General view of the agriculture of the county of Lancaster with observations on the means of its improvement, from the communications of Mr. John Holt and the additional remarks of several respectable gentlemen and farmers in the county / Drawn up for ... the Board of Agriculture.

Contributors

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LANCASHIRE,
for the
AGRICULTURAL SURVEY
taken in 1793. by
I. HOLT,
Sketched from a Survey of the
COUNTY.
By Wm Yates.
CUMBERLAND
WESTMORELAND
YORKSHIRE
CHESHIRE
IRISH SEA
BAY OF MORECAMBE
HAWKS HEAD
Furness
ULVERSTONE
CARTMEL
DALTON
KIRKBY LONSDALE
LANCASTER
River Lune
Moss
Filde
KIRKHAM
PRESTON
River Ribble
CLITHEROE
COLNE
BURNLEY
BLACKBURN
HASLINGDEN
CHORLEY
ROCHDALE
BOLTON
BURY
WIGAN
MANCHESTER
PRESCOT
LIVERPOOL
WARRINGTON
To London
River Dee
River Mersey
Furness. Cragged Mountains of Lime & free stone with woody declivities and fertile vales.
Filde. A fertile Plain except some Moss & Marsh land soil in general Loamy.
Moors & high Lands partly Arable interspersed with many Rivulets & fertile vales, variety of soil but chiefly Limestone in the neighbourhood of Clitheroe.
Low lands made fertile in general by art except some Moss & waste Lands which are yet capable of improvement.
Coals in general the superficies the same as the adjoining Lands, except such as may have been injured by Pits Roads & Rubbish left.

GENERAL VIEW

OF THE

AGRICULTURE

OF THE COUNTY OF

LANCASTER:

WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

Drawn up for the Conſideration of the
BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT,

From the Communications of Mr. *JOHN HOLT*,
of WALTON, near LIVERPOOL;

And the additional Remarks of ſeveral reſpectable GENTLEMEN and FARMERS in the County.

Prima Ceres ferro mortales vertere terram
Inſtituit ——
Dicendum eſt, quæ ſint duris agreſtibus arma,
Quèis ſinè, nec potuêre ſeri, nec ſurgere meſſes.

GEORGICA.

See the ſun gleams; the living paſtures riſe,
After the nurture of the fallen ſhower,
How beautiful! How blue the ethereal vault;
How verdurous the lawns, how clear the brooks!
Such noble warlike ſteeds, ſuch herds of kine,
So ſleek, ſo vaſt; ſuch ſpacious flocks of ſheep,
Like flakes of gold, illumining the green,
What other paradiſe adorn but thine,
Britannia? Happy, if thy ſons would know
Their happineſs. To theſe thy naval ſtreams,
Thy frequent towns ſuperb of buſy trade,
And ports magnific add, and ſtately ſhips
Innumerous. ——

DYER.

LONDON:
Printed for G. NICOL, PALL-MALL,
Bookſeller to HIS MAJESTY, and to the BOARD of AGRICULTURE;
And ſold by Meſſrs. ROBINSON, Paternoſter-Row; J. SEWELL, Cornhill;
CADELL and DAVIES, Strand; WILLIAM CREECH, Edinburgh;
and JOHN ARCHER, Dublin. 1795.

ADVERTISEMENT.

THE great deſire that has been very generally expreſſed, for having the AGRICULTURAL SURVEYS of the KINGDOM re-printed, with the additional Communications which have been received ſince the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE, to come to a Reſolution, of re-printing ſuch as may appear on the whole fit for Publication. It is proper at the ſame Time to add, that the Board does not conſider itſelf reſponſible, for any Fact or Obſervation contained in the Reports thus re-printed, as it is impoſſible to conſider them yet in a perfect State; and that it will thankfully acknowledge any additional Information which may ſtill be communicated: An Invitation, of which, it is hoped, many will avail themſelves, as there is no Circumſtance from which any one can derive more real Satisfaction, than that of contributing, by every poſſible means, to promote the Improvement of his Country.

N. B.—*Letters to the Board, may be addreſſed to Sir* JOHN SINCLAIR, Bart. *the Preſident*, M. P. *London.*

LONDON, June 1795.

PLAN

FOR RE-PRINTING THE

Agricultural Surveys.

By the PRESIDENT of the BOARD of AGRICULTURE.

A BOARD eſtabliſhed for the purpoſe of making every eſſential enquiry, into the Agricultural State, and the means of promoting the internal improvement of a powerful Empire, will neceſſarily have it in view, to examine the ſources of public proſperity, in regard to various important particulars. Perhaps the following is the moſt natural order for carrying on ſuch important inveſtigations; namely, to aſcertain,

1. The riches to be obtained from the ſurface of the national territory.
2. The mineral or ſubterraneous treaſures of which the country is poſſeſſed.
3. The wealth to be derived from its ſtreams, rivers, canals, inland navigations, coaſts, and fiſheries: And
4. The means of promoting the improvement of the people in regard to their health, induſtry, and morals, founded on a *ſtatiſtical* ſurvey, or a minute and careful enquiry into the actual ſtate of every parochial diſtrict in the kingdom, and the circumſtances of its inhabitants.

Under one or other of theſe heads, every point of real importance, that can tend to promote the general happineſs of a great nation, ſeems to be included.

Inveſtigations of ſo extenſive and ſo complicated a nature, muſt require, it is evident, a conſiderable ſpace of time before they can be completed. Differing indeed in many reſpects from each other, it is better perhaps that they ſhould be undertaken at different periods, and ſeparately conſidered. Under that impreſſion, the Board of Agriculture has hitherto directed its attention to the firſt point only, namely the cultivation of the ſurface, and the reſources to be derived from it.

That the facts eſſential for ſuch an inveſtigation, might be collected with more celerity and advantage, a number of intelligent and reſpectable individuals were appointed, to furniſh the Board with accounts of the ſtate of huſbandry, and the means of improving the different diſtricts of the kingdom. The returns they ſent were printed, and circulated by every means the Board of Agriculture could deviſe, in the diſtricts to which they reſpectively related; and in conſequence of that circulation, a great maſs of additional valuable information has been obtained. For the purpoſe of communicating that information to the Public in general, but more eſpecially to thoſe counties the moſt intereſted therein, the Board has reſolved to re-print the Survey of each County, as ſoon as it ſeemed to be fit for publication; and among ſeveral equally advanced, the counties of Norfolk and Lancaſter were pitched upon for the commencement of the propoſed publication; it being thought moſt adviſable, to begin with one county on the Eaſtern, and another on the Weſtern coaſt of the iſland. When all theſe Surveys ſhall have been thus re-printed, it will be attended with little difficulty to draw up an abſtract of the whole (which will not probably exceed two or three volumes quarto) to be laid be-

fore

fore His Majeſty, and both Houſes of Parliament; and afterwards, a general Report on the preſent ſtate of the country, and the means of its improvement, may be ſyſtematically arranged, according to the various ſubjects connected with agriculture. Thus every individual in the kingdom may have,

1. An account of the huſbandry of his own particular county; or,
2. A general view of the agricultural ſtate of the kingdom at large, according to the counties, or diſtricts, into which it is divided; or,
3. An arranged ſyſtem of information on agricultural ſubjects, whether accumulated by the Board ſince its eſtabliſhment, or previouſly known;

And thus information reſpecting the ſtate of the kingdom, and Agricultural knowledge in general, will be attainable with every poſſible advantage.

In re-printing theſe Reports, it was judged neceſſary, that they ſhould be drawn up according to one uniform model; and after fully conſidering the ſubject, the following form was pitched upon, as one that would include in it all the particulars which it was neceſſary to notice in an Agricultural Survey. As the other Reports will be re-printed in the ſame manner, the reader will thus be enabled to find out at once, where any point is treated of, to which he may wiſh to direct his attention.

PLAN OF THE RE-PRINTED REPORTS.

Preliminary Obſervations.

CHAP.

I. Geographical State and Circumſtances.

SECT. 1.—Situation and Extent.
2.—Diviſions.
3.—Climate.
4.—Soil and Surface,
5.—Minerals.
6.—Water.

II. State of Property.

SECT. 1.—Eſtates, and their Management.
2.—Tenures.

III. Buildings.

SECT. 1.—Houſes of Proprietors.
2.—Farm Houſes and Offices; and Repairs.
3.—Cottages.

IV. Mode of Occupation.

SECT. 1.—Size of Farms.—Character of the Farmers.
2.—Rent—in Money—in Kind—in Perſonal Services.
3.—Tythes.
4.—Poor Rates.
5.—Leaſes.
6.—Expence and Profit.

V. Implements.

VI. Incloſing—Fences—Gates.

VII. Arable Land.

SECT. 1.—Tillage.
2.—Fallowing.
3.—Rotation of Crops.

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* Where the quantity is conſiderable, the information reſpecting the crops commonly cultivated, may be arranged under the following heads:

1. Preparation { tillage, manure. }
2. Sort.
3. Steeping.
4. Seed (quantity ſown.)
5. Time of ſowing.
6. Culture whilſt growing { hoe, weeding feeding. }
7. Harveſt.
8. Threſhing.
9. Produce.
10. Manufacture of bread.

In general the ſame heads will ſuit the following grains:

Barley. Oats. Beans. Rye. Peaſe. Buck-wheat.

Vetches - - - Application.

Cole-ſeed - { Feeding, Seed. }

Turneps - - { Drawn - - - - - - - Fed - - - - - - - - Kept on graſs - - - —— in houſes - - - }

PERFECTION

PERFECTION in ſuch inquiries is not in the power of any body of men to obtain at once, whatever may be the extent of their views, or the vigour of their exertions. If Lewis XIV. eager to have his kingdom known, and poſſeſſed of boundleſs power to effect it, failed ſo much in the attempt, that of all the provinces in his kingdom, only one was ſo deſcribed as to ſecure the approbation of poſterity *; it will not be thought ſtrange that a Board, poſſeſſed of means ſo extremely limited, ſhould find it difficult to reach even that degree of perfection which, perhaps, might have been attainable with more extenſive powers. The candid Reader cannot expect in theſe Reports more than a certain portion of uſeful information, ſo arranged as to render them a baſis for further and more detailed enquiries. The attention of the intelligent Cultivators of the kingdom, however,

* See Voltaire's Age of Lewis XIV. vol. ii. p. 127, 128, edit. 1752.

The following extract from that work will explain the circumſtance above alluded to.

" Lewis had no Colbert, nor Louvois, when about the year 1698, for " the inſtruction of the Duke of Burgundy, he ordered each of the inten- " dants to draw up a particular deſcription of his province. By this means " an exact account of the kingdom might have been obtained, and a " juſt enumeration of the inhabitants. It was an uſeful work, though all " the intendants had not the capacity and attention of Monſieur de La- " moignon de Baville. Had what the king directed been as well executed " in regard to every province, as it was by this magiſtrate in the account " of Languedoc, the collection would have been one of the moſt valuable " monuments of the age. Some of them are well done; but the plan was " irregular and imperfect, becauſe all the intendants were not reſtrained " to one and the ſame. It were to be wiſhed, that each of them had given, " in columns, the number of inhabitants in each election; the nobles, the " citizens, the labourers, the artiſans, the mechanics, the cattle of every " kind; the good, the indifferent, and the bad lands, all the clergy, regu- " lar and ſecular, their revenues, thoſe of the towns, and thoſe of the " communities.

" All theſe heads, in moſt of their accounts, are confuſed and imper- " fect; and it is frequently neceſſary to ſearch with great care and pains " to find what is wanted. The deſign was excellent, and would have been " of the greateſt uſe, had it been executed with judgment and unifor- " mity."

will

will doubtleſs be excited, and the minds of men in general gradually brought to conſider favourably of an undertaking, which will enable all to contribute to the national ſtores of knowledge, upon topics ſo truly intereſting as thoſe which concern the Agricultural intereſts of their country; intereſts, which on juſt principles never can be improved, until the preſent ſtate of the kingdom is fully known, and the means of its future improvement aſcertained with minuteneſs and accuracy.

PRELIMINARY OBSERVATIONS

TO THE

LANCASHIRE RE-PRINTED REPORT.

IN the courſe of an addreſs to the Board of Agriculture, when it firſt aſſembled, on the 4th of September 1793, I took an opportunity of ſtating the meaſures which ſeemed to me the moſt likely to promote the objects of that inſtitution; and ſubmitted to the conſideration of the Board, whether the firſt object ought not to be, *to aſcertain facts*, without which no theory or ſyſtem of reaſoning, however plauſible, could be depended on; that for attaining ſo important an object, it would be neceſſary to examine into the agricultural ſtate of all the different counties in the kingdom, and to enquire into the means, which, in the opinion of intelligent men, were the moſt likely to promote either a general ſyſtem of improvement, or the advantage of particular diſtricts; that by employing a number of able men for that purpoſe, by circulating their reports previous to their being publiſhed, and by requeſting the additional remarks and obſervations of thoſe to whom ſuch communications were ſent, it was probable that no important fact, or even uſeful idea, would eſcape notice.

The plan thus chalked out having been approved of by the Board, it was immediately ſet about with every poſſible degree

of energy. Among other intelligent individuals nominated for that purpoſe, Mr. Holt, of Walton, near Liverpool, was appointed to take a ſurvey of the county of Lancaſter. Thoſe who have had an opportunity of examining his original Report, will ſee the pains which he took to fulfil the objects of his miſſion. As ſoon as his Report was printed, it was circulated throughout the county, for the purpoſe of obtaining additional information; and though, from the want of the privilege of ſending and receiving packets duty-free, (a privilege which, it is hoped, the Board will ſoon obtain, for the want of it impedes all its operations) the circulation of the Report was attended with conſiderable difficulty and expence; yet, on the whole, ſuch a number of copies were returned, with valuable additional obſervations, as to induce the Board to form an opinion, that the work might now be rendered fit for publication; and that it would be deſirable to take the ſenſe of the Public reſpecting the beſt mode of communicating the information which it had thus accumulated, by re-printing the corrected accounts of two counties, namely, Norfolk on the Eaſtern, and Lancaſhire on the Weſtern coaſt of the iſland.

There is every reaſon to believe, that the accounts of the other diſtricts in the kingdom will ſoon be equally complete; in which caſe, a greater maſs of agricultural knowledge will be collected, in a ſpace of little more than two years, than probably can be found in all preceding publications on the ſubject of huſbandry; and thus the foundation will be laid for a general ſyſtem of improvement, on that beſt and ſureſt of all foundations, a knowledge of facts.

Next to collecting information, the improvement of a country muſt depend upon rouſing a proper ſpirit of exertion, in order that the information thus accumulated may be put into action. By the happy conſtitution of this country, and the wiſdom of its laws, property is better ſecured here than perhaps in any other ſtate that ever exiſted, which undoubtedly is a great ſpur to exertion. But the legiſlature ſeems to have truſted too much to the beneficial effects of that ſecurity, and to think that no other encouragement or ſpur could be neceſſary. Fortunately, however, a new ſyſtem has commenced. Parliament has already begun to vote ſome aid for the improvement of huſbandry. The legiſlature has at laſt taken the plough and the ſpade under its immediate protection; and thoſe who make any uſeful diſcovery likely to be of ſervice to Agriculture, have now every reaſon to expect attention to their claims, and that encouragement which their diſcoveries may be found to merit.——As ſome of the principal improvements which Mr. Elkington, the celebrated drainer, to whom Parliament has lately granted 1000 *l.* were made in Lancaſhire, it was natural to allude to that circumſtance, when the Report of that county came under conſideration.

Where both ſkill in agriculture, and a ſpirit of improvement, exiſt, there can be but one thing wanting, namely, capital. There is little riſk, however, of any deficiency of that nature in theſe kingdoms, unleſs our capital ſhould be diverted from its natural means of employment, *domeſtic improvement*, to remote and foreign ſpeculations. The beſt mode of preventing ſuch a deviation ſeems to be, *to make the*

kingdom

kingdom known to its inhabitants, and to point out the benefit which they may derive from improving it. Such are the objects of theſe inquiries; which, ſo far as they concern the county of Lancaſter, ſeem to have made very conſiderable progreſs, although in ſome particulars they have not reached that degree of perfection that would be ſo truly deſirable; but which probably will yet be attained, even previous to the concluſion of the preſent century, when the Statiſtical Account of Great Britain, that moſt important of all the labours which the Board of Agriculture can undertake, is completed.

AGRICULTURAL SURVEY

OF

LANCASHIRE.

CHAPTER I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. 1.—*Situation and Extent.*

LANCASHIRE is a maritime county, bounded on the coaſt by Saint George's channel and the Iriſh ſea.

The dimenſions of the county are as follows *.—Its greateſt length 74 miles; breadth 44½ miles.—Its circumference (croſſing the Ribble, at Heſketh bank) 342 miles; containing 1,765 ſquare miles, and 1,129,600 ſtatute acres.—Total number of pariſhes, with the additional ones, 62.

SECT. 2.—*Diviſions.*

THE county is divided into ſix hundreds; namely, Salford, Weſt Derby, Leyland, Blackburne, Amounderneſs, and Lonſdale. There are two diſtricts in it which may deſerve more particular mention; namely, the Filde, which is remarkable

* Calculated upon this occaſion by Mr. William Yates, who ſurveyed and publiſhed a map of the county of Lancaſter in the year 1786.

for its great fertility; and Furneſs, bordering on Cumberland and Weſtmorland, where there is a fertile vale. The Filde is peculiarly diſtinguiſhed for its breed of cattle. Since the circulation of the Lancaſhire Report there, a new ſpirit for agricultural improvements has ariſen, particularly in regard to draining, watering, making compoſts, manuring their lands, &c. which cannot fail to be attended with the beſt conſequences.

The ſhape of the county is ſomewhat ſimilar to that of England, Wales, and part of Scotland; *e. g.* ſuppoſe the parts beyond the ſands repreſent part of Scotland; the river Loyne, and the inlet which runs up to Cockerham, the rivers Merſey and Dee; that tract called the Filde, the principality of Wales; the Ribble, Briſtol Channel, and the Severn; and, again, the river Merſey, the ſouthern boundary of the county, by the Engliſh Channel, the ſouthern boundary of the kingdom. The indentures upon the eaſtern parts of the county have a ſtrong ſimilarity to the indentures on the eaſtern part of the kingdom.

SECT. 3.—*Climate.*

THE ridge of mountains, which bounds this county on the eaſtern ſide, from Yorkſhire, and which runs not only through Yorkſhire, but Cheſhire, Derbyſhire, and Staffordſhire, &c. and called, not improperly, the Back-bone of the kingdom, being the moſt elevated ground in the iſland, ſcreens Lancaſhire more particularly from the ungenial eaſtern blaſts, the froſts, blights, and inſects, which infeſt the countries bordering upon the German ocean; and though the high mountains may cauſe a greater quantity of rain to fall in this diſtrict, (as appears by rain-gauges kept for that purpoſe) than in the more interior parts of the kingdom; yet this county, fanned with the weſtern gales, or north-weſt breezes, has a ſalubrity of air, to which may be attributed the vigour and activity of the inhabitants, who are, if temperate, generally long-lived. The ſaline particles, with which the weſterly winds are loaded, may alſo not a little contribute to the verdure of the fields. Snow

continues

continues but a ſhort ſpace of time upon the ground, owing to the maritime ſituation of the county.

The prevailing winds of this county are the Weſt and N. W. winds, which produce a mildneſs of climate, and ſalubrity of air and atmoſphere, unknown in moſt diſtricts ſo far advanced to the north.

