population.*

The inhabitants of Kendall were found, by an actual enumeration in 1793, to amount to 8089, and the whole population of the county has been eſtimated at 35 or 36 thouſand. As the number of births conſiderably exceeds the number of burials, many of the inhabitants muſt migrate to other counties.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT.

THE moſt material of theſe are cuſtomary tenures, where the fines are arbitrary, or according to the improved value of the eſtate, where the wood is the property of the lord, and where a leaſe for longer than three years is not valid without his conſent; want of leaſes, or very ſhort leaſes, and the collection of the tithes in kind.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. 1.—*Weights and Meaſures.*

GREAT diverſity of weights and meaſures prevails in Weſtmoreland, as is the caſe in almoſt every county in Great Britain. The pound conſiſts of 12, 16, 18, or 21 ounces, and the ſtone of 14, 16, or 20 pounds. There is a Wincheſter buſhel, a cuſtomary buſhel equal to three of theſe, a buſhel of two buſhels for the ſale of potatoes near Appleby, and one of two and a half for that of barley. Rye is ſold by the boll of two buſhels, and potatoes by the load of four buſhels and a half heaped, or more generally

erally a bag which holds ſeven and one half buſhels is filled and ſold for a load of potatoes.

There is the ſtatute acre of 4840 ſquare yards, the cuſtomary acre of 6760 raiſed from the perch of ſix and one half yards, and a third acre on the borders of Lancaſhire, raiſed from the perch of ſeven yards, containing 7840, being the ſame as the Iriſh plantation acre.

SECT. 2.—*Supply of London.*

London is not much indebted to this county for its articles of conſumption. The little it receives from hence conſiſts chiefly of butter, bacon, hams, and excellent blue ſlates, which form a cover for ſome of the beſt houſes in the capital. It is probable that, after being fattened in the ſouthern counties, ſome of its cattle and ſheep reach Smithfield market.

CONCLUSION.

Means of Improvement, and the Meaſures calculated for that purpoſe.

SECT. 1.—*Arable Lands.*

CLOVER. In many counties of England the land is ſown with graſs ſeeds, and left to lie for ſome years with a view to refreſh and enable it to bear crops of corn; but in Weſtmoreland it is ploughed and ſown with corn in order to prepare it for graſs. When it hath been cropped for three years, and it is judged that the ſoil is ſufficient-

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ly reduced, and that the moſs is quite deſtroyed, the land is left to itſelf to graſs over. The firſt crop of hay is never either weighty or good in quality; the ſecond is generally very ſuperior in both theſe reſpects to the firſt, and ſo favourable are the climate and the ſoil to the growth of graſs, that the third crop is often ſo abundant as to be let for two or three pounds per acre, and of a quality ſo excellent, that in ſeveral places cattle are fattened upon it in Winter for the markets of Lancaſter and Liverpool. But even theſe beſt crops are far inferior in point of value to thoſe that would be produced by the ſame fields, were their natural aptitude to grow graſs directed to the production of clover and rye-graſs. The prejudice that prevails almoſt univerſally in Weſtmoreland againſt theſe artificial plants is a great obſtacle to the improvement of the huſbandry of the county, and muſt be overcome before the arable lands can be brought to that degree of cultivation of which they are ſuſceptible.

It is ſaid that hay made of clover and rye-graſs is much coarſer than that which is made of the natural graſſes; and that theſe artificial plants giving place to the natural ones, periſh at the end of two or three years, and therefore ought never to be ſown at all.

The opinion is conceived to be ill founded which holds that hay made of ſown graſſes is bad in quality; long experience and continued practice having ſhown that horſes are very fond of ſuch hay, and that when even fed upon it alone they are able to do a great deal of hard work. It can hardly be ſeriouſly aſſerted that hay made of the traſh produced ſpontaneouſly by the land the two firſt years after it has been cropped with corn is better than hay made of clover and rye graſs. The artificial graſſes ſeldom or never periſh at once at the end of either the ſecond or third year: they diſappear gradually, making room for the natural herbage to occupy their place, which

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it is imagined it would be found upon trial to do with much more profit to the farmer than would have accrued to him by managing his lands in the ordinary way; for the ſuperior value of the hay the firſt two years would far more than reimburſe him for the expence of the graſs ſeeds, and he might ſtill have his favourite natural hay after theſe had died entirely out.