Though that part of the county which lies to the ſouth of the river Ribble is in general a low and flat region, perhaps few diſtricts of this or any other kingdom can produce a more healthy, vigorous, or active race of inhabitants; living in general, when temperate, to a great age, and bearing in the whole of their appearance a moſt ample teſtimony, to the ſalubrity of their native air. The beauty of the *Lancaſhire witches* has long been celebrated; and the men are no leſs diſtinguiſhed for their military ſtrength and proweſs. The neighbourhood of the Atlantic ocean, and the elevation of its mountain boundary, certainly render this county more ſubject to wet weather than moſt in the kingdom. Theſe frequent rains, however, have the effect of rendering Lancaſhire one of the moſt productive and certain graſs-land diſtricts in the iſland. The ſoil is peculiarly adapted to graſs, and the climate uncommonly favourable for that production.

Perpendicular Height of the RAIN that has fallen at Lancaster, during the laſt Nine Years; diſtinguiſhing each Month and Year in Inches and Lines. By DR. CAMPBELL, of Lancaſter.

Years - -	1784.		1785.		1786.		1787.		1788.		1789.		1790.		1791.		1792.	
Months.	In.	Lin.	In.	Lin.	In.	Lin.	In.	Lin.	In.	Lin.	In.	Lin.	In.	Lin.	In.	Lin.	In.	Lin.
January - -	2	8¼	2	6	2	6	1	7½	2	10	4	5	5	11	5	10	3	2
February -	2	3¾	–	6⅓	1	1	5	–	2	1	4	11	1	2¾	3	1¼	3	–
March - -	2	7½	–	1	–	11	3	7⅓	1	10	–	8⅓	–	8	2	2	5	9
April - -	3	–	1	8	–	4½	1	3½	2	7½	4	3¼	1	3½	4	3	5	9½
May - -	3	–	1	6	1	8	1	4¾	1	1	4	1⅓	2	1	2	4½	5	–
June - -	5	9	1	–½	1	10	3	6⅛	2	–⅓	5	2½	4	–	–	10½	3	10
July - -	3	–	2	1½	2	9½	7	–	6	5	5	7½	7	6	3	6	5	1¼
Auguſt - -	5	–	10	4	5	–	7	–	2	–¼	–	5½	3	10⅓	6	2	8	6
September -	2	7	5	6	7	11	2	–	3	7¼	4	1¾	5	5	1	9½	9	4
October - -	–	8	5	9	1	6	9	9	2	1½	6	6	2	9	3	10	4	3
November -	3	–	4	6	3	–	4	5¼	1	9¼	4	1	4	6⅓	6	6	4	–
December -	1	6	1	2	3	8	4	5	–	10⅓	6	6	7	4	5	7½	8	1
Total -	35	1½	36	9⅓	32	3	51	–¼	29	4½	51	–¼	46	6½	46	–¼	65	10

N. B.—A line is the twelfth part of an inch.

Mean

Mean heat of the Thermometer at noon at Lancaſter - - 51.8.
D° - - at London - - 56.
D° - - at Edinburgh - 50.1.

WINDS blow at Lancaſter:

North - -	30 Days.
N. E. - -	67
S. E. - -	35
Eaſt - -	17
South - -	51
S. W. - -	92
N. W. - -	26
Weſt - -	47

The mean heat of the Thermometer, and the direction of the Winds, are taken from an average of the ſeven years from 1784 to 1790 incluſive.

Perpendicular Height of RAIN that has fallen at Liverpool from the year 1784 to the year 1792 incluſive. By MR. WILLIAM HUTCHINSON, late Dock-maſter.

1784.	1785.	1786.	1787.	1788.	1789.	1790.	1791.	1792.
36¼ In.	26¼ In.	26½ In.	37¼ In.	24⅜ In.	48¼ In.	42¾ In.	45⅜ In.	54¼ In.

The ſeed-time, and harveſt, vary a little between the northern and ſouthern parts of the county. Thoſe towards the eaſt, and contiguous to the mountains, are in general later than the ſouth-weſtern parts.

The following Regiſter will ſhew, that there is a greater difference of ſeaſon than many may imagine; and if theſe meteorological regiſters were multiplied, and kept in different places, and the ſyſtem more extended, ſuch data would not only be pleaſing memoranda, but afford many uſeful hints.

The following particulars were taken from the memoranda of D. Daulby, Eſq. Birch Houſe, Liverpool, reſpecting ſome articles produced on the grounds of Mr. Hill, of Wallaſey, in Cheſhire, about three miles from Liverpool. The articles mentioned were for the Liverpool market, the dates

correſponding

correſponding to the two days in the week on which the market is held, Wedneſday or Saturday. It may be worthy of remark, that there is a general ſtrife betwixt the Kirkdale and Wallaſey gardeners, who can produce the firſt early potatoe at Liverpool market. They generally ſucceed both on the ſame day. In the year 1790 the Cheſhire gardener had, however, the ſtart by nearly a whole week.

EARLY POTATOES.

1766.	June 7,	20lb. ſold for 5*d.* and 6*d.* per lb.
1767.	June 6,	3lb. ſold for 14*d.* in the whole.
1768.	May 14,	8lb. ſold for 4*s.* 8*d.*
1769.	May 13,	2lb. ſold for 1*s.*
1770.	May 23,	2lb. for 3*s.*
1771.	May 18,	½lb. for 1*s.*
1772.	May 13,	1lb. for 2*s.* 6*d.*

N. B.—From this period the early potatoes have been regularly ſold for 2*s.* 6*d.* per lb. when firſt brought to market.

After this period the Regiſter was extended to the following articles; namely,

	ASPARAGUS.	POTATOES.	GOOSEBERRIES.
1773.	April 10.	April 7.	May 5.
1774.	3.	30.	9.
1775.	1.	19.	April 26.
1776.	6.	17.	May 2.
1777.	4.	24.	12.
1778.	11.	25.	9.
1779.	March 27.	3.	April 10.
1780.	April 15.	20.	May 6.
1781.	March 31.	14.	April 21.
1782.	May 4.	May 11.	May 18.
1783.	April 12.	1.	April 30.
1784.	May 8.	17.	May 22.
1785.	April 23.	14.	18.
1786.	22.	13.	10.
1787.	March 28.	April 11.	April 28.

1788.

1788.	April 19.	May 11.	May 7.
1789.	18.	9.	9.
1790.	3.	April 3.	April 24.
1791.	9.	16.	23.
1792.	7.	25.	25.
1793.	May 1.	May 11.	May 18.
1794.	April 15.	April 12.	April 18.

From the above Regiſter it appears, that the difference between an early and late ſpring is not leſs than ſix weeks; *e. g.*

	ASPARAGUS.	POTATOES.	GOOSEBERRIES.
1789.	March 27.	April 3.	April 10.
1784.	May 8.	May 17.	May 22.

From this Regiſter may alſo be traced, the improved cultivation of the early potatoe upon common ground: but the potatoe at preſent may be truly ſaid to be raiſed the whole year throughout, by the new method of heating the ſtoves with ſteam. Mr. Butler, gardener to the Earl of Derby, at his ſeat at Knowſley, has practiſed this ſome time; and Mr. Collins, late his lordſhip's gardener, who has ground near Liverpool, had, under glaſſes, forced by the heat of ſteam, Chriſtmas, 1794, nearly, as he calculated, one cwt. of potatoes, ready to take up. But he obſerved, that the proceſs by ſteam was too expenſive to afford any profit at the price they were uſually ſold.

It will at this day ſcarcely be credited, that when potatoes began to be brought to market ſo early as June, the gardeners were under the neceſſity of bringing the ſtems adhering to the potatoes, for without this no purchaſer could be obtained.

A gentleman who has been particularly attentive to this ſubject, obſerved that, in this northern diſtrict, autumnal ſeeds require to be committed to the earth one fortnight at leaſt earlier than is recommended by Mawe, in his Kalendar.

SECT.

SECT. 4.—*Soil and Surface.*

THE features of this county are, in many places, ſtrongly marked; towards the north they are bold and pictureſque, diverſified with alpine mountains and fertile vales. The north-eaſt part of the county, Blackburn, Clithero, Haſlingden, &c. is rugged, interſperſed with many rivulets, with a thin ſtratum of upper ſoil; the ſouthern part more ſoftened, and the plains are more fertilized: along the ſea coaſt, the land is chiefly flat, and has the appearance, in many places, as if formerly covered by the ocean. In various fields at Formby, near the ſhore, there is ſoil above two feet below the ſand, which lies beneath the preſent green-ſward. There are the ſtrongeſt reaſons for believing that this ſoil (which is about four inches thick) originally formed the ſurface of the ground, and was gradually buried by ſand from the neighbouring hills. Few countries produce greater varieties of ſoil, which yet does not change ſo rapidly as in ſome others.

The greateſt proportion of that diſtrict, which lies between the Ribble and the Merſey, has for its ſuperficies a ſandy loam, well adapted to the production of almoſt every vegetable that has yet been brought under cultivation, and that to a degree which renders it impoſſible to eſtimate the advantage which might be obtained, by improved and ſuperior management. The ſubſtratum of this ſoil is generally the red rock, or clay-marle, an admirable ſandy loam, perhaps one of the moſt deſirable ſoils that can be found, equally well adapted to the production of every vegetable. In this diſtrict there is little or no gravelly ſoil, no chalk or flint, no ſtony land, and very little obdurate clay, for the generality of it (except what is under graſs, and indeed much of that) is treated in a manner that does little credit to this æra of improved and enlightened agriculture. There is alſo a black ſandy loam, ſomething diſtinct from the above deſcription, which has no red rock, but the ſubſtratum white ſand, under which is clay, and then marle. There are alſo tracts of white ſand lands, and ſome little pebbly-gravel lands. There are many large tracts which

come under the denomination of *moſſes*, and ſome ſtiff, but no obdurate clay lands.

There is a kind of land which throws up great quantities of ruſhes, not owing ſo much to ſprings, as to a thin ſtratum of ſurface ſoil, under which lies a bed of matter, principally compoſed of clay, which does not admit the water to penetrate; therefore, the upper ſurface, or ſoil, is kept in a continual ſpongy ſtate (if not ſurface-drained) and produces ruſhes and other ſour graſſes *.

Remarks on this Obſervation †.—"This kind of land lying upon clay or marle, is not (I am of opinion) cured, and but little benefitted, by ſurface-draining; the evil, generally, if not always, is under the ſoil, occaſioned by the ‡ ſand-beds, which are of various depths and forms, from the ſurface of the clay or marle, ſay from half a yard to 1½ yard deep, like ſo many baſons filled with ſand and water, which keep the ſoil continually moiſt (except in very dry weather); and as it muſt be granted by all, that ruſhes are occaſioned by a ſtagnated moiſture, ſo it is obvious, that the only effectual method of cure is draining the land ſufficiently deep, ſo that the wet cannot be ſucked up to the ſoil or upper ſurface. If land lies wet in winter, when dried by ſummer's heat it becomes hard and firmly baked together, ſo that little vegetation is produced, conſequently the propriety of under-draining, to produce crops and deſtroy ruſhes, is obvious. And further, to prove this, if a drain is cut acroſs a field of this deſcription into the marle, and through the ſand-beds, it will be found, that there is a continual ſtream all the winter ſeaſon.

* Upon ſuch land, common rack or gravel ſand is ſpread upon the ground previous to ploughing, as thick as common dunging; and then, after ſecond ploughing or croſs-cutting, dung at top, and harrow in the ſeed, and you will looſen the water-tight ſoil. If twice repeated, the ſucceſs is infallible.

† By Mr. James Blundell.

‡ Called here ſand-goats.

"Good marle has the property of ſtiffening light land, and meliorating, and unbinding, (if dry) ſtiff land. Stiff ſoil, it is true, for a long time, reſiſts the rain before it is ſaturated; but when made wet, it longer retains the moiſture than a dry ſoil."

Marle has a good effect upon theſe lands; for, beſides its uſual qualities of promoting putrefaction, it renders the ſoil ſtiffer, and enables it to reſiſt and throw off the ſurface water more effectually.

Moor lands which are in a ſtate of nature, and produce heath, and other wild plants, are of various qualities; very extenſive indeed, and much more ſo than might have been expected in a county ſo populous, and conſequently where lands muſt be ſo valuable.

Theſe are diſtinctions, not neceſſary perhaps, on this occaſion, to particularize more minutely, than by obſerving that the vales are in general fertile, but have leſs of that fertility as they approach nearer to the higher lands.

SECT. 5.—*Water.*

THE great advantages which this county poſſeſſes, both from its having ſuch a range of ſea-coaſt, and alſo from the numerous ſtreams and rivers it is poſſeſſed of (not forgetting the lakes of Windermere and Coniſton-water) need hardly be dwelt upon, being ſo extremely obvious. It may be ſufficient to remark, that without thoſe advantages, neither the manufactures of the county, nor the ſea and inland fiſheries, a matter of no inconſiderable moment to the inhabitants, could be carried on to the ſame extent.

It is believed, that the only decoy pond is at Orford, the ſeat of John Blackburne, Eſq. member for the county.

SECT.

SECT. 6.—*Minerals.*

LANCASHIRE has ſome local advantages, which have been the cauſe of rendering the county ſo famous for its manufactures. Theſe in a great meaſure depend upon two moſt material articles, coals and water; the former of which lie in immenſe beds towards the ſouthern and middle part, and the various rivers, &c. which, together with the ſprings, in ſo many places interſect the county, have conjointly had no ſmall effect upon the agriculture of this diſtrict, as will be ſeen hereafter. The north and north-eaſt diſtricts produce lime-ſtone in abundance, but no calcareous matter except marle is found towards the ſouth; a ſmall quantity of lime-ſtone pebble upon the banks of the river Merſey is alſo to be excepted. In the townſhip of Halewood, near Liverpool, lime-ſtone is found and got at different depths, but in ſmall quantities.

Coals have not been found, as it is ſaid, farther north in the county than Chorley and Colne. The next bed of that uſeful article, after a long ſpace, appears again in immenſe quantities at Whitehaven and Newcaſtle-upon-Tyne. The cannel (a ſpecies of coal reſembling black marble) lies chiefly at Haigh, near Wigan, and occupies a ſpace, as it is ſaid, of about four miles ſquare.

Near Leigh is found lime of a peculiar quality, which reſiſts the effects of water, and is therefore applied to the conſtruction of ciſterns to hold water, and mortar for building under water. Alſo at Ardwick, near Mancheſter, not many years ago has been diſcovered a lime of ſimilar, by ſome it is ſaid of ſuperior, quality. The tarras-ciſtern at Drury-lane houſe is of this lime.

There is ſaid to be coal about Hornby.—" The exportation of coal to foreign countries is now become a great trade, which has encreaſed rapidly within theſe few years paſt. No doubt this trade is beneficial to ſome individuals, and alſo to the revenue; at the ſame time we ſhould reflect, that this avidity for preſent profit has a deadly ſting in the tail of it. We are now eagerly ſupplying other nations, and frequently our worſt enemies, with thoſe coals, which the metropolis and our manufac-

tories will one day ſtand in need of; and even now, the exportation trade has raiſed the price of coals ſo high, as to be exceedingly inconvenient to many of our manufactories, and to many of the induſtrious poor, eſpecially in South Britain; and this in leſs than one hundred years from the commencement of an extenſive conſumption. What may we ſuppoſe will be the price of them two hundred years hence * ?"

To the above may be added, the great conſumption of coals by fire-engines, many of which, in the courſe of years, muſt ſtand ſtill for want of that article.

The power of ſteam is ſo great, and the mechaniſm of the engine is ſo much improved, that in a little time it is probable we may ſee a ſmall veſſel over the kitchen fire with hot water, forcing an engine and working the churn.

Beſides coal, this county alſo produces ſtone, of various denominations. Near Lancaſter (upon the common) is an extenſive quarry of excellent free-ſtone, which admits of a fine poliſh. The county town (Lancaſter) is built wholly of this ſtone, and, for its neatneſs, is excelled by few towns in the kingdom. Flaggs and grey ſlates are dug up at Holland, near Wigan. Blue ſlates are got in large quantities in the mountains, called Coniſtone and Telberthwaite fells, near Hawkshead, of which many are exported. They are chiefly divided into three claſſes, viz. London, country, and *tom* ſlate, which are valued in a due proportion: London are the beſt, &c. The beſt ſcythe-ſtones are obtained at Rainford, and well wrought on the ſpot. Iron ore, in large quantities, is obtained near Lindle, between Ulverſtone and Dalton, in Low Furneſs. Copper mines in the North have been worked, but without much ſucceſs.

* Williams's Natural Hiſtory of the Mineral Kingdom, vol. i, p. 171.

CHAPTER

CHAPTER II.

STATE OF PROPERTY.

SECT. I.—*Eſtates.*

SINCE the introduction of manufactures, property has become more minutely divided. But there remain proprietors who ſtill hold very extenſive poſſeſſions.

The remark made by Camden, in his BRITANNIA, of the number of ancient families bearing the names of the places where they reſide, and whence they took their names, is ſtill applicable to this county, *e. g.* Atherton, Bold, Fazakerley, Formby, Hoghton, Hulton, Mawdſley, Townly, Trafford, &c.

The yeomanry, formerly numerous and reſpectable, have greatly diminiſhed of late, but are not yet extinct; the great wealth which has in many inſtances been ſo rapidly acquired by ſome of their neighbours, and probably heretofore dependants, has offered ſufficient temptation to venture their property in trade, in order that they might keep pace with theſe fortunate adventurers.

Not only the yeomanry, but almoſt all the farmers, who have raiſed fortunes by agriculture, place their children in the manufacturing line.—The farmers in this county moſtly ſpring from the induſtrious claſs of labourers, who, having ſaved by great economy a ſum of money, enter upon ſmall farms, and afterwards, in proportion to the encreaſe of their capitals, take larger concerns. Nothing appears more deſirable to the proprietors of large eſtates, than that many cottages ſhould have annexed to them *a few* acres of land, which ſerve as a ſchool to the occupier in Agriculture, by giving his mind an opportunity of being employed in the management of it. An ob-

ſerving proprietor may always ſelect from amongſt them proper tenants for his ſmall farms, who may riſe, as numbers have done, to occupy with advantage the largeſt farms in their neighbourhood.

Eſtates are principally under the direction of ſtewards and bailiffs. A few individuals have attended perſonally to the improvement of their own lands; and having executed their work in a ſuperior manner, without doubt have found their account in the ſuperior profit derived from ſuch exertions.

SECT. 2.—*Tenures.*

THE Tenures are chiefly freehold. There are ſome copyhold; leaſes on lives have been more frequent formerly, than at preſent; but the practice for granting leaſes for lives is not entirely diſcontinued. A conſiderable eſtate in the county, is poſſeſſed by the tenants in the following manner, which may give ſome idea of the proportion of leaſes for lives, compared to thoſe for a determinate period.

	Statute Meaſure.			Preſent Rent.			Eſtimated clear Yearly Value.		
	A.	R.	P.	£.	s.	d.	£.	s.	d.
Amount of Leaſes for one Life -	297	3	27	79	6	5	515	0	0
Ditto - - - for two Lives -	322	3	19	30	14	7½	458	13	0
Ditto - - - for three Lives -	222	0	13	80	2	4	352	3	0
Ditto - - - for years - -	1,742	2	4	3,910	2	8	4,212	1	2
	2,495	2	1	4,100	6	0½	5,537	17	2

CHAPTER

CHAPTER III.

BUILDINGS.