This is ſtated upon the ſuppoſition that the field was to be allowed to lie eight or ten years in graſs, as is the cuſtom at preſent. If it were to be broken up at the end of the firſt or ſecond year, it would be found in good condition for bearing a crop of corn, the roots of clover, it is well known, being a great improver of the ſoil: but this way of cropping the lands will enter with more propriety into that part where an alteration of the preſent courſe will be ſuggeſted.

In the year 1792, Mr Smith at Henridding in the pariſh of Burton, ſowed a cloſe containing exactly two acres and a half Lancaſhire meaſure, with 48 lbs. of red clover ſeed amongſt a crop of barley, for which the land had been ſlightly manured after fallow wheat. This field is in Lancaſhire, but being ſituated within an hundred yards of the county of Weſtmoreland, it may be mentioned here without impropriety, and it is ſelected merely becauſe the particulars reſpecting it are better known to the writer of this Report than thoſe in regard to any field of clover in the county that was the object of his ſurvey. It was mown in the month of July 1793, and it then yielded a crop of twenty-two ſingle-horſe cart-loads of hay. It was mown a ſecond time in September, and produced eighteen of the ſame cart-loads. It was depaſtured with nine ſheep from the time the laſt crop was carried off till the beginning of November, and the foggage was then tolerably good. Let the moſt ſtrenuous advocates for natural graſs, ſay whether they ever had a crop ſo valuable!

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Where the land is intended to be depaſtured, the argument will apply with treble force; and the decided preference given by cattle of all kinds to the green herbage of the artificial, over that of the natural graſs, ought to remove every doubt from the minds even of thoſe who are the moſt ſtrongly prepoſſeſſed in favour of the preſent practice.

In front of Carus Wilſon, Eſq.'s new houſe near Kirkby Lonſdale, there lies a field of ſixteen acres, which was ſown with graſs ſeeds amongſt a crop of barley in the year 1792. It was depaſtured in 1793, and maintained *three times* more ſtock than he would have expected it to maintain, had it been left to itſelf in the ordinary way. Farmers, the moſt prejudiced againſt ſown graſſes, ſaw and confeſſed the force of the experiment; and, it is not to be doubted, will follow an example which tends ſo materially to promote their intereſt.

The cultivation of clover is perhaps the greateſt improvement in the art of farming which has been diſcovered in modern times; and it is equally matter of regret and of ſurpriſe, that what is at once ſo eaſy and ſo profitable is not yet become univerſal, and it furniſhes a ſtrong inſtance of the difficulty with which old habits and prejudices are rooted out, even when ſelf-intereſt is concerned in their extirpation.

Turnips.—The climate and ſoil of the vallies of Weſtmoreland are well ſuited to the cultivation of turnips, which muſt be carried on to a conſiderable extent before the agriculture of the county can be improved in any material degree. Experience has ſhown that this crop, and the mode of huſbandry uſually connected with it, are able, not only to fertiliſe particular farms, but even to improve whole counties. The moſt profitable and the leaſt troubleſome way of diſpoſing of this crop is to fatten ſheep with it. A cuſtomary acre of turnips, if the crop

is good, will feed twenty-five ſheep weighing ſixteen pounds a quarter, from 1ſt November to 1ſt April; even ſuppoſing the ſheep made no advance in theſe five months, the very encreaſe of the price of the mutton from 4d. to 5½d. or 6d. a pound, would bring a profit to the farmer as conſiderable as it is eaſily calculated. When to this there is added the value of what they would gain in point of weight, the profit, it is hoped, will appear to be ſo great as to make the deſire to grow turnips irreſiſtible, and quickly to increaſe the quantity an hundred-fold beyond what it is at preſent.

Where the land is very dry the ſheep may be penned upon a ſmall part of the field of turnips, and ſhifted to another as thoſe in the firſt part are eaten up; but if there is a field of graſs near at hand, the ſuperior improvement of the ſheep will pay for the labour of carrying the turnips to be eaten on that field where they will lie dry and clean, and where the turnips will be leſs trampled on and abuſed.

Rotation of Crops.—It is the general opinion of farmers in Weſtmoreland, that their lands are better ſuited for graſs than for bearing crops of corn, and they are ploughed for three or four years, not with an expectation that the corn will be more profitable than the graſs, but in order to renovate them for graſs, and to deſtroy the moſs, which in a few years over-runs all their ley grounds: but there are ſome who are perſuaded, that the neat profits of the three or four years the lands are under crop, uſually exceed the profits of any other three or four years, while the ſame lands lie in graſs, and they think that their fertility for the production of either graſs or corn would be injured by ploughing for a longer term, or after ſhorter intervals of reſt.

Whether the lands under the preſent ſyſtem are moſt profitable to the farmer when they are in corn or in graſs, it

it is not neceſſary now to enquire, becauſe, with all due deference to the general practice and opinion of a whole county, it is preſumed that a mode of huſbandry and a ſucceſſion of crops may be pointed out, which upon trial would be found far more profitable than thoſe at preſent followed.

The uniting what may be called the Clover and the Turnip Huſbandry is the beſt method hitherto diſcovered of keeping dry lands in a ſtate of continual fertility, and for this the light and friable ſoil of the vallies of Weſtmoreland is well calculated. Inſtead of the common rotation of oats, barley, and oats again, and then leaving the land to graſs over of itſelf, the following courſe of crops might be introduced with advantage, both to the public and the individual. When an old cloſe of good land is broken up it ſhould be ſown with oats, as is done at preſent; after the oats it ſhould be manured and ſown with turnips in drills thirty inches aſunder, ſo as to admit of being horſe-hoed; next with barley or oats, and always with graſs ſeeds at the rate of about ſixteen pounds of clover, and a Wincheſter buſhel of rye-graſs to the ſtatute acre. If it is intended to paſture the field, the graſs ſeeds can hardly be ſown too thick; if it is to be made into hay, the quantity of ſeeds above-mentioned will be found amply ſufficient. The firſt year's crop of graſs may be mown twice, or after the firſt cutting it may be eaten by fattening cattle; or it may be eaten by ſheep till the beginning of June, ſaved after that and mown in Auguſt, and it will ſtill produce a valuable crop of foggage or after-math. It ſhould be depaſtured with cattle or ſheep the ſecond year, and the third year likewiſe, if it ſhall be thought proper to keep the field ſo long in graſs.

This courſe would preſerve the land in a ſtate of perpetual *health and vigour*, did it not, taking pleaſure in variety, diſlike a too frequent repetition of the ſame crops.

After ſome rounds it will be proper to encreaſe the quantity of clover ſeed, and at laſt to bring it ſeldomer into ſucceſſion, for if too often ſown it will be rejected entirely. When this is apprehended the courſe may be varied or lengthened by the introduction of a crop of peaſe, or of drilled beans where the land is deep and moiſt, and wheat after either of theſe, or after a clean Summer-fallow, or by leaving the land ſome years longer in graſs than uſual.

When it ſhall be proved and known that potatoes are a cheap and nouriſhing food for horſes, the demand for that valuable root will become nearly as unbounded as that for turnips is; and even although they exhauſt the land, they may then be introduced into the courſe with much advantage to the farmer.

It is not pretended that the rotation of crops here recommended would ſuit all the arable lands of Weſtmoreland; but it is believed that, on a very large proportion of them, it might be followed with a certainty of ſucceſs. The cold, wet, ſtiff ſoils ſhould be Summer-fallowed inſtead of being cropped with turnips; wheat ſhould be ſown after the fallow, and clover, or oats, and then clover after the wheat; but it is impoſſible, and were it poſſible it would be improper, in a work of this general nature, to mention how all the varieties of ſoil ſhould be treated; and to deſcend to the minutiæ of ploughing and ſowing, and ten thouſand little matters that continually demand the farmer's attention, and that are always varying with the weather. In theſe his own ingenuity muſt aſſiſt him, and there all his ingenuity will be neceſſary; for his art, though apparently eaſy, is attended with a thouſand difficulties.