SECT. I.—*Houſes of Proprietors.*

THERE are not many noblemen's ſeats in the county, and thoſe have been already ſufficiently deſcribed in former publications.—In regard to the ſeats of the gentry, Ince Hall, belonging to Henry Blundell, Eſq; deſerves particular notice, having been much improved by its preſent poſſeſſor, not only by the addition of excellent offices, hot walls, green-houſes, and paddock, but alſo on account of its being ornamented with many excellent paintings by ancient and modern maſters, foreign and Engliſh; many marble ſtatues, rich tapeſtry, and other articles, have been ſelected to embelliſh this ſeat, in a ſtyle ſo as to become a place of reſort to the young artiſt, the virtuoſi, and the curious traveller.

The buildings of the merchants and tradeſmen diſperſed over many parts of the county, and particularly in the vicinities of large towns, certainly merit notice *.—Conſiderable expence having been laid out of late years in the erection, finiſhing, and embelliſhing many of them in a ſuperior ſtyle—many of which are furniſhed with hot walls, green-houſes, the rareſt plants and fineſt fruits: the adjoining grounds have been improved, laid out in various ſtyles, and fringed with plantations.

* Some gentlemen tradeſmen's houſes in Mancheſter are erected upon a ſcite of land, which pays a ſum no leſs than 50 *l.* per annum ground-rent.

A taſte

A taſte for the fine arts has alſo gone forth, and a great number of expenſive paintings have been purchaſed to ornament the walls, and engravings to fill their port-folios.—There are more readers amongſt the lower claſs of people, it is ſuppoſed, than in any part of the kingdom.

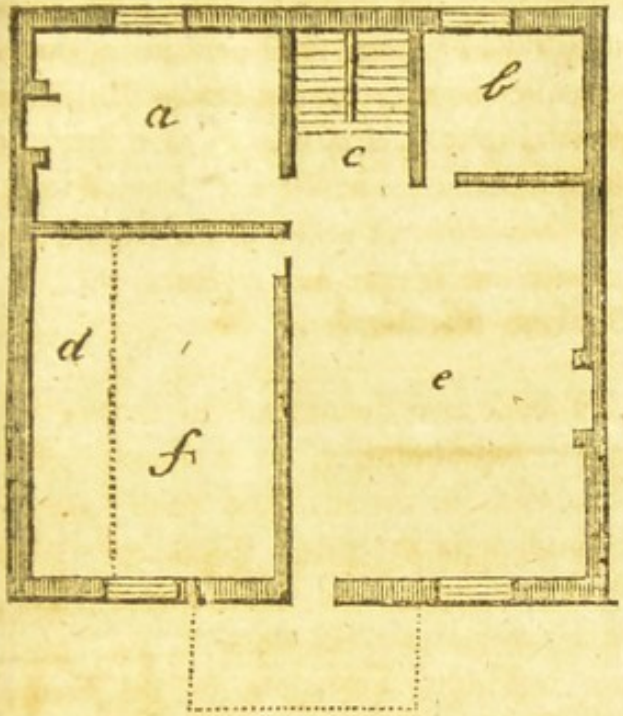
SECT. 2.—*Farm Houſes and Offices; and Repairs.*

SOME of the old built farm-houſes are ill conſtructed; and (which may appear extraordinary, in a county where ſlate abounds, and ſtraw ſells at an advanced price) are ſtill thatched, and the preparation of the ſtraw for thatch is but ill managed. Fern is ſaid to make the beſt covering, being naturally dry, and not apt to ferment like ſtraw.

The more modern buildings, belonging to the Earl of Derby and many others, are uſeful conſtructions; and in general ſufficiently ſpacious to contain the crops both of hay and corn.

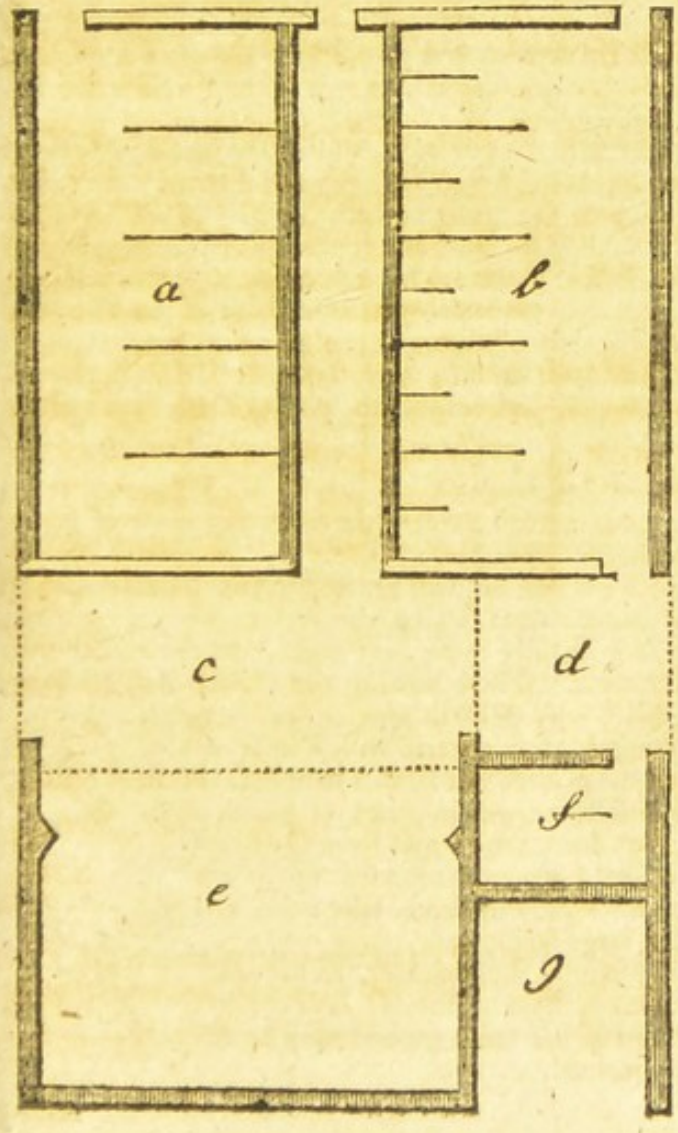
Farms of ſixty pounds a year, in Lancaſhire, have offices frequently as large as would be thought to ſuffice, in other counties, for farms of three or four hundred *per ann.* where it is the cuſtom to ſtack their corn, which is not the general practice in Lancaſhire.

Mr. Boyer, of Lathom houſe, has favoured the ſurveyor with the following plan of a farm-houſe and offices, which have been lately erected upon Mr. Bootle's eſtate.



HOUSE.

a. Parlour.
b. Dining-room.
c. Staircaſe.
d. Milk-houſe.
e. Kitchen.
f. Pantry.



OFFICES.

a. Stable.
b. Shippon, or cow-houſe.
c. Thraſhing-bay, or barn.
d. Shed.
e. Corn-bay, or barn.
f. Calf-crib.
g. Cart-houſe.

In forming buildings, convenience is the firſt thing to be conſidered: this is the only plan that has yet been erected in this county upon this conſtruction; it will ſoon be allowed by the intelligent farmer, that two front parlours and front door are unneceſſary, two out of the three are ſeldom or ever uſed. It is eaſily conceived from the plan annexed, how much more room is gained, and with what ſnugneſs every apartment joins. Many a farmer's wife would think herſelf in paradiſe in ſuch a kitchen—theſe buildings are large enough for

Repairs have been frequently left to the tenant, as by covenant ſtipulated; but they are in general ſo ill performed, under theſe terms, as to prove no ſecurity to the landlord. Some landlords provide materials, and the tenant is to cart them to the place wanted; which practice ſeems the only ſervice in repairs by the tenant that proves of real utility to the landlord.

SECT. 3.—*Cottages.*

THE cottages are of different kinds, for the common labourer in agriculture, and the different artificers, and with accommodations accordingly, with ſeparate rooms, to hold the utenſils of trade in their various occupations;—near large factories, being frequently built in long ranges adjoining together, and near the works, and ſometimes accommodated with ſmall gardens *.

farms of £. 100 a year, but may be reduced or enlarged at pleaſure. The houſe ought to ſtand with the kitchen and pantry to the north: a porch is alſo neceſſary, and ſerves as back kitchen, to put milking veſſels in, &c. and break off the north-weſt winds.

The ſet of offices may be varied many ways, and alſo be uſeful and convenient; the one laid down appears to be the beſt adapted for farms not exceeding £. 100 a year; it will hold five horſes and ten cows: you paſs to ſuckle the calves under cover, and they are clear and convenient to the ſhippon, for it is well to keep the ſucklings at a diſtance from the cows. Over the calf-crib and cart-houſe is the granary, into which you aſcend out of the barn, and have no ſteps to the outſide of the building; you may load the cart under cover with eaſe through a trap-door into the cart-houſe. In large farms I would add a ſtable to one end, and convert the preſent ſtable into another ſhippon, or cow-houſe.

* Where the cottager has a ſmall garden, the following mode of laying potatoes may be of particular uſe to him:

From every eye in each potatoe-ſet, will proceed different ſtems; which when they are about nine inches above the ſurface of the ground, ſhould be ſpread out in a circular form, bent down, and covered all over (but juſt the ends) with earth. The following rude ſketch may probably render it more intelligible: a pit of earth nine inches diameter, about one foot deep, dunged, then covered with a little mould, upon which is depoſited the potatoe whole, that is uncut. From this ſet may ariſe ſeveral ſtems, which when of length ſufficient, then the ſtems bent down thus: and from the ſtems thus covered a few inches deep, and rounded up in the ſhape of a mole-hill, new fibres will ſtrike, take root, and potatoes be produced in large quantities.

This mode may be uſeful to the cottager, as the practice requires but little dung, ſome additional labour; but as the pits may be varied, the ſame ground may be repeatedly and repeatedly planted.

Many

Many of theſe kind of dwellings have been erected by building ſpeculators, as they generally (if the rents are paid) are calculated to yield an intereſt of £. 10 *per cent.* to £. 20 *per cent.* The modern buildings are chiefly of brick, and covered with ſlate; rents from one to five and ſix pounds *per annum.* The old cottages of the county, of which ſome are yet remaining, are of unhewn ſtone, or poſt and plaiſter, clay floors, and thatched roofs.

The gardens attached to ſuch cottages are found of the greateſt utility, both for the means of healthy exerciſe they furniſh, and as enabling the cottager to raiſe a conſiderable quantity of food at a ſmall expence.

CHAPTER IV.

MODE OF OCCUPATION.

SECT. I.—*Farms.*

IN moſt townſhips * there is one farm, ſtill diſtinguiſhed by the name of the Old Hall, or Manor Houſe (the reſidence formerly of the great proprietor of that diſtrict) which is of larger extent than any of the adjoining or neighbouring farms. Few of theſe farms, however, exceed 600 ſtatute acres; many do not extend to the amount of 200. But the more general ſize of farms is from 50, 40, 30, down to 20 acres a-piece; or even ſo much only as will keep a horſe or cow only; or one of theſe, as is moſt convenient.

Farmers in general are charged with being ſtupid, obſtinate, and attached to old cuſtoms. In this county they do not altogether merit theſe harſh accuſations — we have all our prejudices and attachments. They are, in general, a laborious, and certainly a moſt uſeful claſs in ſociety. The hazards they have to encounter, from ſeaſons, and other cauſes, leave little room for trials of uncertain experiments. After the grain has been depoſited in the earth, the ground being previouſly prepared to receive it, in the moſt huſband-

* The pariſhes of Lancaſhire are again ſubdivided into townſhips.

man-like manner, ſtill the ſucceſsful iſſue entirely depends on a favourable ſeaſon to vegetate and mature the grain. Mildews and blights, under theſe favourable aſpects, may yet intervene; but ſhould not any inauſpicious appearance happen, and ſhould the reaper be prepared to gather the produce of the loaded fields, yet how often does the howling blaſt ſcatter and diſperſe the hopes of the huſbandman!

Again, the labours of the farmer are toilſome; his gains cannot be great, upon the moſt favourable calculations; namely, that from his grounds he ſhould be enabled to raiſe three rents—one, of courſe, his landlord demands; more than another is requiſite to maintain his family, pay the hire of ſervants, and ſupport contingencies; the third and laſt, toward paying intereſt of the capital advanced for ſtock, and afford an annual ſurplus to reward his labours.

A ſpirit of ingenuity and improvement amongſt the inhabitants of this county, has been frequently proved, and is yet, every day, manifeſting itſelf; but this is moſt apparent amongſt the manufacturing claſs; and the reaſon is obvious —reward immediately enſues. The Glaſgow manufacturers, till of late, have exceeded the Lancaſhire in muſlins. Stimulated by emulation, in the neighbourhood of Bolton, they now boaſt that they have at laſt, and but very lately, ſurpaſſed the Glaſgow muſlins and fancy-works. The ſame flame would equally ſhine amongſt the farmers as well as amongſt the manufacturers, were the reward equally certain: ſtill it remains to enquire how a ſpark of this flame may be kindled. The farmer is not ſuch a novice, and ſo totally blind to his own intereſt, as to be incapable of viewing the effects of ſkilful cultivation, however novel; and if on repetition this new practice be found beneficial, the great incentive to action, INTEREST, will operate equally upon one individual as on another.

But how is the farmer to be convinced? He is told ſuch are the cuſtoms which ſucceed in other diſtricts; but theſe aſſertions do not convince. Soil, climate, or other cauſes, may operate — he waits an example nearer home. Herein the landlords, the gentlemen of property in the county, ſhould interfere and ſet the example; and ſeveral ſpirited gentlemen have

have made great exertions in the introduction of many novel practices, and under great diſadvantages; for not being able to execute, but only to direct, they have had both prejudice and ignorance to encounter. Their labour is always procured upon worſe terms, probably by £. 50 *per cent.* than can be obtained by the farmer or gardener, who can ſay to his workmen, "*Come, let us go dig together*;" even if the labourer be hired to work by the piece upon the uſual terms, it will often be ſlightly performed.

How many good effects, and what ſuperior cultivation, has been produced within the ſpace of half a century, by theſe means, in a ſlow and almoſt imperceptible manner! The very village in which this account is written *, half a century ago, was not able to ſupply from its own meadows an inferior number of cattle, with a ſufficiency of hay for winter ſtock. What was wanted of this article was generally purchaſed from the Seſton meadows.

There is a greater quantity of live ſtock at preſent kept, and yet no ſmall ſurplus of hay remains to be ſent to the Liverpool market.

It was in the memory of a worthy and experienced farmer †, who only died the preſent year, that the firſt load of night-ſoil brought from Liverpool towards the north was by his father; who was paid for carting the ſame the price that heretofore had been paid for carting away this nuiſance, and throwing it into the river Merſey.

The good effects upon the land, which experience has proved dung to have, have cauſed it, at this period, to be ſold at an advanced price, and carted to a conſiderable diſtance. The varieties of potatoes, their diminiſhed value to the purchaſer, in compariſon to the price they fetched twenty or thirty years ago, under an advance of land, dung, and labour, proves ſuperior cultivation, and much greater produce of this excellent vegetable, from the ſame quantity of ſoil. The introduction of clover, the varieties of ſeeds of grain, both oats and wheat, pro[illegible] ſome degree of atten-

* Walton, near Liverpool.

† Mr. John Harper, late of Bank Hall.

tion; as does alſo the introduction of the turnip, although the cultivation at preſent be not ſo extended, nor treated in the moſt huſbandman-like manner. Yet this, and all the above examples, are introduced to prove that a Lancaſhire farmer, though not a complete agriculturiſt, is not without ſome ſpirit of improvement.

SECT. 2.—*Rent.*

THE rent of lands is very variable in the different parts of the county, from ten ſhillings to ten pounds *per annum*, the large acre, of eight yards to the rod; the latter enormous ſum, being frequently paid in the vicinity of large towns, for particular accommodation. The price paid by the farmer is from ten ſhillings for ſome barren lands, up to twenty, thirty, forty, and ſome (but not many) as high as eighty ſhillings *per* acre *per annum* (large meaſure.)

SECT. 3.—*Tythes.*

THE tythes are in many places collected, one *eleventh* of the corn—the hay is frequently converted, five ſhillings *per* acre for old meadows, ſix ſhillings *per* acre for firſt year's clover (acre large meaſure.)

SECT. 4—*Poor Rates.*

POOR rates are at Liverpool 2*s.* 6*d.* *per* lb.; at Walton 12*d.* *per* lb.; at Mancheſter 6*s.* *per* lb. at a highly-valued rental, but taxed at only half value, they are therefore at 3*s.* *per* lb. on the rental; at Bolton 6*s.* a late aſſeſſment, but would be 4*s.* of full and preſent value; Rochdale about 4*s.*; at Weſt Houghton 16*s.* the pound; Aſhton 5*s.* *per annum*; Oldham 5*s.* *per annum* on the full rental.

SECT. 5.—*Leaſes.*

MANY farms are held by leaſes on three lives *, on which a fine has been paid, and a ſmall annual rent reſerved; and

* When a leaſe is granted for three freſh lives, on an average the term laſts upwards of 50 years.

ſometimes an addition of *boon ſervices*; which laſt ſyſtem ſeems much on the decline. Theſe leaſes are generally eſtimated at about fourteen years purchaſe.

The leaſes upon years are, from ſeven, eleven, to fourteen; but chiefly ſeven *. Covenants in ſome to pay the rent the day the tenant enters upon the premiſes. This covenant for the ſecurity of the landlord, but not exacted except on emergencies. The time of entering upon the lands is Candlemas; and on the buildings, May-day. Uſual covenants are, the landlord to repair buildings, the tenant carting the materials. The tenants ſeverally to diſcharge all taxes, ſerve all offices, and all the duties charged upon the farm.

Tenants are reſtrained, by covenant †, to the quantity allowed to plow, ſometimes to one-third, ſometimes to one-fourth, of the whole; and alſo, of late, to the number of crops to be taken at one breaking up of the ground—ſometimes to o ur crops; and ſometimes only three are allowed. Tenants are reſtrained, by covenant, from ſowing wheat upon bean ſtubble ‡, or any other ſtubble from which a crop has been taken

* Short leaſes, where farms are arable, and upon an improving plan, ſuch as marling, and any other ſort of improvement, manure, &c. being ſo dear, would greatly check the ſpirit of improvement, whence of courſe in time the land muſt decreaſe in its value, when farmers have to do at their own expence. If the proprietor was to improve at his own expence, and finds there is an advantage in ſhort leaſes, it is but juſt ſo to do; but when the farmer has to improve at his own expence, and upon a ſhort leaſe, and cannot pay his way, the farmer is often ruined, and the proprietor a loſer; for when the farmer is poor, the farm is ſure to be made poor alſo.

Leaſes of a reaſonable fair length of time, and the covenants not ſo ſtrict at the beginning of the leaſe, would greatly encourage the ſpirit of the farmer to improve, when he has to do it at his own expence, and the covenants to be ſuch as to bind the farmer by forfeitures, over and above the yearly rent, ſo as to have the premiſes in a high ſtate of cultivation at the expiration of the leaſe, and to give his management of manures, &c. in writing, and his account of ſtock every year of the term to the proprietor or his agent, or as often as it may be required; and if found in an error, the covenants to be ſuch as to bind him in a ſum, according to the rent and largeneſs of his farm, over and above all forfeitures, and likewiſe to forfeit his leaſe.—*Mr. Harper.*

† Tenants are *very much reſtrained* in plowing, and not improperly, unleſs they could be induced to cultivate green crops, as turnip, cabbage, &c.