Sect. 2.—*Waſtes.*

There is room for great improvement in the management of ſheep, as well upon private eſtates as upon the commons;

commons; but while theſe laſt continue in their preſent deplorable ſtate, it would be in vain to attempt any alteration upon their ſtocks. The caſe, however, is different with ſtore farms properly ſo called, where the breed or treatment of the ſheep differs very little from that of thoſe upon commons, although there can be no reaſonable doubt of their being well adapted to the keeping a far more profitable ſort than is to be found there at preſent. There is no weight whatever in the argument which has been often uſed againſt the introduction of ſuch a breed from the ſcarcity of food and the coldneſs of the climate, the Britiſh Wool Society having proved that "the fineſt "breeds of Spain or of England will thrive on the wil-"deſt of the Cheviot hills, and that very fine-woolled "breeds may be propagated on the moſt mountainous di-"ſtricts of Scotland." There are numbers of ſheep at the Feroe iſlands, which lie in latitude 63, and even in Iceland, part of which is beyond the Arctic circle; they are to be found in great abundance on every farm; and there Nature ſports in a great ſuperfluity of horns, as if the ſcanty pittance of food which the animal can pick up in that bleak and frozen climate were more than ſufficient for the ſupport of the carcaſe and the fleece.

The extenſive and valuable commons of Weſtmoreland loudly demand the interpoſition of the legiſlature in a country that boaſts of attention to its intereſt. Some immediate alteration in their ſtate, whether by diviſion or by ſale, cannot be too eagerly purſued, nor too ſtrongly inculcated; nor can it be too generally made known, that there are many wealthy people living near ſome of the beſt commons in the county, (which is a point of great importance) who do not think it worth while to avail themſelves of their right of paſturage.

Every perſon ſees the neceſſity of ſome material change with regard to the commons; and now that thinking men

are turning their attention to this important ſubject, there is no doubt that ſome plan will be fallen upon by which both the public and the individual may reap the full benefit of theſe, at preſent, dreary waſtes, which are a reproach and diſgrace to the nation. But it cannot be expected that any meaſure however wiſe, or any propoſal however advantageous, can meet with univerſal approbation. It will probably be reprobated by ſome whoſe prejudices it will alarm, and with whoſe little intereſts it may be ſuppoſed to claſh. Till ſomething of greater conſequence be accompliſhed, the reduction of the ſtint, where ſuch is already eſtabliſhed, or the eſtabliſhment of a moderate ſtint upon commons that are perfectly free, ought not to be delayed one hour; for at preſent they are of little, if of any uſe, either to thoſe having a right of commonage, or to the nation at large.

A general incloſure-bill for the whole kingdom would ſave the expence of ſeparate applications to parliament for the diviſion of particular commons, but there are many barren and rocky commons that would not be in any wiſe benefited by incloſure; and although the intereſts of a few individuals ought to give way to thoſe of the community, there are numerous inſtances where both would be injured by the operation of ſuch a bill; for it would at once be ruinous to many proprietors to be obliged to incloſe each his ſhare, often at an expence greater not only than the value of that ſhare, but in ſome inſtances greater than the value of the fee-ſimple of that farm or eſtate in right of which he claims, and prejudicial to the public, by interrupting the ſheep-walks upon the mountainous diſtricts, which ought to be as free and open as poſſible.

The principal part of the ſtock kept upon the commons conſiſts of ſheep, either of the breed of the county, or brought from Scotland. The ewes are wintered in the

the incloſures, and ſent back to the commons in April; the wedder hoggrels are always wintered the firſt year on the low grounds at the expence of 2s. a head, are ſent back to the commons about the ſame time with the ewes, and remain there till they are ſold to the grazier. They may fetch at an average 11s. a piece; add to this the value of the wool, and 15s. may be about the ſum received for every wedder ſheep that arrives at the age of four years and a half.