‡ Bean ſtubble, in ſome counties, is almoſt the only and beſt tilth known for wheat; and probably, with proper culture, might be ſo in this county.

taken the ſame year. The tenants, by covenant, reſtrained from paring or burning, except moſs lands.

The tenants ſometimes reſtrained, by covenant, from ſelling either hay or ſtraw, but are bound to conſume the whole upon the premiſes.

The tenants, by covenant, reſtrained from ſelling off their ſtock till the cloſe of the year, at the expiration of their term, that the greater quantity of dung may be raiſed from the produce conſumed.

The tenants allowed to take off three-fourths of the wheat growing upon the premiſes at the expiration of a leaſe. The ſucceeding tenant to have the remaining quarter *.

A ſucceeding tenant to have permiſſion, after Candlemas, at the expiration of a leaſe, to occupy certain portions of the outbuildings, by clauſes founded for the accommodation of his horſes, hay, &c. neceſſary for the ſpring ſeeding, on the new tenant entering upon his farm.

Upon the eſtate of that intelligent landlord, Mr. Bayley, of Hope, whenever a tenant wiſhes for the whole of his farm, or any particular field, to be improved, by draining, marling, liming, dunging, or laying down to graſs in a ſuperior manner, the landlord takes the field into his own poſſeſſion, during the proceſs; and, when completed, returns it again to the tenant, with an advanced rent of ten *per cent.* upon the capital laid out upon the improvements; by which ſteps Mr. Bayley has advanced the rental of his eſtate, ſince the year 1768, very conſiderably—his

county. At any rate it is wrong to prevent the tenants from making trials, and ſtill more ſo to prevent them making one of the firſt of agricultural improvements on poor land, and turf-burning.—*Mr. Boys, of Kent.*

This covenant, to the ear of a Kentiſh farmer, ſeems the moſt extraordinary that can be. It is by them ſuppoſed to be almoſt the beſt preparation that can be for wheat. Nothing can juſtify it, but inattention to the bean crop, by which the land is in too foul a ſtate to be ſown: but it muſt be foul indeed, if a Kentiſh farmer could not find ways to clear it properly for wheat. No man can be ſurprized that corn is ſo dear in this county, when he knows that ſuch covenants are to be found in leaſes.—*Mr. Dann, of Kent.*

* The cuſtom of the off-going tenant taking three-fourths of the wheat left growing on the premiſes is much upon the decline in this diſtrict, for it is generally allowed but one half; and many leaſe not to leave any at all. I myſelf, for one, am not to leave any growing.—*Mr. Harper.*

tenants

tenants are thriving, and getting money. Mr. James Balmer, who accompanied the ſurveyor in this excurſion, and is a good judge of cattle, declared he never ſaw, upon any one eſtate, ſo large a ſtock of cattle, uniformly good, being the Lancaſhire long horn, and what he termed the right ſort.

A certain method to excite improvement would be to let farms to men of induſtry, ingenuity, and property, upon reaſonable terms, and give leaſes for 21 years, free from arbitrary covenants; without this nothing can excite a general and effectual improvement. For ſuppoſe a farmer to lay out a few ſcore or hundred pounds upon his farm in uſeful improvements; his landlord ſees the advantage he is making, ſends a valuer to look over his farm; who, never conſidering (nor being told) what he has done, lays a tax upon his induſtry, and makes him pay intereſt for his own money. Daily experience proves the truth of this aſſertion, and will ever operate to the deſtruction of improvement, and of courſe to the great diſadvantage of the public.

Another improvement which here ſuggeſts itſelf, is by a reviſal of the covenants in leaſes; and adapting them better to the preſent improved ſyſtem of agriculture; many of them at preſent militate againſt ſome approved practices, nor has an ingenious cultivator ſcope to act, being reſtrained under covenant. There wants a ſpirit of liberality in the general tenor of leaſes. Inſtances might be produced to prove that if indulgencies were upon ſome occaſions granted, the tenant would be benefited, and the landlord enriched; and this only by a new modelling of the covenants, whereby the lands, if managed under a certain cultivation, muſt return, at the expiration of the leaſe, into the hands of the poſſeſſor, in a better ſtate than they were in at the beginning; and of courſe, would bring an advanced rental to the eſtate; and again, the tenant, if induſtrious, might be enabled, by his advanced capital already gained by his former leaſe, and the ſuperior ſtate in which he now finds the lands upon the ſame farm, to give the advanced rent to his landlord with greater profit to himſelf, than upon his former rent, under the impoveriſhed ſtate in which farms are generally entered upon.

Leaſes upon lives only act as checks to improvements; they are, in general, only beneficial to the firſt purchaſer, who ſecures an income on three lives, for fourteen years purchaſe—the fee ſimple of which would have required double the ſum. The ſucceſſors, elevated by poſſeſſing an eſtate under a ſmall annual quit rent, inſtead of full rent, *live up to the height*, as the phraſe is, and are but ill-prepared to renew the leaſe, or pay the fine required when a life drops. The leaſe, through inability of the tenant to renew, or ſome other cauſe, is ſuffered to run out, under the uncertainty of life, and the lands (there being no proviſion made by covenants to prevent it) are haraſſed and abuſed to ſuch a degree, as to require a length of time to reſtore them.

Theory and practice, it muſt be confeſſed, are perpetually at variance, as well in Agriculture as many other purſuits. It might at firſt ſight appear, that the cuſtom of granting leaſes for three lives (a tenure that gives ſuch probable ſecurity to a tenant) would excite a degree of ſpirit of improvement amongſt the holders of theſe tenures. Experience however proves the contrary fact—For leaſeholds upon lives are generally under the moſt wretched cultivation.

Eaſy rents may have produced a careleſs indolence, and hence an averſion to enterprize. The landlord having but little intereſt in ſuch eſtates, and leſs power over ſuch tenants, is himſelf checked from any ſpirit of improvement upon ſuch contingent property. Thoſe proprietors who look a little towards the welfare of poſterity, are come to a reſolution of running theſe tenures out, and, of courſe, the tenants are not behind in exhauſting and every way impoveriſhing the land.

The ancient cuſtom of granting leaſes for three lives is beginning to diſappear: It ſhould ſeem probable that this tenure, which grants ſo much ſecurity to the tenant, would naturally excite a liberal and enterpriſing ſpirit of huſbandry: fact however proves the reverſe of the propoſition; the ancient leaſehold eſtates being almoſt univerſally in a wretched ſtate of cultivation, beyond all compariſon leſs productive than thoſe held upon ſhorter tenures. Eaſy rents, ſecure poſſeſſion, and good

land,

land, have lulled the leaſeholders into a careleſs indolence, an averſion to enterprize, which have been productive of much ill to themſelves and their connections, and, above all, to the public; much ill has accrued to the leaſeholders from the power of borrowing money upon this ideal ſpecies of property.—Theſe obſervations hold good to the cuſtom of half *rent* and half *fine*. Upon ſuch tenures the immediate landlord can have no inducement to advance money for the amelioration of his eſtate, and but little intereſt and leſs power either to prevent his land being exhauſted by wretched huſbandry, or to oblige his tenants to keep upon their farms a due proportion of ſtock. Whoever will take the trouble of examining the eſtates of this county held upon three lives, will find the arable worn out by a perpetual ſucceſſion of exhauſting crops, and the graſs little more than a collection of ruſhes and beggary, the whole unditched, undrained, and unmanured. Landlords have at length become ſenſible to their own intereſts, and are ſuffering their leaſes to run out, which, though a wiſe policy, is deſtructive in its immediate effects: in fact, the country is at this time ſuffering extremely in conſequence.

Modern leaſes upon land in high condition are from ſeven to eleven years;—upon improveable land fourteen to twenty-one:—But landlords in this county will never adopt the ſyſtem of granting *long leaſes* free *from all reſtrictions*, ſuch as are recommended by the ſurveyors for the Weſt Riding of York.—To recommend ſuch a ſyſtem to a manufacturing county would be abſurd.

The firſt purchaſer of leaſeholds is generally a ſenſible induſtrious man, who underſtands his buſineſs, and attends to it. His ſucceſſors are often both ignorant and idle, but their tenure is ſecure, and they cannot be diſturbed in their poſſeſſions by any thing but their own folly; this often induces them either to haraſs their eſtate themſelves, or let them off at rack rent to ſome poor devil, without any capital or means of procuring one.

I know that the contrary may be, and often is the caſe, and that the abuſe of a good cuſtom is no argument againſt the cuſtom itſelf: but I alſo know that there are no poorer or more wretched people in the county than the occupants of leaſehold eſtates, and that the ſons and grandſons of moſt of the original leaſeholders are not to be found upon ſuch eſtates —A middle man is the devil—all the world knows the conſequence of this cuſtom in Ireland—*the little lords* of this country are in the ſame predicament.

Differences between Landlords and Tenants.

The juſtices might ſettle all differences * and diſputes betwixt the landlords and tenants, inſtead of the preſent expenſive mode of courts of judicature. The differences are generally of a trifling nature, and eaſy to be comprehended. The tenant would be more likely to obtain redreſs under this mode of judicial enquiry, and the landlord would prevent abuſes to his land: he may now be withheld, under certain circumſtances, from correcting a refractory tenant, which might be too heavy for any redreſs the landlord could obtain; and the damages given too grievous for a tenant to bear.

SECT. 6.—*Expences.*

Authentic Statement of a Farm, communicated by MR. HENRY HARPER, of Bank Hall.

	£.	s.	d.	£.	s.	d.
Yearly Rent - -	270	0	0			
Taxes - - -	45	0	0			
				315	0	0

* With a *proper jury* perhaps they might. But how would ſuch ſummary proceedings operate on the pockets of a moſt numerous tribe in this country, the gentlemen of the law?—*W. D.*

Outgoings for one year	£.	s.	d.	£.	s.	d.
Sugar	7	10	7			
Tea	1	17	5			
(1) Bread	4	7	2			
(2) Butchers meat	6	0	11			
Currants	0	19	9			
Vinegar	0	8	4			
(3) Soap	1	19	8			
(3) Candles	1	5	11			
Starch	0	2	5			
Mugs	0	7	6			
Flax and wool	3	2	0			
Salt	2	12	8			
Malt and hops	6	10	0			
Liquors	5	10	0			
Cheese	31	10	0			
Coals	6	16	0			
				81	0	4
Nine servants' wages, who live in the house	66	0	0			
Three labourers	78	0	0			
Mowing and haymaking	20	0	0			
Reaping corn	12	0	0			
Manure	100	0	0			
* Tythe hay	7	10	0			
Blacksmith	25	0	0			
Wheelwright	25	0	0			
Collar-maker	5	0	0			
Cooper	1	0	0			
				339	10	0

(1) Wheaten bread purchased for tea, and on extraordinary occasions.

* Corn is collected (tythe) in kind.

Provender

	£.	s.	d.	£.	s.	d.
(1) Provender - -	50	0	0			
Farrier - - -	3	3	0			
Miller - - -	3	0	0			
Weeding - - -	2	0	0			
Repairs of gates and building	5	5	0			
Timber for rails and fences	3	3	0			
Mole-catcher - -	2	12	6			
Rat-catcher - -	0	10	0			
Store pigs - - -	3	3	0			
(2) Cloaths and extra expences	31	10	0			
Loſs in cattle - -	20	0	0			
Bad debts - -	20	0	0			
				144	6	6
				£. 879	16	10

Stock kept upon the Bank Hall from March 1794, valued by a ſworn appraiſer, for the uſe of the Lancaſhire Report.

Ten draught horſes, 15 l. each -	150	0	0			
Three three-year old colts, 15 l. each	45	0	0			
One two-year old colt - -	10	0	0			
Two year old colts - -	10	0	0			
A hack horſe - - -	10	0	0			
A poney - - -	3	3	0			
Twenty-five milch cows, at 7 *l.* 10 *s.* each - - -	187	10	0			
Seven in calf heifers, at 8 *l.* each	56	0	0			
Nine heifers barren, 4 *l.* 10 *s.* each	40	10	0			
Fourteen one year old, 3 *l.* 10 *s.* each	49	0	0			
Ten rearing calves - -	10	0	0			
Two bulls - - -	15	0	0			
One brood mare in foal - -	20	0	0			
				606	3	0

(1) Malt-duſt, bran, &c. purchaſed to give to the cattle, mixed with potatoes or turnips.

(2) Mr. Harper is a bachelor; his family conſiſts only of himſelf and nine ſervants.

Three

	£.	s.	d.	£.	s.	d.
Three carts, at 15*l.* each	45	0	0			
Three ſmaller carts, at 6*l.* each	18	0	0			
One water-cart, pump, &c. for conveying water from dunghills	15	15	0			
Three ſingle ploughs, 15*s.* each	2	5	0			
Three pair harrows, 15*s.* each	2	5	0			
One large harrow	1	10	0			
				84	15	0
Four ſets of horſe gears for 3 horſes	16	0	0			
Nine ſpades, at 2*s.* each	0	18	0			
Twelve dung forks, at 1*s.* 3*d.* each	0	15	0			
Twenty-four pitch forks, 6*d.*	0	12	0			
Twenty rakes, at 3*d.*	0	5	0			
Forty chains and hoops to faſten cattle	1	0	0			
Marling hacks and hedging tools	0	12	0			
Marling piles and lumber	1	0	0			
Two wheelbarrows	0	18	0			
Dairy utenſils	8	0	0			
Winnowing machine	3	3	0			
Forty ſacks, at 1*s.* 3*d.*	2	10	0			
Riddles and ſieves	0	5	0			
One buſhel meaſure	0	7	6			
One half buſhel and peck	0	7	6			
One winnowing ſheet	0	5	0			
One machine for cutting ſtraw	1	5	0			
Six cart ropes for binding	0	18	0			
Harrowing geers	1	0	0			
Thraſhing machine	50	0	0			
Building for gangway	30	0	0			
				120	11	0
				£. 811	9	0

N. B.—The houſhold goods not brought into this account.

Rent,

	£.	s.	d.
Rent, with taxes	315	0	0
Outgoings	564	16	10
Intereſt of ſtock	40	11	5 ¼
	920	8	3 ¼
Three rents, with taxes	945	0	0
Three rents paid to the landlord	810	0	0

The Bank Hall eſtate was, in the year 1793, under the following cultivation.

The acres are given in the cuſtomary meaſure of eight yards to the rod.

Bank Hall eſtate	69 acres
Bootle Marſh, improved 1780	53
Bootle Marſh not yet improved	25
	147

Diſtribution of crops.

Old meadow for hay	40 acres
New meadow, clover and graſs ſeeds	12
Wheat	10
Barley	6
Oats	6
Beans	3
Potatoes	2
Fallow	8
Turneps	2
Paſture	33
Paſture, unimproved land	25
	147 acres

CHAPTER

CHAPTER V.

IMPLEMENTS.

USEFUL INSTRUMENTS IN HUSBANDRY.

ABOUT thirty years ago, the Rotheram or Yorkſhire plough was introduced into the ſouthern part of this county *. The plough formerly in uſe was almoſt a load of itſelf for a draught horſe. In the north of Lancaſhire a plough, called the Cumberland plough, invented in that county, is generally uſed. A trench plough has been lately introduced by Mr. Ducket, ſon of the celebrated Ducket of Eſher, in Surrey.

This plough has a ſkim coulter, by which the ſurface (if foul) may be turned under, and freſh ſoil brought up; as it is capable of bringing up the land from ſix to ten inches, and is uſually drawn by three horſes. Another inſtrument has been lately introduced, which Mr. Eccleſton, with propriety, calls the *miner*; which is a plough-ſhare fixed in a ſtrong beam, without mold-boards, and drawn by four or more horſes, and follows in the furrow the plough has juſt made, and, without turning up the ſubſtratum, penetrates into, and looſens the ſoil, from 8 to 12 inches deeper than the plough had before gone; which operation, beſides draining the land, cauſes the water to carry along with it any vitriolic or other noxious mat-

* By the late J. Atherton, Eſq. Walton Hall.

ter; by the ſubſtratum thus looſened, the roots of plants may penetrate the deeper; and, in courſe of time, that which is but a barren ſubſtance may become fertile ſoil.

There is a greater variety of carts in this county than in the ſame given ſpace in any other part of the kingdom. In the neighbourhood of Liverpool they are of very large ſize; thoſe employed in the coal-trade within the town are gauged to 36 buſhels Wincheſter.

The country dung carts, in the ſame neighbourhood, are alſo of a very large ſize, and generally will hold thirty-ſix Wincheſter buſhels, and carry two tons of dung; they have ſix-inch wheels. In the interior parts of the county, the carts greatly diminiſh in ſize, and have variety of forms; in the northern part the ſize is very ſmall; the clog wheel, as it is termed (three planks of aſh), which was formerly much in uſe in the north, on account of cheapneſs, has yielded to the ſpoke wheel; the clog being more clumſy, and the cart more liable to overſet—in theſe carts the wheel did not move upon the axis, but both turned round together.

Single carts are in more general uſe*. Mr. Jenkinſon of Yealand ſays, "that a gentleman, in his neighbourhood, made a fair trial in the hay field between the large and ſmall carts, or what is often called double and ſingle carts, in which the latter had much the advantage, in diſpatch of buſineſs; and the conſequence was, that the double carts were little uſed afterwards." Mr. H. Harper obſerves, that for a ſmall diſtance, *e. g.* half a ſtatute mile, the ſingle cart has certainly an advantage; but at a further diſtance, he prefers the double cart for diſpatch of buſineſs; becauſe the ſame ſtrength or number of hands is requiſite to unload the ſmall, as the large cart.

Although Lancaſhire is not a corn county, yet, labour being dear, there are ſeveral thraſhing machines already introduced; one of which belongs to Colonel Mordaunt of Halſall, which

* The encouragement of theſe can alone preſerve the roads of Great Britain.—See Annals of Agriculture, Vol. XVIII. p. 178, &c.

moves

moves by water, thraſhes, winnows, and grinds (or cruſhes the corn for provender), all at the ſame time. Many of the neighbours apply to this machine, for the uſe of which the colonel takes or charges one twentieth part *. Hand machines are alſo introduced, and are uſeful to the farmers, chiefly made by John Naylor, at Aſhton, near St. Helen's †.

This machine requires two men to turn, a boy or girl to feed, and another to take away the ſtraw ‡. The price of theſe hand machines are about ſix pounds each.

A churn has been lately introduced, which ſeems very uſeful for its neatneſs, cleanlineſs, and economy (as it occaſions leſs waſte of milk). The churn, or veſſel, inſtead of being round, has four corners, and the milk is put in motion by turning a handle, upon which are fixed boards which move horizontally in the manner of a reel within ſide the veſſel,

* The average price paid for thraſhing in the diſtrict.

† On this it is remarked, on the margin of one of the Reports, that "The ſurveyor has been wrong informed of the above; for I have ſeen three or four different ones of the ſaid John Naylor's make, and never any that would do as much as the information given. From all the enquiries I could make of them, there was little or no benefit ariſing therefrom beyond thraſhing with flails. One of his make, in particular, I ſaw at work at the honourable Mr. Jones's, of Blackley-hurſt, in Billinge, from which I could ſee no advantage.

"Mr. Steevens of Chorley, who erected Colonel Mordaunt's of Halſall, made one for Mr. Blundell of Ince, to be worked by hand, which would have taken as many men to have worked it as would have thraſhed the corn with flails; for which reaſon it was returned to the maker as per agreement. Mr. Steevens I have ſince ſeen, who ſaid it was impoſſible for one to be erected to any advantage to be worked by hand; it muſt either be by water, ſteam, or horſes."