Scotch hogs are bought at about 8s. 6d. a piece, and are kept two years upon the commons, when they may be worth 10s. 6d. or 11s.; add to this the price of three fleeces of wool, and the whole ſum received for every ſheep delivered may be about 14s.; from this ſubtract the original price, two years intereſt of the money, expence of herding for the firſt two months, of thrice waſhing and clipping, of twice ſalving, the value of the riſk of bad payment from the drover or grazier, the loſs by ſtraying, and, what is often much more conſiderable, by death, and ſay what profit remains.

It has been computed that one third of all the ſheep in Weſtmoreland died in 1792. Great calamities are often exaggerated, though no doubt the loſs muſt have been prodigious when it was eſtimated ſo high.

Twenty ſhillings are reckoned an ordinary profit for keeping a Scotch beaſt a year; ſubtract from this the price of wintering on the low grounds and in the ſtraw-yard, intereſt of the coſt, value of the riſk of drovers, loſs by death from fatigue eſtimated at 2½ per cent, by diſeaſe, and now and then by one tumbling into a peat-moſs, and ſay what advantage ariſes from this adventure.

Seven ſhillings and ſixpence are thought an ordinary profit for keeping a little Scotch beaſt on a common from May to October; make the ſame deductions as in the for-

mer article, with the exception of the value of the Winter's keeping, and ſee how little remains for the rent of the land.

It is not poſſible to place this matter in a more ſtriking point of view than by repeating, that on ſeveral commons the liberty of keeping an ox, or ten ſheep, for a whole year, may be hired for *ſixpence*.

Improvement of Waſtes by Liming.—Great portions of many of theſe might be improved at a ſmall expence by the application of lime, which is found in moſt parts of the county, and might be cultivated with the certainty of great advantage. When ploughed, great care ought to be taken to adopt a proper ſucceſſion of crops, and to lay the lands down with graſs ſeeds in a very few years; becauſe, when exhauſted by over-cropping, they are reduced to a worſe ſtate than they were in before, and there is no way yet diſcovered of preparing lands for a repetition of a hearty doſe of lime.

By Paring and Burning.—Many of the level moory parts might be converted into arable lands by paring and burning, which are well underſtood by ſeveral perſons in the county, and have been practiſed with more or leſs ſucceſs on ſome private eſtates.

By Planting.—There are many thouſands of acres utterly incapable of cultivation by the plough; and, in the paper prefixed, the Biſhop of Landaff has ſhown, in a manner equally ingenious and novel, with what advantage theſe might be covered with wood. It is well known that trees flouriſh with the greateſt vigour on ſoils far more barren, and in climates much colder, than that of Weſtmoreland. There are ſtately oaks at Niagara, which, though not in a high latitude, experience a degree of cold in Winter far beyond what is ever felt in this country. On the weſtern coaſt of America, in latitude 61°, the very ſummits of the hills are covered with wood, and

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there is plenty of trees at Norton's Sound in latitude 64° 55″; and timber for the uſe of ſhips in the Britiſh navy has been cut even at Kamtſchatka, the very end of the earth, where the ſoil is barren in the extreme, and covered with Summer ſnow, and where the Winters are rigorous beyond the conception of an inhabitant of Europe.

That Weſtmoreland has been a wooded county, is evident from trees found in moſſes on the higheſt hills; and ſtatutes and regulations made long after the Conqueſt, ſince which time the climate has not been changed for the worſe, are full of the mention of foreſts, and chaces, and parks, and maſtage, and pannage, and vert, and veniſon, and greenhue, and regarders, and foreſters, and verderors, and an hundred other names and titles reſpecting the preſervation of the woods and the game.