‡ Hire of two men - - - £. 0 s. 3 d. 4
Boy and girl - - - - 0 2 0
0 5 4
} who can, with this machine, thraſh about 30 buſhels of wheat *per* day, which would come to 11*s.* 3*d.* at the preſent price paid for thraſhing: about 70 buſhels of oats alſo *per* day, which would coſt 9*s.* 6*d.* according to the preſent price paid. But hand machines will be found inſufficient for this heavy work. Mr. Henry Harper, of Bank-hall, has contracted for a thraſhing machine, to be made for 40*l.* which will require one horſe, and is to thraſh out from eight to ten buſhels *per* hour, according to the length of ſtraw, and quantity of grain contained.

by which the operation of churning is ſomething eaſier, and the work expedited.

A hay-cutter, in the form of a ſpade, ſtraight, and ſharp at the point and upon both ſides, performs the work with much more eaſe and expedition than the common hay-knife. This tool was introduced from Yorkſhire by Mr. Eccleſton.

The following is a Deſcription of MR. HARPER's *Mill; drawn up by himſelf.*

" MY thraſhing mill will thraſh all kinds of corn, and any kind of ſmall ſeeds, perfectly clean*; and in wheat that is bad to thraſh by the flail, will get from two to four quarts out of a thrave, more than it is poſſible to get out by the flail; and if it is good to thraſh, generally about a quart; and gets a deal more chaff of all kinds than the flail, which is uſeful upon a farm if properly applied, the merits of which belong to the mill; and it does not damage the ſtraw more than the flail; and if the corn is not well got, it does not damage the ſtraw ſo much.

The following is the deſcription of the mill: Firſt is the horſe-wheel, which is fifteen foot diameter; in which there are 204 caſt iron coggs, and at the end of a tumbling ſhaft is a caſt iron wheel, which contains 20 coggs, which work into the horſe-wheel; and at the other end of the tumbling ſhaft within the barn is a ſpor-wheel, ſeven foot and a half diameter, which contains 100 wood coggs, which work into a caſt iron wheel of 18 inches diameter, containing 14 coggs, which is fixed on the end of the ſhaft that comes through the cylinder. The cylinder is ſix foot long and three foot diameter, and has fixed upon it twelve wrought iron beaters, all at an equal diſtance; theſe beaters by the cylinder running round meet two

* The ſurveyor purchaſed twenty thrave of barley ſtraw, 1794, from a tythe barn, thraſhed with the flail in the uſual manner of the county, and at the uſual price paid. When he got it home, he cauſed it to be thraſhed over again, and from this ſmall quantity, which was made up into ſmall ſheaves, he obtained one and a half buſhel of good corn.

wood

wood fluted rollers five inches diameter and ſix foot long, which are fixed ſo as to be right in the center of the cylinder as it runs round; and under the cylinder is fixed a playboard, which is the whole length of the cylinder, and goes about one third of the way round the cylinder, and is made ſo as to fit to the ſhape of the round of the cylinder; and at one ſide it is fixed cloſe up to the under roller, and the other ſide of the play-board is where the corn and the ſtraw come out, only ſome little that drops through the playboard, which is made with ribs of an inch and a half broad, and two deep, and half an inch diſtant one from another: the playboard is faſtened to the frame that ſupports the machinery, where the corn and the ſtraw come out on a ſwivel, turned by two wood pins; and at the other ſide up to the under roller it is ſupported by two wood levers, one at each end; which, by weight being hung on the levers, forces the playboard either nearer or farther off the cylinder: if the corn comes out foul-thraſhed, the play-board muſt be forced nearer the cylinder by more weight.

The rollers are worked by the ſpor-wheel, which has a caſt iron wheel of two foot diameter, which contains 72 coggs, and is fixed right in the center of the ſpor-wheel, which works into another wheel of the ſame diameter and the ſame number of coggs, which is fixed to a ſtrong upright piece of wood that ſupports the ſpor-wheel, and this works into another caſt iron wheel of one foot and a half diameter, and contains 52 coggs, which is fixed to the end of the under roller: theſe rollers draw the corn in from off a feeding board, which is as broad as the rollers are long; the top roller is fixed in wood levers, at each end one, which are faſtened into the frame by a ſwivel turn at one end, and the other ends of the lever lie looſe upon the frame, which have weights hung on them as occaſion requires for drawing in the corn more or leſs.

Now as theſe different motions are all connected together, they appear to be ſimple, and only take up eight foot ſquare in the inſide of the barn, by ten foot high. The gangway is eight yards ſquare, which the horſe-wheel works in at the outſide of the barn. The horſes travel at the rate of 2 miles

and

and $\frac{7}{8}$ in one hour, and at that rate the beaters on the cylinder ſtrike the corn 3,000 times in one minute: by the motion of the machinery, the rollers draw the corn in at the ſpeed that the beaters ſtrike it, full four times in one inch of length of the corn drawn.

Expence of one day's work of eight hours of thraſhing corn, &c. by the mill when kept in full work.

To thraſhing 16 quarters of wheat.

					£.	s.	d.
To 3 horſes one day -	at 2s. 6d.	0	7	6			
To 2 men ditto - -	at 2s. -	0	4	0			
To 4 boys ditto - -	at 1s. -	0	4	0			
To extra charge for winnowing -		0	2	0			
					0	17	6

To thraſhing 24 quarters of barley.

To 2 horſes one day -	at 2s. 6d.	0	5	0			
To 2 men ditto - -	at 2s. -	0	4	0			
To extra man for one day - -		0	2	0			
To 4 boys ditto - -	at 1s. -	0	4	0			
To extra charge for winnowing -		0	2	0			
					0	17	0

To thraſhing 32 quarters of oats.

To 2 horſes one day -	at 2s. 6d.	0	5	0			
To 2 men ditto - -	at 2s. -	0	4	0			
To 4 boys ditto - -	at 1s. -	0	4	0			
To extra charge for winnowing * -		0	2	0			
					0	15	0

* The charge for winnowing ſeems trifling; but it ſhould be underſtood, that when corn is thraſhed by the flail, and paid for by the ſcore, the thraſhers always aſſiſt, without any additional expence paid for their labour.

To

To thraſhing 24 quarters of beans.

				£.	s.	d.
To 2 horſes one day -	at 2 *s.* 6 *d.*	0	5 0			
To 2 men ditto - -	at 2 *s.* -	0	4 0			
To 4 boys ditto - -	at 1 *s.* -	0	4 0			
To extra charge for winnowing -		0	2 0			
				0	15	0
				3	4	6

Expence of thraſhing different kinds of corn on my farm by the flail.

To thraſhing 16 quarters of wheat at 2 *s.* 10 *d.*		2	5	4	
To ditto - 24 ditto of barley - at 1 *s.* 6 *d.*		1	16	0	
To ditto - 32 ditto of oats - at 1 *s.* - -		1	12	0	
To ditto - 24 ditto of beans - at 1 *s.* 6 *d.* -		1	16	0	
		7	9	4	
To expence of thraſhing the ſame quantity of corn by the mill - - - - -		3	4	6	
		4	4	10	

Hence it appears that the mill clears 120 *per cent.*

To expence of the mill, and fixing up - -	50	0	0
To ditto of gangway that contains the horſe-wheel, which is at the outſide of the barn -	30	0	0
	80	0	0
To the average of corn thraſhed on my farm by the flail *per* year - - - - -	30	0	0
To 120 *per cent.* ſaved by the mill, of thirty pounds - - - - - - -	18	0	0
To 10 *per cent.* for 80 pounds, for intereſt and repairs - - - - - - -	8	0	0
Clear *per* year towards paying off the principal -	10	0	0

The

The extra charge of two ſhillings per day for every day's work of different kinds of corn, &c. thraſhed by the mill, for winnowing, is a charge that belongs to the mill.

For the thraſher that thraſhes the corn with the flail, either by the ſcore or quarter, is always an aſſiſtant hand to the winnowing, without any additional charge on the corn thraſhed.

Improvements on the thraſhing mill to be made. The firſt of theſe I am under with my mill, for I have a man now making models to my own direction for caſt iron wheels, with four different rows of coggs in every wheel, for to either quicken or ſlower the motion of the rollers that draw the corn in from the man that feeds it off the feeding board; for although the mill thraſhes all kinds of corn, &c. perfectly clean, let the corn be good or bad to thraſh, as the motion of the rollers are now fixed, it all gets thraſhed alike.

2dly. Gaining power in the horſe wheel, which will quicken the motion of the ſpor wheel, and eaſe friction from the horſes.

3dly. Small friction wheels for the cylinder to work off.

4thly. To have canvas fixed upon rollers, to draw the corn in more regularly.

5thly. Stones to be fixed to grind corn.

6thly. To cut ſtraw.—7thly, to waſh clothes.—8thly, to churn, and pump water.

Now the ten pounds per year, that appears to be ſaved by the mill towards paying off the principal, as a farmer I do not mean it for that purpoſe, nor to deprive the labourer ſo much of his employ, but am happy in finding myſelf ſo ſituated as to get my corn ten *per cent.* cleaner thraſhed, and with ſo much diſpatch, and in ſo little time that I can take my labourers to any buſineſs the farm may require, ſuch as pruning fences, cloſe or open draining; and ſo much caſh that is ſaved by thraſhing, laid out yearly in the employ of labourers for that uſe on the farm, will pay me fifty *per cent.* better, and improve the farm more than keeping one man ten months in the year *batting* * in the barn, or even to half the time, and thraſhing with the flail. There is not one labourer in twenty but what would rather do any labour on the farm, than thraſh; and if he thraſhes it clean,

* *Batting*, a provincial phraſe for thraſhing.

it is well; and if foul, and you find fault, the anſwer is "Get ſome body elſe;" and he moſtly quits your employ.

Mr. Johnſon, of Wilmſlow, whoſe machine is not ſo large, and conſequently not ſo powerful as Mr. Harper's, winnows corn, and grinds oats or beans at the ſame time.

Mr. Johnſon has the friction-wheels Mr. Harper means to adopt.

The following is a deſcription of the Reverend Croxton Johnſon, rector of Wilmſlow's, thraſhing-machine:

Diameter of the horſe-wheel—twelve feet.

D° tumbling ſhaft nut—two feet.

D° of iron-wheel at the end of the tumbling ſhaft within the barn—three feet eight inches.

D° of the nut—one foot two inches.

D° of the drum—four feet two inches.

D° of the pully fixed on the thraſhing cylinder—ſix inches.

The diameter of the thraſhing cylinder—two feet.

The diameter of the feeding rollers—two feet ſix inches.

The iron wheel on the feeding roller—two feet ſix inches.

The nut on the thraſhing-cylinder—five inches.

The tumbling ſhaft turns the iron wheel within the barn, which iron wheel turns the nut, on the axis of which the drum is ſtaked.—The machine is turned by a ſtrap from the drum round a pully fixed on the end of the axis of the thraſhing cylinder.

A nut is ſtaked on the ſame axis, which turns a wheel ſtaked on the lower feeding roller.

Under the thraſhing cylinder there is a ſemicircular board, on which the ears of corn are beat by the ſix beaters of the cylinder.

The ſpace occupied by the thraſhing-machine is ſix feet by three feet eight inches."

A ſwing-harrow has been lately introduced, and ſeems coming much into vogue.

Hurdles, of an improved conſtruction, merit notice. They are faſtened by a wooden pin, through a ſtrong piece of oak, in a manner ſo as to be looſened and removed with leſs trouble, and leſs injury to the hurdle, than the old forms. Theſe were obſerved at Mr. Bayley's, of Hope.

Winnowing machines, of an improved conſtruction, have been introduced, and gain ground; they diſpatch work briſkly, and ſave the chaff.

This machine cannot be too generally recommended, nor ſpoken of in too warm terms. It is admirable for its expeditious and neat manner of winnowing; and in the cleanſing of ſmutty wheat it is invaluable. I will venture to predict, that in a few years it will be in the hands of every farmer in the kingdom, who plows 20 acres of land. It is made at Aſhton, near Newton. Price £. 5. 5 s.

A machine for cleaning corn from ſmall ſtones, or earth, of which foreign cargoes are, ſometimes, too full, and invented by Mr. Whiteſide, of Lancaſter, ſhould not be unnoticed: as alſo an invention of the ſame ingenious perſon, for opening, ſhutting, and bolting the doors of granaries, or corn-rooms. He imagined, that treading upon, and walking over the corn, to ſhut the door, or window, which admitted the air, was injurious; he therefore contrived a bolt, which opens the window, and ſhuts it again, by only pulling a cord, which runs upon a pully, and communicates with the ſhutter. The contrivance has both ſimplicity, neatneſs, and ſecurity.

CHAPTER

CHAPTER VI.

OF INCLOSING.

THE ground work of improvement muſt be a general incloſure bill *.

Mr. Elkington's principles of draining, if publicly known, would be of moſt material ſervice in all new incloſures; as from his knowledge in diſcovering ſprings, he could place the fences in ſuch ſituations, that each ditch would anſwer the double end of fence and effectual drain, which hitherto, from want of his knowledge, has always required both operations.

There are but few open, or common fields, at this time remaining; the inconvenience attending which, whilſt they were in that ſtate, have cauſed great exertions to accompliſh a diviſion, in order that every individual might cultivate his own lands, according to his own method; and that lots of a few acres, in many places divided into ſmall portions, and again ſeparated at different diſtances, might be brought together into one point.

The incloſures, or fields, are in general very ſmall; ſo much ſo, as to cauſe great loſs of ground from their number, and from the ſpace occupied by the hedges, banks, and ditches. This great number of fences too, prevents the air from freely circulating, by which the crops, both of corn and graſs, are deprived of the ſalutary effects of the ſun and air, and, after the grain is reaped, the proceſs of drying, healing, &c. is materially delayed.

There are objections to very large fields, which are, the cattle lying in them are more expoſed to the weather, and cannot lie out ſo long in the autumnal months. In ſtormy weather, nature and ſelf-preſervation teach them to ſeek the beſt ſhelter. And with reſpect to corn land without ſhelter, ex-

* This idea ſeems ſo generally to prevail, that I am ſure it cannot fail of being one of the objects that will be recommended to the legiſlature by the honorable board.—*W. Dann.*

poſed to the ſea (as a great part of this county is) the winds blowing from thence, ſtrongly impregnated with ſalt water, would greatly injure the young crops, and ſhake the growing corn ready for the ſickle, as we but too often have experienced.

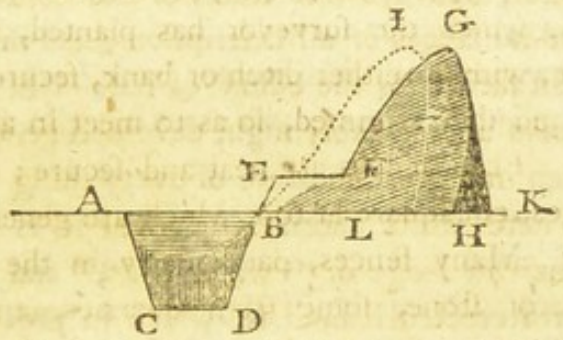
Beſides, the banks are full of weeds, which often remain unmoleſted, the ſeeds of which are diſperſed by the winds over the adjoining fields, to their no ſmall injury. The hedge-rows are but too frequently neglected, and permitted to ſpread their branches upon the lands. Plaſhing is almoſt all neglected, except only by a few ſpirited gentlemen. Many hedges ſeem faſt upon the decline, and muſt in a little time be renewed. Durable as hedge-timber may be, a length of years brings on old age, and, at laſt, decay. The newly-planted hedges are chiefly of thorn, which muſt be the beſt, without intermixture, as formerly, of hazle, alder, willow, holly, &c.* The hedge-rows, which the ſurveyor has planted, are thorns upon the plane, without either ditch or bank, ſecured by rails, till grown up, and then trimmed, ſo as to meet in a narrow point at the top. Theſe fences are neat and ſecure; and are preferable to hedges, cut ſquare at top, which are generally thin in the bottom. Many fences, particularly in the northern parts, are made of ſtone, ſome from quarries, and ſome of pebbles. Buildings are frequently erected with the latter, uncouth and miſhapen as they may appear.

The banks being liable to weeds (ſo are all other lands that are turned up) can be no objection to making them, as a mower would clean a new-made bank in a ſhort time; and this mowing would not be requiſite above a year or two (if care is taken that the banks be made of ſoil only) by that time the bank graſſes over, and becomes good herbage.—Railing may anſwer gentlemen's purpoſes, but it is too expenſive for common practice, or farmers.—I have always conſidered thorn

* The young ſhoots of the new-planted thorn are liable to great injury, if not well ſecured from cattle, who eagerly nip the tender ſprouts, and greatly injure the ſtem. The hair from a raw hide, with all the impurities adhering, if laid in ſmall quantities, near the roots of the thorn, have been found ſufficient ſecurity from the teeth of cattle. The cows will not approach near hedges thus defended.

quicks as beſt adapted to fences, as they are both durable, and make the beſt fence: and as the common method of planting them is liable to many objections, ſhall give a method I have practiſed with ſucceſs; and for the better deſcription have made the figure below, where A B C D repreſent the ditch; E F the water-table, upon which the quicks are to be planted; L F G H the cop, to defend the quicks.

The land, B L, is firſt dug up one ſpade deep, and near two in breadth; care being taken not to come too near the ſide of the ditch, B, for fear of its falling in: then the bank is begun by taking out of the ſurface of the ditch, A B, one ſpade deep, and placing them at E, green ſide in: then clean ſoil may be got to form the water-table, E F, which ought to be eight or ten inches above the ſurface A K; upon the middle of which the quicks ſhould be planted, with ſome old rotten dung, five in a yard: then proceed with the remaining part of the ditch, to form the bank E G H. Nothing more is neceſſary, except a dead hedge at the top of the bank, and keeping the quicks clean from weeds two or three years, when they will have grown ſo as to make a tolerably good fence. The advantage of making a broad water-table is, that the quicks receive the benefit of the rains, by every ſhower penetrating to the roots, which greatly invigorates the young plants, inſomuch that as good a hedge will be formed in three years as would have required ten or twelve by the old method, which is, by making a narrow water-table, as from E to the dotted line, and planting the quicks up to the dotted line (E I forming the front of the bank); the point E, by froſty weather, and weeding, &c. falling away, makes it one continued ſlope as B I, which acts like the eaves of a houſe, carries off th rains which ſhould refreſh and invigorate the young plants, and is the reaſon ſo many new planted hedges miſcarry.



Another method of planting quicks, which I think not a bad

bad one, is planting them at the top of the bank; but the bank in this caſe ſhould not be made ſo high, and broader at the top; and the bank and ditch making one continued ſlope, it is neceſſary to take care that nothing but good ſoil be put into the bank, and the quicks dunged as before.

In the firſt method it is ſometimes a practice to dig the bank ſloping down (after the quicks are become a ſufficient fence) to dung and ſet it with potatoes; and a great part of it afterwards is carted to the meadow or paſture land, as manure, but ſo much of the bank is left as to prevent the cattle from treading upon the roots of the quicks.

Incloſures in this country are, for the moſt part, infinitely too ſmall; from two to ten ſtat. acres may be the medium ſize.—This unneceſſary multiplicity of fences cauſes much uſeleſs expence, deſtroys vaſt tracts of excellent land, harbours vermin and nuiſances of all deſcriptions, and in reality rather prevents than facilitates the efflux of redundant moiſture; the hedge-banks unreaſonably high, devoid in general of timber trees, and even in a great meaſure of every thing that can form a fence. Where white thorn is planted it is generally placed upon a narrow ledge or "water table," and an immenſe mound of earth erected behind it, which in proceſs of time drives the plants into the ditch below; if the ditch be marle, the action of the froſt ſpeedily undermines the heavy bank, and by this means are produced thoſe irregular and unſightly diviſions equally ill adapted to the purpoſes of utility or ornament.

Many parts of the county are very flat and wet, ſuch conſequently require good ditches; from this has ariſen the multiplicity of ditches, and from that cauſe neglect.

If ſuch ditches as are abſolutely neceſſary were properly attended to, and care taken to ſecure a proper communication with the brooks and rivers, nine-tenths of the preſent fences would be unneceſſary, as under-draining would amply provide againſt all defects.—At preſent, moſt of the ditches are nearly navigable, and no attention paid to gain an outfall, ſo that they are full of putrid water, and are a perfect nuiſance. Many hundred acres of excellent arable and paſture land are ſacrificed to this ſtupid rage for ſmall incloſures. I believe they may be of

ſervice

ſervice in keeping up the breed of water-rats, but I know of no other advantage to ſociety ariſing from them.

In every anſwer received to the queſtion, Whether incloſures have increaſed or decreaſed population? the reply has univerſally been—increaſed.

And how can the fact be otherwiſe upon rational grounds? In conſequence of incloſures and diviſion, every occupier has unqueſtionably the means of cultivating his lands to the beſt advantage to himſelf; but he cannot effect this without affording advantages to the public at large. Superior cultivation requires more labour, which requires a greater quantity of hands. The lands yield increaſed returns; and produce both means to increaſe population, and give food to the increaſe upon better terms.

As to increaſe of rent, the lands formerly in common fields but now divided, have doubled, in many inſtances trebled, their rents immediately to the landlords; have yielded greater profit to the tenant; and have afforded more means of ſubſiſtence to the public.

The commons, or uncultivated lands, which heretofore have not yielded profit either to the proprietor or public; have increaſed in their value from—nothing, if ſtarving a few geeſe, lean kine, producing—weeds, heath, &c. can, with propriety, be called nothing, or, to give ſome better *ratio*, from one to thirty *per cent* *. In many inſtances, the cultivated waſtes have proved more fertile and productive than the old lands; if, therefore, the foregoing premiſes be well founded, the public have gained 30 *per cent.* of additional employment and additional produce, by the improvement of waſtes and commons; and the proprietor has gained, not indeed 30 *per cent.* for he has the expence of the improvement firſt to deduct; but, on a moderate calculation, an addition of 10 or £.15 *per cent.* to his eſtate, on the capital advanced.

* Mr. Wilkinſon's improved moſs land, was, before draining, worth from 7 to 10*s. per* acre, is now worth from 4*l.* to 5*l. per* acre of the large meaſure.

Warbreck Moor, in Walton, incloſed in 1761, was not worth 1*s. per* acre in its uncultivated ſtate, is now well worth 30*s. per* acre. After the incloſure act was obtained, and a diviſion made the fee ſimple of ſeveral lots was ſold after the rate of 3*l. per* acre, large meaſure.

The

The ſurveyor has been informed of only one inſtance where an attempt to improve waſte lands has failed.—Elland Moor, near Lancaſter, notwithſtanding lime has been laid on, and the ground treated according to the uſual cuſtom of improving waſtes; yet, after a few crops taken, ſeems verging back towards its original ſtate of poverty. But this was owing to its being overplowed at firſt, and it is now coming round again.

Hedges.—When hedges grow thin at the bottom, Mr. Harper has the following practice. He cuts the wood very low, leaving the young and vigorous ſhoots; after cutting away the old wood, he takes a hand-ſaw, and cuts away again that part of the old ſtump, ſo far as was ſhaken by the hatchet in the firſt ſeparation, and ſaws the top level, ſo that the water may not remain. By this practice, he ſays, the ſhoots will grow ſtronger, and more in number, in one year, than they would by the common practice in three years. When the ſhoots are half a yard, or two feet long, he bends the young ſhoots down, and, where room permits, makes a hole in the bank with a ſhovel, in which the ſhoots are cloſely tied down with hooked ſticks, and covered up again with earth; when theſe young branches, with a little nurſing, will, by taking root afreſh, form a new hedge.

Gates—Are in general made of oak, and with five bars; ſome are inferior, and made up of the materials, which the eſtate may produce, and put ſlightly together, at a ſmall expence. There are gates alſo made of deal, and painted. In ſome places rails only to hang up, and take down are made to ſuffice. About gentlemen's ſeats, there are gates frequently of ſuperior conſtruction, and made in different forms.

CHAPTER VII.

ARABLE LANDS.

SECT. 1.—*Tillage.*

THE ploughmen are ſuppoſed to be as complete workmen as in any part of the kingdom, the tillage of their lands being in general performed in a maſterly manner. There is no general rule without ſome exceptions; and it muſt be acknowledged that ſpecimens of great ſlovenlineſs might be produced.

In laying down either for corn or paſture, particular care ſhould be taken to throw the butts or ridges as near north and ſouth as poſſible. Inſtances are known where they have been laid eaſt and weſt, and in large round lands, when the ſouth ſide has yielded double.

SECT. 2.—*Fallowing.*

IN ſome intelligent letters, which the ſurveyor has received, in anſwer to the queries which have been circulated by the Board, very oppoſite opinions have been held upon this ſubject. According to ſome, fallowing is too little, according to others, it is too much practiſed.

From what has been ſaid before, it is evident, that fallowing is here underſtood, as preparatory for wheat. The tenant being generally under a covenant, reſtraining him from ſowing wheat upon clover, * whence a crop has been, the ſame year, previouſly gathered, or from a bean ſtubble, &c. as a practice tending to exhauſt, and rendering the ground foul, which, by way of reproach, is called ſtubbling †. Upon the ſyſtem of

* To reſtrain a tenant from ſowing wheat upon clover-lay is the greateſt abſurdity that can be, becauſe it is the beſt tilth known on moſt ſoils.—*Mr. Boys, of Kent.*

† In many parts of the county the ground is not broken up for a *fallow* till ſpring ſeedings are over: the abſurdity and want of ſucceſs ariſing from ſuch management, forms no argument againſt fallowing upon proper principles. But there is a very ſtrong argument againſt fallowing at all in this country, which is, that nine-tenths of the county are a ſandy loam, capable of producing uncommon crops of turnips, cabbages, potatoes, &c. &c. and that manure is every where to be had in plenty.—What is the uſe of a fallow upon ſuch land?

green crops preceding wheat, by way of ſaving one year's rent, and the labour of fallowing, the potatoe crop ſhould ſeem to claim a ſuperiority; both from the dung given, and the clean ſtate into which, under good management, the land is brought. Yet the neateſt farmers ſeem at preſent not very partial to this mode of agriculture. They ſay the ſucceeding crop of wheat is more feeble and worſe fed; and the bad effects of theſe two, potatoes and wheat in ſucceſſion, are evident upon ſucceſſive crops for years afterwards.

Fallowing may undoubtedly be avoided, by a well conducted variation of crops; and ſo that the grounds may be kept clean by a full produce. Since every plant and fruit only extracts from the ſoil ſuch ſubſtances as are required for its peculiar nature, and rejects thoſe which are proper for the nutrition of others, *e. g.* the pungent taſte of an onion muſt require very different juices to thoſe which are neceſſary to yield the mild flavour of a potatoe. Therefore by a well-regulated change the earth may be ſaid to have repoſe equal to the fallow year. Gardens have been ſucceſſively cropped, or it may be doubly cropped, every year for a ſucceſſion of fifty years together.

Others aſſert that fallowing is a good preparatory for wheat, if the land is inclined to clay or a ſtrong nature; but if, on the other hand, the land is of a light nature, ſuch as a hazle loam, ſand, or gravel, in that caſe fallowing is not preparatory to wheat, but would endeavour to come at clover roots to ſow wheat upon. There is much fallowing for wheat in this county upon light ſands, which is the height of folly.—A clover root is the beſt preparation for wheat upon ſuch ſoils. Beans are always ſown in this county broadcaſt, generally when the land is foul ſowed with previous crops of corn.—Can the landholders be cenſured for diſcouraging a ſucceſſion of wheat after beans neither hoed nor weeded?

Mr. Henry Harper prefers potatoe land for wheat, to that from whence a crop of turnips has been taken. But he prefers a good ſummer fallow to either preparation. The grain produced from the fallows being of ſuperior quality, and not ſo ſubject to blights.

The

The fallowing, as it is ſometimes practiſed, is not performed in the neateſt manner. The lands not being broken up, till too late in the ſeaſon to partake of the influence of the froſts, and to furniſh a proper opportunity for the croſs cutting, or ſtirring (as it is called), this work being the grand operation; and it is requiſite, that a dry ſeaſon be caught whilſt the land lies open, and a large ſurface expoſed to the influence of the ſun and air. But if greater attention were paid to the turnip culture, with proper hoeing and dreſſing, fallows would become leſs neceſſary; and, according to the preſent advanced rent of land, they are too expenſive for the tenant.

SECT. 3.—*Rotation of Crops.*

OATS are univerſally ſown towards the north-eaſt and ſouth-eaſt of Preſton for years together, except this chain be broken occaſionally by a crop of potatoes, and afterwards wheat, or wheat on a ſummer fallow. In the Filde, which, from its fertility, has been called the Granary of the county, the ſoil has been ſtill worſe abuſed. Certain fields have been kept under cultivation, it is aſſerted, for more than a century, without intermiſſion, under the following rotation. After marle, 2 or 3 years oats; beans or barley, each one year. If beans, barley the year after; but, if barley, then beans, and this alternate change of beans and barley continued for a few years. The eighth year from the firſt marling is generally reckoned a period, from which the land is upon the decline, and a complete ſummer fallow is given, and ſome *till** (as it is called) is added, upon which, wheat; after the wheat, two crops are taken, one either of oats, beans, or barley; and then another fallow, with the addition of *till*, and two more crops of grain, above ſpecified; and the practice, it is ſaid, may be advantageouſly followed for the ſpace of 20 years, but is often continued much longer. Upon ſuch courſes it is unneceſſary to dwell longer, as they can afford neither pleaſure, nor inſtruction, to the experienced cultivator.

* A compoſt of earth and lime mixed. Yard dung, and ſea-muſcles, have been uſed, but this laſt article is not found in ſufficient quantities, nor is it durable.

I ſhall proceed to ſome other practices, which are followed in other parts of the county*.—Oats, fallow, and next year wheat; if for barley or oats, the land to be manured and laid down with red clover and graſs ſeeds. 2. Oats or barley with dung, if rich, another crop, barley, then fallow for wheat; afterwards barley, with dung, and then laid down with clover and hay ſeeds. 3. Wheat, with one furrow, barley, with dung; fallow, for wheat; barley, or oats, laid down with clover, &c. 4. Potatoes, wheat, barley, with dung, and laid down. 5. After wheat, fallow for turnips, with dung, laid down with well dreſſed hay ſeeds, from the cleaneſt and beſt meadow lands, with a mixture of white clover. 6. Early potatoes, after which a crop of turnips, then wheat or barley. 7. Early potatoes, and ſown with graſs ſeeds, and white clover, without any corn; the hay ſuffered to ſtand, till the ſeeds become ripe, to drop and fill up vacancies, the ground well dunged after the firſt crop of hay. 8. If the land be full of ruſhes, by only taking a ſingle crop of oats in the following manner; by plowing one furrow with a good dreſſing of dung, harrowed in, upon which the crop of oats, with graſs ſeed only: by which the ruſhes are deſtroyed, but the graſs roots are preſerved, and the graſs meliorated by expoſing the ſoil to the air and ſun, by turning it once over.

Nothing can be ſo barbarous as the rotation of crops in this diſtrict; if that can be denominated a ſyſtem of rotation which depends merely upon the caprice of the cultivator, or upon what he thinks the land is capable of producing for the moment. Near Preſton, the general plan is to grow as many crops of oats in ſucceſſion as the land can produce, then fallow for wheat, by way of cleanſing the land; and then oats again, while oats can be produced; after which weeds and ruſhes, 'till reſt again

* In a note, however, take the following wretched rotation, which has been frequently practiſed, and which has reduced both farmer and ſoil to an equality of poverty.

An old poor paſture broke up without being previouſly marled: 1. oats, 2. fallow, 3. wheat, 4. oats, 5. vetches and wheat, 6. oats, 7. fallow, 8. wheat, and this laſt crop probably ſooted; in which ſtate the land is ſuffered to remain till again reſtored by that Power which can not only reſtore, but create.

produces graſs.—An occaſional crop of potatoes ſometimes intervenes, after which wheat.

Wherever green crops, ſuch as turnips or cabbages, have been attempted, they have yielded immenſe returns, and ſuch as ought to encourage the cultivation of theſe uſeful plants. But the application of them to ſheep has been little attempted, though there is every reaſon to imagine the introduction of ſheep would be attended with the happieſt effects.

Diſtribution of Crops of a Field of Three Acres, of Eight Yards to the Rod, for the Years 1791, 1792, and 1793; ſhewing the Amount of all Out-goings, Rent, &c. and the Quantity of different Produce of each Year, and the Amount it ſold for: firſt Beans and Turnips, ſecond Vetches, third Wheat.

By Mr. HENRY HARPER.

	£.	s.	d.
Rent for three years, at £. 4. per acre - -	36	0	0
Taxes for ditto, church, king, poor and conſtable, highways - - - - - - - - -	4	19	0
Manure for ditto, 60 tons per acre, at 15 s. per ton - - - - - - - -	45	0	0
Cartage and putting on the land, at 3 s. 6 d. for every ton and a half, and ſpreading in the drills	21	5	0
Seed beans 2 quarters, at 36 s. per - - -	3	12	0
Twice ploughing for ditto - - - -	4	4	0
Drilling and covering - - - -	1	1	0
Sowing beans in the drills - - - -	0	10	6
Horſe-hoeing twice - - - - -	1	1	0
Hand weeding - - - - -	0	2	6
Reaping beans - - - - -	1	16	0
Cartage home - - - - -	0	14	0
Pitching to the cart - - - -	0	3	4
Thraſhing beans - - - - - - -	2	5	0
Cleaning for market - - - -	0	3	0
Carting to market - - - - -	0	4	0

Seed

	£.	s.	d.
Seed turnips	0	6	0
Horſe-hoeing for ditto	0	10	6
Sowing turnips broadcaſt	0	3	0
Covering ſeed with horſe machine	0	10	6
Hand-weeding turnips where too thick in the beans	0	2	6
Drawing 400 buſhels of turnips	0	8	0
Cartage home	0	8	0
Seed vetches	3	3	0
Twice ploughing for ditto	4	4	0
Sowing broadcaſt	0	3	0
Harrowing ditto	0	15	0
Mowing ditto	0	18	0
Making them for hay	0	18	0
Cartage home	0	18	0
Pitching to the cart	0	6	0
Seed wheat 1 quarter and half, at £. 2. 12 s. 6 d. per	3	18	9
Four times ploughing for ditto	8	8	0
Sowing broadcaſt	0	3	0
Reaping ditto	1	16	0
Thraſhing ditto	3	3	0
Cleaning	0	4	6
Cartage home from field	0	18	0
Pitching to cart	0	4	0
Carting to market	0	5	0
Tythe for vetches, at 6 s. per acre, all others taken in kind	0	18	0
The average profit of three years crops, after all expences are deducted, at the full coſts	30	10	4
	187	2	5
By three acres of beans, at 8½ quarters per acre, 36 s. per	45	18	0
By ſtraw from ditto, 80 thrave, at 1 s. per	4	0	0

By

	£.	s.	d.
By 400 bushels of turnips, at 8 *d.* per bushel, at 90 lb. per bushel	11	13	8
By vetches, 500 stone per acre, at 8 *d.* per stone, £. 16. 13 *s.* 4 *d.* per acre	50	0	0
By three acres of wheat, at 8½ quarters per acre, at £. 2. 12 *s.* 6 *d.* per quarter	66	18	9
By straw from ditto, 22 thrave per acre, at 2 *s.* 6 *d.* per thrave £. 2. 15 *s.* per acre	8	5	0
By light wheat, 2 bushels, at 3 *s.* 6 *d.* per	0	7	0
	£. 187	2	5

This was a poor run-out field, that had been ploughed, &c. for near a century, and without any improvement at all only since it came into my hands. For the first, I marled it, at 8 rod to the acre, of 64 cubical yards to the rod, nine years since which it has never done any great things: then the last three years before described, for which I must give the merits of the crops to drilling and hoeing, by keeping the land clean; and, in the first place, producing three bushels for two if they had been sowed broadcast, this I know by dear-bought experience: and, in the next place, 400 bushels of turnips, which were worth £. 11. 13 *s.* 8 *d.* and all the expences of seed, hoeing, drawing, and carting home, is only a discount of £. 2. 8 *s.* 6 *d.* which is accounted for in the outgoings before mentioned, and the crop of beans even as luxuriant and as proveable as where there were no turnips, and the land left in better condition.

The manure was all put on the land for the beans and turnips; and after producing the other two crops, vetches and wheat, the land appears to be left in a deal better condition than before it produced these crops, and if the rotation of the same crops had been continued, 40 tons per acre would have answered as well as the 60 tons had done for the before-mentioned crops, which would have been a saving of £. 22, which is an object worthy of notice; but as through conve-

nience

nience have changed the rotation of the ſame crops to another old ploughed field.

One acre of the three had been pared and burned about thirty years ſince, which, from that time, after producing two crops, never gave ſcarcely the ſeed again, and never would give any graſs; and ſince it has been in my hands, if the crops were ever ſo luxuriant in ſtraw, the corn was never ſo well fed as the other part of the field, nor ſo much in quantity according to breadth; only theſe laſt three years it appears to have come round according to the other land.

The ſoil is a black ſandy loam of a regular depth of about ten or eleven inches, under which there is a hard pellet of four or five inches thick, which is commonly called red ore, and under that, good marle ſix or ſeven yards deep.

The field is called the Fernel, lying up to the townſhip of Orrel, about half a mile north of the Greavehouſe, in the townſhip of Bootle.

SECT. 4.—*Of the Crops commonly cultivated.*

THE grain principally cultivated is oats, which, when ground to meal, is the food of the labouring claſs, particularly in the northern and eaſtern borders of the county; it is made into bread-cakes, of which there are various kinds, prepared by fermentation with ſour leaven; others without leaven, and rolled very thin; alſo water, boiled and thickened with meal into porridge; and this, eaten with ſweet* or butter-milk. Small-beer ſweetened with treacle, or treacle only, was in many families, about forty years ago, both the breakfaſt and ſupper meal. The general uſe of tea, eſpecially among the females, has leſſened the uſe of meal at breakfaſt; and the influx of wealth has induced numbers to indulge, upon many occaſions, with the wheaten loaf. Notwithſtanding the

* Sweet milk is a provincial term, in contradiſtinction to the butter-milk, which in this country is ſour, and therefore ſometimes called ſour milk.

conſumption

conſumption of oat-meal is not ſo general at preſent as it was formerly; yet the quantity ſtill uſed is very conſiderable; and the growth of oats is greater in proportion, than that of any other grain. There are ſome excellent wheat lands, *e. g.* Low Furneſs, the low lands near the ſhore, beyond Lancaſter, the Filde, and the S. W. part of Lancaſhire; but wheat does not ſucceed well, when bordering upon the moor-lands; neither does barley, which ſeems, of the two, more delicate in ſoil, and there is a greater diminution in the cultivation of this grain, than of either wheat or oats. Beans, peas, &c. are alſo cultivated, but ſeldom drilled; a ſmall quantity of buck-wheat alſo, for the uſe of poultry, or to be ploughed in previous to a crop of wheat, but very little rye is at preſent ſown.