The valuable plantations at Lowther-hall, the ſeat of the Earl of Lonſdale, ſhow how well calculated the ſoil and climate of Weſtmoreland ſtill are for the growth of timber, which, it cannot be queſtioned, would thrive over all the county as well now as it did five hundred years ago. The profits of planting are ſo diſtant, and ſo few perſons, looking eighty or an hundred years beyond the preſent day, are willing to ſacrifice a paltry intereſt for the ſake of a remote poſterity, that perhaps it may be neceſſary for Government to encourage by premiums what in the end would turn out ſo greatly to the advantage of the community. Theſe might be diſtributed with much propriety by the Board of Agriculture, whoſe income ſeems to be far too moderate for the ſupport of ſo important an eſtabliſhment, the objects of whoſe ſuperintendence are innumerable, and the field of whoſe operations is extenſive as the iſland itſelf.

To the north of Shap lies a very extenſive common called the Scars, where between two and three thouſand acres

acres of level white land, in a ſtate of nature, offend the eye of every traveller, and cry aloud for improvement, the means of which it contains in immenſe quantities of lime-ſtone upon its very ſurface. It is more than twenty years ſince an act of parliament was obtained for a diviſion of this common, and that it has not been carried into execution is the more to be regretted, as, in the opinion of very judicious perſons in the neighbourhood, a large portion of it might be eaſily made as valuable as the little cloſes of Shap, which are let from 30s. to 40s. an acre.

On the ſouth of Shap lies another common called the Fells, which is, in general, incapable of cultivation by the plough, but it is not ill ſuited to the maintenance of ſheep; and the remains of the celebrated *Shap-thorn*, near the road to Orton, ſhow that plantations would ſucceed even on thoſe places of it which are moſt expoſed.

Near the mouth of the river Kent there is a marſh of conſiderable extent, common to Haverſham and Millthrope, and, like all the other commons in Weſtmoreland, greatly overſtocked. It would not be difficult to bank off the ſea from this marſh, and to convert it into corn fields; but if this were thought not adviſeable, its value might be inſtantly more than doubled by the eſtabliſhment of a moderate ſtint, or ſtill farther increaſed by a diviſion.

Part of Croſby common might be eaſily converted into arable and good paſture land, and two clumps of trees, of a conſiderable ſize, prove that its worſt parts might be planted with ſucceſs.

From Croſby and Meaburn, a dry level common extends to within three miles of Appleby. It is covered with heath, and is capable of various modes of improvement.

The commons of Knock, Newbigging, Kirkby-Thore, and Marton, lie contiguous, and form a tract of ſeveral thouſands of acres, dry, ſoft, and improveable. A great part

part of these is covered with strong brackens, and is superior in quality to the soil of many farms in the neighbourhood, and well suited to the cultivation of turnips and clover.

This specimen of the commons in Westmoreland will, it is hoped, be deemed sufficient; for it would be tedious and painful to enumerate them all. It is difficult to behold the desolate state in which they lie, without surprise at the nation having so long delayed taking measures for their improvement. The wastes and commons in this county, and throughout England in general, have been elegantly called *a public treasure in the hands of private persons*; it is to be hoped that the time is not very distant when this important treasure shall be opened, and its contents shall prove equally beneficial to the individual, and to the public at large.

It is impossible to look forward without emotion to that day when these neglected wastes shall have received that degree of improvement of which they are susceptible; when they shall wave with valuable crops of corn, bleat with profitable flocks, or be clothed with stately timber; when every little rill shall be turned out of its natural course to fertilise the neighbouring plain; and when there may be seen in every corner the industrious husbandman, at once enriching himself and advantaging the community in a manner the most substantial!

Contemplating the matter in this view, who but must exclaim, what a noble field for exertion! What a source of national wealth yet in store! "More certain than the "profits of commerce, more permanent than those of "manufactures!"

Such are the reflections and observations that occurred in a Survey of the state of the stock and husbandry in the county of Westmoreland, made in the months of October and November 1793, at the request of the newly establish-

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ed Board of Agriculture. What ſucceſs has attended the attempt to place this important matter in a juſt light, others will judge; but it will be doing no more than juſtice to admit, that no pains have been ſpared in the execution of this taſk, which others might have performed with more ability, but not with greater alacrity or zeal.

It is impoſſible to conclude this Report without mentioning to the Board the very flattering manner in which the perſon commiſſioned by them to make this Survey, was received by all ranks and deſcriptions of perſons in the county of Weſtmoreland. Every poſſible aid was given by the two reſpectable Members of the Board reſident in the county. The other individuals who aſſiſted him are too numerous to be diſcriminated; but the writer of this paper will ever remember their very polite attention with gratitude, and his ſhort reſidence in that part of the kingdom with peculiar feelings of pleaſure and reſpect.

What gratitude is due to HIM, who firſt called the attention of the nation to its moſt important intereſts, and whoſe unremitted efforts are directed to promote the good of his country! How well does He deſerve, and what a ſure road has He choſen to immortal fame, that will ſurvive the ravages of time, and ſmile at the fleeting celebrity of martial atchievements!

ADDENDA.

ADDENDA.

TO the note, page 68, the reader is desired to add,—The result of this experiment was, that, in the harvest of 1797, such parts of the wheat, the seed of which was pickled and limed, as well as that which was pickled and not limed, was nearly free from smut; but that which was neither pickled nor limed, had smutted ears in abundance, at least a hundred times more than the other: it may be proper to observe, the seed was purposely taken with a few balls of smut in it.—This experiment is decisively in favour of steeping in chamberlye.

The following addition is also desired to be made, (at the bottom of page 69,) to the paragraph on drilling, ending, "on moist soils."—We have lately found it most convenient to yoke two horses to the drill, one going in each furrow, and to drill seven rows upon a ridge, of 80 to 84 inches wide, when the intervals are 10½ or 11 inches; and 90 inches wide, when the intervals are 12 inches.

With the horses yoked in this manner in a five-row drill, ten rows may be sown upon ridges 10¾ feet wide, leaving a space on the top of the ridge, about 14 inches wide, for one of the horses to travel on; this is supposing the intervals 12 inches wide; but, if the intervals be 10½ inches, then the ridges may be 9¾ feet wide.—A light harrow is fixed to the drill, to cover in the seed.

DIREC-

DIRECTIONS TO THE BINDER.

Map of Northumberland to face the Title Page
Plate 1ſt Implements — Page 40
2d Turnip Drill — 42
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Map of Cumberland — 169
Herdwick Ram — — 210
Map of Weſtmoreland — 239

The Reader is deſired to correct with his Pen the following

ERRATA.

Page 2, line 6, *for* country *read* county—p. 2, l. 8, *for* county *read* country—p. 5, l. 10, put a comma after ſeams—p. 19, l. 27, *for* warde *read* ward—p. 40, l. 36, *for* or *read* on—p. 41, l. 9, *for* CF *read* CE—p. 46, l. 26, *for* ſwitches *read* ſwitchers—p. 47, l. 7, *for* they are *read* they were—p. 81, l. 19, *for* country *read* county—p. 87, l. 5, *for* that *read* than—p. 91, l. 31, *for* into rich *read* into a rich—p. 94, l. 19, *for* gathered firſt *read* firſt gathered—p. 113, l. 8, *eraſe* the comma after ſatten, *place* it after quicker—p. 119, l. 20, *for* ſcandiæ *read* ſcandix—p. 132, l. 22, *for* breed *read* breeds—p. 140, l. 5, *for* 15l. 10s. 0d. *read* 15l. 15s. 0d.—p. 151, l. 7, *for* one *read* and one—p. 162, l. 22, *for* have *read* and have—p. 164, l. 2, put a comma after fallow—p. 178, l. 24, *for* Chapter *read* Section—p. 180, l. 17, *for* or *read* and—p. 182, l. 17, *for* impropriator *read* impropriator—p. 203, l. 29, *for* val. p. acre *read* val. p. ann.—p. 208, l. 5, *for* ſeed *read* ſeed—p. 211 l. 13, *for* form as thick *read* forms a thick—p. 226, l. 23, *for* 1-2th *read* 1-12th—p. 252, l. 30, *for* tw *read* two—p. 258, l. 29, *for* would a yield *read* would yield.