The tartarian, or reed oat, for ſome years paſt, has been the favourite ſpecies of this grain, in the neighbourhood of Liverpool. Its produce is great, but the grain inferior, and not yielding an equal proportion of meal with the early or Dutch oat. The ſtraw is luxuriant, and ſeems well adapted to lands exhauſted under bad management; nor is the grain ſo liable to be ſhaken out with the north-weſt gales, to which this county is expoſed, as the other ſort.

Potatoes.—Lancaſhire was the firſt county in this kingdom in which the potatoe was grown: and as it is able at this day to boaſt a ſuperior cultivation in that important article, in which it ſtill ſtands unrivalled, it may be requiſite to deſcend to particulars in regard to the management of that crop: 1. A ſward, or freſh lay, is deſirable, but not always to be obtained. Good crops have been frequently raiſed from lands exhauſted. The ground being previouſly cleaned by ploughings, and planted (if the ground can be got into condition) in April, in drills.*

* I am confident that this method of planting either the early or late potatoe, is not ſo productive as that of ſetting them in beds of five feet wide, and covering them, when the ſhoots begin to appear, with mould dug from a trench between the beds. This is the general mode in the neighbourhood of Frodſham, in Cheſhire, where the planters of this moſt valuable root have tried all poſſible methods, for many years, and are generally allowed to produce a greater crop on a given quantity of land, than any other people in the kingdom.—*T. Wright.*

about 3 feet diſtance, and from 12 to 9 inches aſunder, in each drill, the ſets * placed immediately upon long dung from the yard, &c.; but dung from the great towns produces a wonderful effect upon lands not formerly accuſtomed to that article; and it is ſuppoſed, will generally enrich twice as far, with equal effect, as the manure formerly uſed from the farm-yard, &c. This is experienced in the lands bordering upon the canals. The great quantity of corn, and different kinds of provender, given to cattle kept in towns, muſt tend to enrich the quality of the dung, which depends upon the food taken, whether of man or beaſt.

2. Although April be the prime ſeaſon for producing a crop of good potatoes for the table, becauſe this vegetable requires a certain portion of time, to acquire that degree of maturity, which renders it peculiarly mellow and farinaceous, yet it is frequently planted as late as May, or even June; and yet produces abundant crops, but not of the ſame matured quality, as thoſe planted at a more early ſeaſon.

3. The apprehenſion of froſts (by which, if the tops are caught, after breaking the ſurface, they pine and ſicken, and the hopes of the huſbandman are blaſted,) ſometimes operate againſt planting at this early ſeaſon; yet good planters riſque the chance of froſts, in order to obtain ſuperior quality.

4. The crops are kept clean from weeds by the plough, firſt by turning a furrow, left for that purpoſe, towards the young plants, as ſoon as they appear; and afterwards by turning the ſame furrow back from each ſide of the drill, and which is ſometimes, if very foul, harrowed by a ſmall triangular harrow, running through each drill. After the weeds have been ſo expoſed, the furrow is turned back again, and ſometimes the ſame plough, or a double-wrifted one, runs up each drill once

* The ſurveyor has made ſome experiments to aſcertain the beſt mode of cutting the ſets; for, if the potatoe be ſet whole, putrefaction does not always enſue; and a ſet of a large ſize, to a certain degree, is better than a ſmall one. The beſt method he has yet diſcovered, is taking off the ſprout, or noſe end, and the umbilical, or tail end, of the potatoe, leaving the middle entirely for the ſet; the worſt method of cutting the potatoe, as has been proved, is cutting the potatoe down the middle, from noſe to tail end; a practice but too common.

more;

more; beſides the deſtruction of weeds, the ſoil, by theſe operations, is looſened, expoſed to the ſun and air, which contributes greatly to improve the crop.

5. There are various kinds of ſeeds in uſe.—The ox-noble, and cluſter potatoe are planted for the cattle *; the pink-eye, and a variety of others, with different kinds of kidney-potatoes for the table. The old winter red, as it is ſometimes called, ought to be mentioned for its peculiar goodneſs in the ſpring, when other kinds have loſt their flavour; this potatoe is then in its beſt perfection; it has another quality, that of never having been known to curl. There are alſo great varieties of early potatoes, and great attention is paid to raiſing new ſorts of the beſt qualities from ſeeds, of what is called the crabs, or apples, which grow upon the ſtems. Mr. G. Green obſerves, that after many experiments he invariably found that the watery potatoe (of which there are great varieties) have fallen far ſhort of the purpoſe intended. That he has ſeveral times, both through neceſſity as well as for the ſake of experiment, given the ox-noble to milch-cows, after the more farinaceous ſort, *e. g.* the pink-eye, when the decreaſe of both milk and butter has been evident in a very ſhort ſpace, and the beaſts themſelves ſeemed much diſſatisfied with the change.

6. Great attention is paid to changing the ſeed occaſionally, to prevent the curl †, the practice of obtaining freſh ſeed from Scotland

* Of the cluſter potatoe, the ſurveyor had an opportunity of viewing the produce of a crop, lying upon the ſurface of the ground, after being juſt taken up, belonging to Colonel Mordaunt, of Halſall, in this county. He, and an intelligent farmer, were both of opinion, that they never ſaw ſo large a crop; and yet, as they were informed, raiſed without dung.

The cluſter, or conglomerated, or Suffolk (for ſo it is called by Mr. Howard, who firſt introduced it to notice) was cultivated in this county 25 years ago (*a*) from ſets left by that gentleman with the Society for the Promotion of Arts and Commerce.

Vide *Doſſie's Memoirs*, vol. X. It has ſince been produced from ſeed, and, though much improved in ſhape, retains the red colour and ſaccharine taſte.

(*a*) By the Rev. Mr. Heathcote, rector of Walton, and Mr. William Haliday, Anfield.

† The ſurveyor had the honour of receiving a premium from the Society for the Promotion of Arts and Commerce, in the year 1789, for a letter on the Lancaſhire method of preventing the curl. He has the plea-

Scotland (as was the cuſtom a few years ago), is not now ſo frequent; a change from the moſs lands, and *vice verſa*, being generally ſufficient. A change of land is alſo deſirable, but not always practicable: crops have been ſucceſsfully taken, for a ſucceſſion of years, from the ſame land.

7. The produce of a crop is, on a medium, from 2 to 3 hundred meaſures, or buſhels *, the ſtatute acre. The early potatoes are generally planted in beds, in rows about 8 inches diſtant, and the ſets 4 or 5 inches ſeparate, becauſe the early potatoes, being of a leſs ſize, require a ſmaller ſpace; but the advanced price theſe early crops obtain at market, render them a profitable article to the cultivator †; who, beſides reaping a profit from this early produce, has his ground prepared for another crop the ſame ſeaſon. Mr. Waring, ſteward to the Earl of Derby, gave to Major Atherton the following account of the produce of one acre of indifferent land in Knowſley.

1793—700 buſhels of potatoes, pink-eyes.

1794—92 buſhels of wheat, 70lb. to the buſhel, ſold at 7 *s.* 6 *d.* *per* buſhel. 3 months later they would have fetched

ſure to obſerve, that the fact ſeems to be confirmed, from the general opinion and practice of the county; nor did he obſerve a ſingle diſeaſed potatoe in the whole of his ſurvey—the crops were univerſally luxuriant. This thought is improved upon by Mr. Thomas Wright, gardener to John Fazakerley, Eſq. Preſcot, who has ſent ſome favourite plants which had caught the diſeaſe of curl, to the moſs lands, which change of lands he expected would effect a cure.

* By a buſhel of potatoes, is generally meant 90lb. before they are cleaned.

† Mr. Eccleſton took the ſurveyor to view a piece of ground, 30 perches (8 yards to the perch) the early potatoes raiſed upon which had been ſold for 30 *l.* in the preſent year 1793; after which a crop of turnips had been grown, which, at 6 *d.* *per* buſhel, were worth 50 *l.* *per* acre; after which the ſame land was to be cropped with wheat.

Remark on this Fact.

"The groſs amount of the account of the potatoes appears to be great, that of 20 *s.* *per* rod of 8 yards; but if all expences of ſets, and preparing the land, and getting them up, and afterwards marketing them at the different markets, Liverpool, Mancheſter, &c. were deducted, it is a query but the outgoings would be conſiderably more than the groſs amount given, although the land muſt be perfectly well prepared for the turnips; but the account given of the turnips, at the rate of 2000 buſhels of thirty-ſix quarts or ninety pounds *per* buſhel, is more by 800 buſhels *per* acre than ever I knew or heard of for either large or ſmall lot, either by hoeing, or any other advantage to be taken."—*Mr. Harper.*

10*s.* 6*d. per* buſhel, cone wheat. Mr. Waring ſays, the live crops were equal to the fee ſimple of the land. He is confident that *marle* would have *produced* 20 *buſhels more wheat.* The markets of Mancheſter, Oldham, Rochdale, and the neighbourhood, are ſupplied with great quantities, not only from Warrington, but as far as from Rufford, Scarſbrick, &c.

Upon the ſame ground, from which a crop has already been taken, the early ſeed potatoes are in ſome places afterwards planted; which, after being got up about November, are immediately cut up into ſets, and preſerved in oat ſhells*, or ſaw-duſt, where they remain till March, when they are planted, after having had one ſpit taken off, and planted with another, of a length ſufficient to appear above ground in the ſpace of a week.

But the moſt approved method is, to cut the ſets, and put them on a room-floor, where a ſtrong current of air can be introduced at pleaſure, the ſets laid thinner, viz. about 2 lays in depth, and covered with the like materials, (ſhells or ſaw-duſt) about 2 inches thick: this ſcreens them from the winter froſts, and keeps them moderately warm, cauſing them to vegetate; but at the ſame time admits air to ſtrengthen them, and harden their ſhoots, which the cultivators improve by opening the doors and windows on every opportunity afforded by mild ſoft weather: they frequently examine them, and when the ſhoots are ſprung an inch and a half, or 2 inches, they carefully remove one half of their covering, with a wooden rake, or with the hands, taking care not to diſturb, or break, the ſhoots. Light is requiſite as well as air, to ſtrengthen and eſtabliſh the ſhoots; on which account a green-houſe has the advantage of a room, but a room anſwers very well with a good window or two in it, and if to the ſun ſtill better.—In this manner they ſuffer them to remain till the planting ſeaſon, giving them all the air poſſible by the doors and windows, when it can be done with ſafety from froſt: by this method the ſhoots at the top become green, leaves are ſprung, and are moderately hardy.

* Vulgarly called meal ſhudes.

They

They then plant them in rows, in the uſual method, by a ſetting-ſtick, and carefully rake up the cavities made by the ſetting ſtick; by this method they are enabled to bear a little froſt without injury. The earlieſt potatoe is the ſuperfine white kidney*; from this ſort, upon the ſame ground, have been raiſed 4 crops; having ſets from the repoſitory ready to put in as ſoon as the other were taken up; and a fifth crop is ſometimes raiſed from the ſame lands, the ſame year, of tranſplanted winter lettuce. The firſt crop had the advantage of a covering in froſty nights.

The above excellent information was communicated by J. Blundell, Ormſkirk, and has hitherto been known only amongſt a very few farmers.

8. The manner of taking them up varies. The three-pronged fork is in general uſe—the ſoil turned over, the weeds picked out, the potatoes gathered and ſeparated, according to their ſize, by the ſame perſon. Another practice is, for a ſtrong man to take a three-pronged fork, but crooked (the ſame which is generally uſed to pull dung out of the cart) which he ſtrikes down between every root, and pulls it over, laying the roots bare, which are taken up by two children that follow. Another practice is to turn a furrow from the potatoes, with a Rotheram plough, and then with another plough, furniſhed only with a ſhare, to turn up the potatoes, which are afterwards gathered.

After the potatoes are gathered, and ſufficiently dried, they are put together in heaps, in the ſhape of the roof of a building, covered cloſely with ſtraw, which ſhould be drawn ſtraight, and to meet from each ſide in a point at the top, about ſix inches in thickneſs, and then covered with mould, cloſely compacted together, by frequent applications of the ſpade; after which Mr. Eccleſton makes holes in the mould, at the ſides and tops of theſe repoſitories, as deep as the ſtraw, and about three yards diſtant, to permit the air, which, he ſays, viſibly ariſes from the fermentation, to eſcape: after the fermen-

* The early potatoe is a diſtinct ſpecies, of which there are yet great varieties.

tation has ceaſed, the holes are cloſed to prevent the effects of froſts or rain.

9. The utility of the application of potatoes to feeding ſtock, is ſufficiently known, but not ſufficiently practiſed. Converting the produce into immediate caſh, by taking it to market, is a ſtronger temptation than waiting the more tedious proceſs of purchaſing ſtock, and fattening the cattle; but a ſource of improvement to the land, and conſequently of ſuperior profit in the iſſue, is by this means done away.

10. From the amazing quantities conſumed by ſtock, it may not be amiſs to mention the manner of boiling, &c. which is almoſt univerſally by ſteam, in a large hamper, or tub, perforated at the bottom, and placed over the water: in this way they are readier for uſe than by being immerged in water; after which they are given either warm or cold, mixed with chaff, bran, hay ſeeds, barley, or oatmeal.

The method of boiling potatoes by ſteam, has been adopted by ſome for culinary purpoſes as an improvement, thinking by this proceſs they muſt imbibe leſs water from their not being immerged in the ſubſtance. But immerſion in water cauſes the diſcharge of a certain matter, which the ſteam alone is incapable of doing, and by detaining of which the flavour of this root is injured. The cottager underſtands this kind of cookery: having poured off the water, he evaporates the moiſture by replacing the veſſel in which the potatoe was boiled, once more over the fire. Potatoes do not admit being put into a veſſel of boiling water like greens. If America *, whence this choice vegetable was firſt imported, had yielded nothing elſe to the reſearches of the European, the preſent generation would have reaſon to be thankful for the acquiſition, and to be grateful to the planters in Lancaſhire, for their ſpirited attention to the cultivation of this excellent root.

* A note in a common-place book that I wrote ſeveral years ago, informs me, that John Hawkins, a dealer in ſlaves, got in 1565 the firſt potatoes for ſhip proviſions from the inhabitants of Santa Fé, in New Spain; he introduced the root into Ireland, whence it was farther propagated through all the northern parts of Europe.

An old method of cooking potatoes.—Boil, and let them grow cold, then eat them, mixed with oil, vinegar, and pepper. *Parkinſon's Herbal.*

Turnips.—

Turnips.—It muſt be acknowledged, that turnips are not cultivated but on a very contracted ſcale *, and even then but ſeldom hoed; and yet there are not many articles more adapted to the ſoil and climate, there being ſeldom a crop deſtroyed, or loſt, by the ſlug (or whatever that is which deſtroys the tender plant). The turnips find a ready market † if near a great town, whilſt the inferior crops generally pay well, if applied wholly to feeding cattle; and they leave the land in ſo clean a ſtate, as to be fit for moſt kinds of grain, and generally taken, by the beſt farmers, as a previous crop, to lay down to graſs or crops of clover.

Mr. Eccleſton not only ſows his turnips in drills, but every other feed, and was the firſt who introduced this vegetable into a ſyſtem of crops in his own neighbourhood.

Clover.—This ſort of graſs is cultivated generally with ſucceſs; being greatly preferred to the white hay, by thoſe who keep horſes in the great towns for the draught; containing, it is ſuppoſed, more nutriment. If opportunity offers, inſtead of ſending their horſes to graze upon a field, which is difficult to obtain, a lot of green clover is purchaſed, and brought in that ſtate to the conſumer, who ſoils his horſes in the ſtable for a few weeks in the year, and it acts both as food and phyſic, and enables them to ſtand work the better. Some few farmers keep their cart horſes in the houſe throughout the year, and ſoil them in ſummer entirely with clover.

The lands upon which clovers have been frequently grown, it is ſaid, do not yield ſuch plentiful crops as they did ſome years paſt; ſecond crops, in this northern climate, are ſeldom worth the riſque of being made into hay, and, beſides, are thought to exhauſt the lands, therefore are generally paſtured. But marle will always inſure clover; when it fails in this county it is the fault of the huſbandman, not the land.

* Turnips, to the amount of eight acres, were cultivated in the neighbourhood of Wrightington, by William Diconſon, Eſq. about 30 years ago: before this period none had been ſown but in the gardens.

† To raiſe an expenſive crop of turnips merely to *ſell*, may be good management with a gardener, but not with a farmer. The crop that is not conſumed upon the premiſes, I cannot allow to be a meliorating crop.—*T. W.*

Other

Other green crops.—Vetches are ſometimes cultivated as a ſmothering crop, and a preparation for wheat, but not very generally. Lucerne has been attempted, but at preſent not much, if at all, cultivated. Scotch cabbages have been planted, and good crops raiſed, but not to any great extent. Carrots are ſucceſsfully cultivated upon ſandy loams, in the neighbourhood of Kirkby, Scariſbrick, Burſcough, Rufford, chiefly for the ſupply of the Liverpool market, and ſometimes purchaſed to be given to horſes (particularly wind-broken)—They are generally ſold about 2 *s.* 6 *d.* or 3 *s. per* cwt. and are reckoned a profitable crop on ſuitable lands.

TIME OF SOWING.

Wheat ſeeding is from the middle of September to the end of October. Mr. Eccleſton, of Scariſbrick, ſays, "The beſt crop of winter wheat I have ſeen this year, or, indeed, ever recollect, was ſown after a crop of potatoes, as late as the 20th of laſt March. I mention this as an extraordinary fact."

The time of reaping wheat, from Auguſt to September.

Beans are uſually ſown early in March, and reaped in September.

Common oats in April. Early oats in May and June, and reaped in Auguſt, September, and October. Barley is ſown in April and May, and reaped in Auguſt and September. Theſe are the general ſeaſons.

But there are always exceptions to general rules; *e. g.* the preſent year the produce of ſeveral fields, both barley and oats, was not put into the barn, in the ſouth-weſt part of the county, the ſecond week in November; and there was a certain field of barley in Toxteth Park, not cut the third week in November.

On the moſs lands, where paring and burning is practiſed, both ſeed time and harveſt is very late; owing to the uncertainty of the weather—if wet, the burning proceeds but ſlowly; the ſeed time is conſequently retarded, and the crops are by theſe means ſo late, as to become precarious from the advanced ſeaſon, being frequently expoſed to froſts and ſnows. If the barley from the moſs lands be well houſed, it is in high eſtimation: and obtains an advanced price from the farmer, who

prefers corn raiſed upon thoſe lands for his ſeed. Mr. Eccleſton ſowed one year a field of barley about the middle of June, which he houſed the following year, January 1. Barley is generally ſown too late in this county—much of it even in June, but the greateſt part in May—in the moſs lands, where paring and burning is the preparation for this grain, this practice may have its foundation in neceſſity; but the imitation is abſurd on good barley lands.

HARVESTING.

The grain in this county has been uſually reaped by the ſickle, the quantity grown being but ſmall, and the labourers abundant. In the year 1794 ſeveral farmers however mowed their corn, amongſt whom was Mr. H. Harper, who fetched the ſurveyor to ſee his proceſs, which was neat, and in the following manner.