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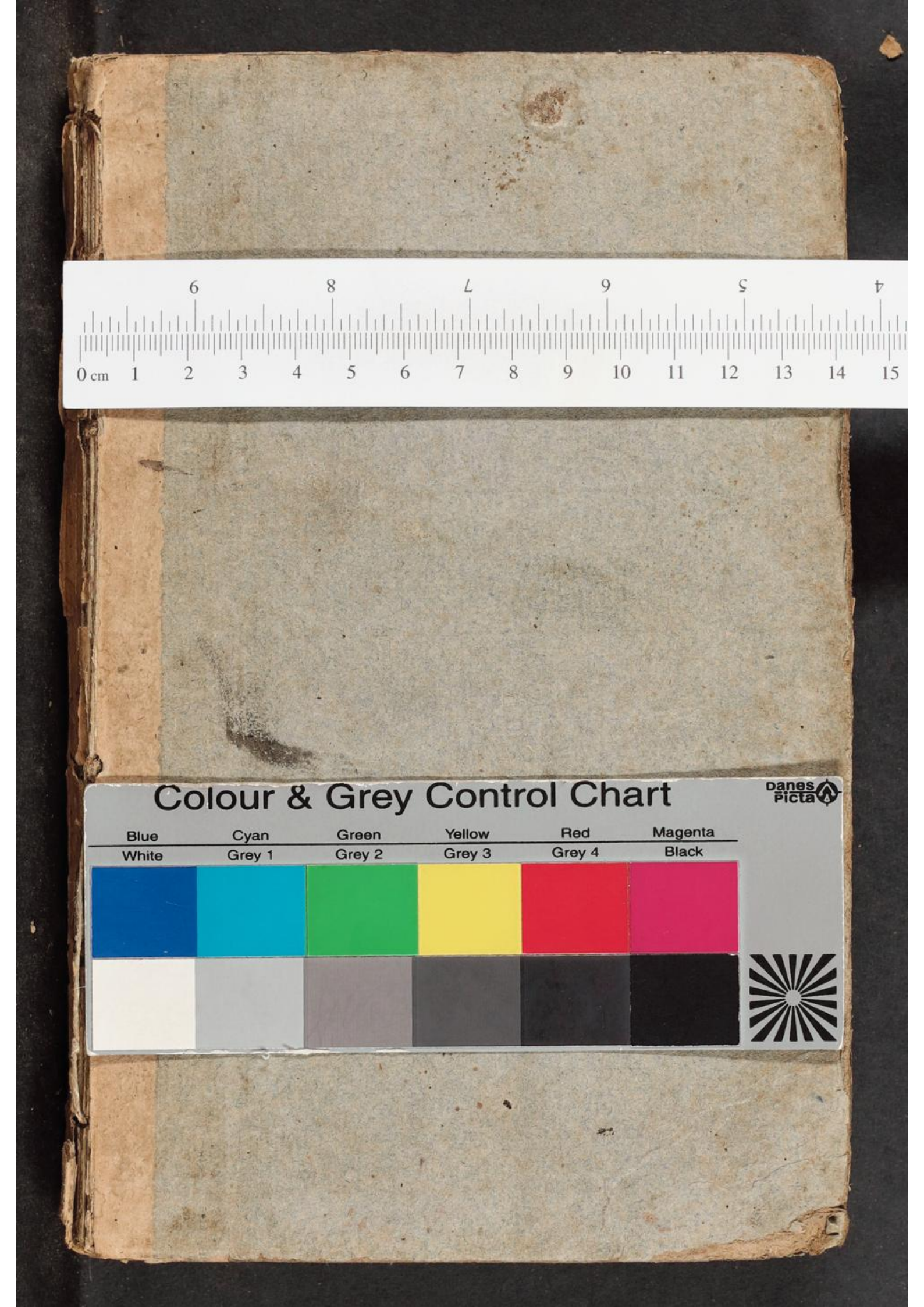
Colour & Grey Control Chart
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Green
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Magenta
White
Grey 1
Grey 2
Grey 3
Grey 4
Black
0 cm 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15