The wheat was mown *in*, that is, thrown towards the ſtanding corn, immediately gathered and tied up into ſheaves; the ſet was two mowers, two women gatherers, and one man binder. The barley and oats were mown *out*, into ſwathes, and gathered at convenience. The advantages of this method were, a ſaving of expence about 14 *d.* per acre, leſs danger of the corn being ſhook out of the ear, and gaining nearly one-third more ſtraw; no trifling conſideration under ſeveral heads, eſpecially ſince it does not appear that what ſtubble is left in the field is of the leaſt ſervice, in ſome caſes evidently does harm, *e. g.* to clover or other young graſſes, by retaining moiſture through the winter, and ſtarving the tender plants, or injuring the hay when mown, and which, when wet, it has a tendency to render putrid.

After the corn was gathered, the ground was gone over with a rake, to collect what ſtraggling ears might remain, which are generally the heavieſt, and of ſuperior quality.

A wooden rake, with teeth about one inch longer than the common hay-rake, was preferred to the drag-rake, and did its work much neater—a woman could rake about two ſtatute acres per day.

The ſcythe for cutting the corn had an addition of a bow, made out of a piece of rod-iron, faſtened into the pole, and ex-

tending three inches over the ſcythe-heel, from whence it roſe about nine inches in height and about two feet in length, and which formed a kind of cradle. The rod was ſupported by an upright prop from the pole about the centre, and which was furthermore braced and kept tight by a ſtring.

The Lancaſhire method of ſetting up corn, after being reaped, and whilſt it continues in the field, may merit to be noticed; which if barley or oats, and in a greeniſh ſtate, is ſet up in four ſtandard ſheaves only, with one cover called a hooder, that is, a large well-bound ſheaf is ſelected and opened, with which the four ſtandard ſheaves, with the grain uppermoſt; are covered, the grain of the hooder hanging downwards, but free from the ground. This ſhape is provincially called a *pricket*. But the moſt general method is, ſix ſheaves ſtandards placed againſt each other, ſpread out in their butt ends, and cloſed tight at their tops, when a couple of ſheaves are opened, each about one half, clapped over each end of the ſtandards, and meet with their butt ends together in the centre, thus forming a roof or cover for the ſtandards. This form is provincially called Hattocks, and their covers Riders.

PRODUCE.

Where the land is well cultivated, inſtances of a great increaſe might be given; but the general produce of the county cannot be ſtated at more than 24 buſhels of wheat, 30 of barley, and 40 of oats.

PRESERVATION AND MANUFACTURE OF CORN.

Corn is kept both in barns and ſtacks: the laſt is conſidered to be preferable. There are mills belonging to the Free grammar-ſchool at Mancheſter, granted by Hugh Bexwick, Clerk, and Joanna Bexwick, widow, in 1524, where a great quantity of grain is manufactured. In the neighbourhood of Liverpool, moſtly windmills, but there is one tide-mill lately erected there, which does conſiderable work. The mills in general, are private property; and, except in few caſes, the tenants are not bound to grind at particular mills. Where they are bound, great indulgences are granted.

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

LIQUORICE,

Is not cultivated in this county, in any ſufficient quantity, as an object of profit; although upon many grounds, it might flouriſh, and be worthy of attention.

The ſurveyor has a number of plants interſperſed amongſt other ſhrubs; when the root is wanted for decoctions, or other uſe in the family, a quantity is taken up, and it has been found to be as well-flavoured, rich, and juicy, as the Pontefract.

RHUBARB,

Alſo, has been planted in this way, a number of years, and the root cured and made uſe of; ſome pounds were lately preſented to the Liverpool Diſpenſary. This plant, when in bloom, has a majeſtic appearance; its growth, at a certain period, a little before the ſeed appears, is amazing. The ſtem has grown, in length, three inches in twenty-four hours *.

The ſurveyor, has, at preſent, a moſt vigorous plantation. Having deſtroyed an old hedge planted upon a bank with a

* Growth of a rhubarb plant, N° 2, belonging to the ſurveyor, and meaſured by him in the year 1789.

	Morning. Feet.	Inches.	Tenths.			Evening.		
May 11	3	6	5	-	-	3	7	9
12	3	9	8	-	-	3	10	5
13	4	2	5	-	-	4	3	4
14	4	5	9	-	-	5	0	0
15	4	10	8	-	-	5	5	5
16	5	2	8	-	-	5	7	8
17	5	6	4	-	-	5	10	1
18	5	8	2	-	-	6	1	0
19	5	10	3	-	-	6	2	7
20	6	1	2					
21	6	4	5					
22	6	7	5	-	-	6	7	8
23	7	0	1	-	-	7	1	6
24	7	3	1					
31	8	2	0					
June 5	8	8	0					

1795, a rhubarb plant of the ſurveyor's, which broke ground April 1ſt, was, June 15, 52 inches long; 16th June, in the ſpace of 24 hours, grew 4 inches 6 10ths; from the 22d of the ſame month, 4 inches 9-10ths.—*Vide Gent. Mag. June* 1795.

ditch

ditch on one ſide, a new thorn hedge was again planted where the old bank had formerly ſtood, and the ditch filled up with rich earth, in which the plantation of rhubarb was made, ſecured on one ſide by the hedge, on the other by rails.

CHICORY.

Mr. Wakefield ſpeaks highly of the heavy crops of chicory he has mown, from the ſame land, and with which he has foiled his horſes, viz. ten horſes, the ſpace of ten weeks at hard work, upon this plant, and without either hay or corn, from two ſtatute acres; and was cut 3 times in the ſeaſon; firſt time about the 20th of May; that which remained for ſeed grew to the ſize of 8 or 9 feet high. The root of chicory is made uſe of as coffee in Germany, &c.

MADDER.

It was obſerved, by an ingenious gentleman*, that madder, he imagined, might be ſucceſsfully cultivated, and with advantage, upon moſs lands, ſince the art of dying cottons a Turkey red has been diſcovered, for which purpoſe madder, in the root, is abſolutely neceſſary. Madder, which previous to this diſcovery was of little value, is now worth 50 *s.* per cwt.; and, if of prime quality, worth 120 *s.* per cwt. This root was attempted to be cultivated in this county ſome years paſt, under the encouragement of a premium, by the ſociety for promotion of Arts and Commerce, but failed of ſucceſs under the expenſive proceſs of drying, by artificial heat, the difficulty of grinding, peeling off the bark, &c. But of late the ſun has been found ſufficiently powerful to cure it, and the grinding and peeling proceſs is better underſtood.

RUTA BAGA.

Mr. Taylor kept ſix brood mares, and two young horſes 3 years old, upon the Swediſh turnip and ſtraw, in a fold-yard.

* Leigh Phillips, Eſq. Mancheſter. A ſpecimen of dying with madder of his own growth has been tranſmitted to the Board of Agriculture, and been viewed with much approbation.

They

They appear healthy, and in fair good condition, to each he gives half a buſhel a day.

The Ruta Baga, or Swediſh turnip, has ſtood the ſevere froſt of 1794 and 1795, whilſt the Engliſh turnips of almoſt every ſpecies have ſuffered, and upon the wet lands have been totally rotted and deſtroyed. The tops of the Swediſh turnip it is true, have ſhrunk; but the root ſtands quite firm. This turnip is a valuable acquiſition.

HEMP AND FLAX.

The culture, neither of hemp nor flax, was ever carried to any great extent in this county. It is proper to remark that a crop of hemp is ſuppoſed to be an excellent means of deſtroying couch, let it be ever ſo abundant.

Mr. Fazakerly obſerves, that couch ſhould always be deſtroyed upon the land, by ſmothering or withering; and if either carried off the land, or even burnt upon it, the ground is injured. He contends, from experience, that though the couch, whilſt living, be injurious, yet it ſhould never be taken from the lands whence produced, but the roots by ſome means there deſtroyed by putrefaction.

CHAPTER VIII.

GRASS.

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

ALTHOUGH there is a mixture of arable and graſs land, yet the latter muſt greatly preponderate, and that to ſuch a degree, that it has been frequently aſſerted, that the corn raiſed in Lancaſhire would not ſupport the inhabitants more than three months in the year; ſo that the eaſieſt way of obtaining corn, until the county is improved, is to purchaſe it at other markets.

The lands in the immediate vicinity of the great towns are chiefly employed in paſturage; at a remoter diſtance, in paſturage and meadow, immenſe quantities of hay being requiſite for the number of horſes and cows kept therein. Near ſome places, ſuch as Bolton, beſides the demand for lands under hay and graſs, a great number of acres are occupied as bleaching grounds; and throughout the whole of the county there are, in different places, many acres of rich land, covered with yarn, or cloth, under various operations.

Theſe ſeveral cauſes have had a tendency to change the ſyſtem of the agriculture of the county, and to convert the arable grounds into graſs lands; and this ſyſtem of management ſeems yearly increaſing, even in thoſe parts which were formerly conſidered as the great corn diſtricts; ſuch as that fertile ſoil under the denomination of the Filde, a tract of land from the north of the Ribble along the coaſt as far as Cockerſands, to the turnpike road on the eaſt.

At this period, (1795) the diminution of arable land is likely to become a ſerious calamity to the nation at large. The converſion of arable land into graſs in this county may be imputed to ſeven cauſes.—1ſt. The enormous and immoderate wages to be obtained in the manufactories, which has wreſted the arm of induſtry from the plough.—2d. The conſequent encreaſe of the poor rates, becauſe the manufactories do not ſupport their own poor; and the manufacturers, if out of employment, when

when ſick, or infirm, or aged, are ſupported by *taxes levied upon agriculture*.—3d. By all capitals being veſted in the working cotton inſtead of raiſing corn.—4th. To the very abſurd rotation of crops uſed throughout the county.—5th. To the barbarous cuſtom of keeping the ſame land too long under the plough.—6th. To an opinion, originating in the conſequence of the two laſt reaſons, that graſs is more valuable than corn. Good graſs probably may, but not ſuch graſs as is to be found through a great part of this diſtrict.—And, 7th. To the exaction of tythes in kind.

SECT. 2.—*Artificial Graſſes.*

THE mode of laying down graſs for hay, is after having taken a few crops, cleaned and dunged the land, along with barley and oats, to ſow the red clover, with the hay-ſeeds which fall off in feeding, which are collected; ſometimes trefoil is added. Ray-graſs of late years has not been in much eſtimation. Mr. Eccleſton, Mr. Wilkinſon, and Mr. Philips have each of late ſown chicory or ſuccory. The laſt has already kept his coach-horſes three months upon this plant; they look well—the chicory is already ſufficient to mow a ſecond time—this plant cauſes his horſes to ſtale much.

Paſture lands are, in general, moſt miſerably laid down, they being in many places left to nature, to ſupply the ground with whatever ſeeds remained in the earth, or came from other quarters, carried by the winds or other accidental cauſes; and in the Filde particularly the lands have, on many occaſions, been ſo exhauſted by repeated plowings, that they are rendered incapable of yielding any uſeful herbage; ſeeds that have hitherto been tried upon theſe lands have ſickened and died away, and ſome have not even vegetated; and the ſurface remains covered with weeds of various kinds, for a ſucceſſion of years. White clover, and the cleaneſt hay ſeeds, have been the beſt ſyſtem of laying down paſtures, hitherto practiſed; but in attempting this, many of the farmers have been too inattentive to the choice of their ſeeds, which have been promiſcuouſly collected as they dropped from the hay, without regard to the ſpecies of

graſs,

graſs, the crops being free from docks or other ſpontaneous weeds, which were permitted to grow. But the lands in general abound with varieties of natural graſſes; and, if in tolerable condition, in a very little time will be covered with a good ſward; among which, white clover, growing ſpontaneouſly, is not unfrequent.

Inſtead of the old method of laying down land in ſmall ridges (called *butts* in Lancaſhire) particularly in wet lands, of late the beſt farmers have adopted the ſize of ſix or eight yards broad, with but ſhallow intervals; if for mowing, the lands are in a better ſtate for the ſcythe; if for paſture, the cattle not ſo liable to be overthrown in the deep drains. In very dry lands, which require no drains, the ſurface is laid as ſmooth and even as can be effected; the whole being united into one plane, if poſſible; which not only renders the ſurface of the land more agreeable to the eye, but in every reſpect of agricultural management ſuperior. To prevent theſe butts being too high in the centre, the land is drawn out into breadths of half the ſize of the intended butt, then a furrow is thrown together from each ſide of the two, which are to be formed into one for the centre part.

Red clover is ſown alſo, but not as a matrix for wheat, to which the land in ſome places is adapted *. After two years crop of red clover, although hay ſeeds have been added, there is generally but a ſcanty crop, the clover diſappearing; and, unleſs an ample dreſſing of manure be alſo given, the produce of hay ſeeds will be very ſcanty; this mode of manuring is by good farmers frequently practiſed. Some experiments have been made upon the *Alopecurus pratenſis* and *Feſtuca pratenſis* with great ſucceſs; as alſo the wild endive or chicory (*Cichorium intybus*); but theſe trials are yet in their infancy, and the ſcale but ſmall. Trefoil, cinque-foil, rib-graſs, and rye-graſs, have been frequently ſown, but in no great quantities, but this laſt is ſeldom found to anſwer here. But the ſame ſoil, in different ſeaſons,

* If for paſture, red clover is omitted, white clover and ſeeds collected from the hay-lofts, are alone uſed. Some fields have been laid down to paſture, with graſs-ſeeds only, without any corn, and have been found to ſucceed. There is ſaid to be an evident ſuperiority in lands thus treated, although twenty years ago: but the experiments have been few. A gentleman at Bolton Moor has an excellent paſture the preſent year, with white clover, ſown with vetches.

produces different kinds of graſſes, *e. g.* white clovers, which may probably ariſe from the application of different manures, or the ſeaſons being more congenial to this or that ſpecies of graſs.—The ſeeds muſt be originally lodged in the earth, the great ſtorehouſe where nature has depoſited her treaſures; for none have been fabricated, they have been only collected and ſelected by the induſtrious cultivator to whom they offer their liberal aid. Tufts of knot graſs, which ſcarcely any beaſt will touch, have been removed by ſpreading a little lime over them. Another ſpecies of graſs has ſucceeded this operation.

The great abundance of natural graſſes in this country, ſuperſede, in a great meaſure, the neceſſity of having recourſe to artificial ones. Sainfoin and lucern are unknown, or nearly ſo. The land naturally produces white clover, eſpecially when kept in high condition; the application of the root of red clover as a matrix for wheat, is ſcarcely ever practiſed, though admirably adapted to the lighter land of the county. It is however ſown pretty generally when land is intended to be laid down to graſs; by this means the farmer obtains two very large crops of hay the firſt year, but his land is much impoveriſhed for the next two or three, as the clover diſappears, and the natural graſſes do not puſh forward, as the land has been generally haraſſed by the previous crops of corn and clover. This reſult is in ſome meaſure obviated by an ample dreſſing of manure being given to the clover root, for manure is to be purchaſed in this populous country in vaſt quantities. Upon the whole, the manner of laying down land to graſs is by far the moſt reprehenſible part of the management of this county. After land had been many years under tillage, the old plan of the country was to fallow for wheat, and leave the ſtubble of little narrow wheat butts to produce whatever weeds and trumpery it might pleaſe Heaven to ſend: of late years, the ſtubble has been well manured, and ſown with barley and clover, and the refuſe of the hay ricks. The manure, and the additional breadth of the barley butts, and the graſs ſeeds were an improvement; but in general this advantage was much diminiſhed by the foulneſs introduced by the additional crop, the vigour and abundance of the couch graſs, and the foulneſs

of the hay-ſeeds. By the time the clover had been twice mown, the lands were in miſerable condition, little but couch graſs and weeds to be ſeen: but reſt from the plough, and the natural fertility of the ſoil, by degrees brought it into condition to be *ploughed again*. Such management has been productive of much loſs both to landlord and tenant, and is the reaſon that gentlemen of property are ſo deſirous of having the *tillage of their tenants* ſo much *reſtricted*. We are, however, beginning to adopt a more enlightened method of laying down our lands; fallowing for turnips once or twice, if the land is very foul, and then ſowing barley and well-dreſſed hay ſeeds, from known good meadows, and white clover. Another method is, to manure land very well for early potatoes, which ought to be off the land in June, July, or Auguſt at lateſt, and ſowing graſs ſeeds and white clover, without any corn; the hay ought to ſtand until the hay ſeeds are pretty well ripened the ſubſequent year, and the eddiſh or after-graſs to be well manured as ſoon as the hay is carted off.

SECT. 3.—*Hay Harveſt.*

IN the management and curing of clover, which, from the quantity of moiſture to be evaporated from the plant, before it be cured ſufficiently to keep, is attended with conſiderable difficulty, the following method has been practiſed by Thomas Eccleſton, Eſq. that ſpirited gentleman ſo frequently mentioned.

Hay, without doubt, cures faſter the more it is raked, as by this, more ſurface is expoſed to the influence of the ſun and air, by frequent turning and ſhaking:—but, in my method, a very little labour, will ſuffice when the weather is good. The only difficulty is to cure hay, ſo as to preſerve its nutritious juices, ſcent, and other qualities, when the ſeaſon is wet, and the graſs, through its different ſtages, is repeatedly caught with ſhowers.

Mr. Eccleſton's mode.—The clover is collected together into ſmall ſheaves, and kept ſtraight; then twiſted together, in the top part, to admit the ſheaf to ſtand upon its butt, or bottom end, when ſpread out, in the ſame manner that horſe-beans

have been frequently treated; and if theſe little bundles are not thrown down by the winds, they will reſiſt more rain, if it ſhould fall, than when lying on the ſurface of the ground; and if the weather be fine, having more ſurface expoſed and open, the clover will cure the faſter.

In making hay-ſtacks, beſides a chimney* in the ſtack, by a baſket placed in the middle, and drawn up by a cord, in order to ſuffer the air, generated by heating, to eſcape, and to prevent the ſtack taking fire, as mentioned in the "Survey of Mid-"dleſex," Mr. Eccleſton cuts gutters in the ground, length-ways, and covers them acroſs in that place whereon a ſtack is to be built. Through theſe trenches, in different directions, the outward air may enter, paſs through, then aſcend the aperture left in the ſtack; and this continued circulation takes away the generated heat or foul air, which, if confined together without any vent, might produce damage to the hay, or worſe effects; and, by theſe uſeful precautions, he is enabled to collect his hay together at a more early period, and in a more juicy ſtate; by which good practice, time is ſaved, and the quality of the hay improved.

I have obſerved ſtacks of clover hay, made with layers of wheat ſtraw, at certain diſtances, from the bottom to the top, which I think a good method, particularly when it has had bad weather upon it, and was got in rather damp, as the damp heat is conveyed through it by means of the ſtraw from one ſide to the other, and a greater circulation of air might ſtill be procured by a chimney in the centre being filled with ſtraw.

Hay-barns have of late been erected in many places, ſtanding upon pillars, and covered with ſlates; ſometimes with a bottom boarded with planks, open in the joints, perforated with holes, and lying hollow a ſpace above ground, to admit a free circulation of air all under the hay. Theſe buildings are uſeful, cheap, and by their great convenience in bad weather, and

* "When hay is *properly prepared* to be put together in a ſtack or rick, a chimney ought never to be made; it is a great evil, never to be adopted but when there is abſolute danger of the rick taking fire. Rather let an ox-feeder in North Wilts be conſulted in the art of hay-making, than a farmer in Lancaſhire."—*T. W.*

the

the great preſervation they afford to the hay, will ſoon repay the firſt expence.

It is a good practice with hay in buildings, as ſoon as it is become ſolid enough to bear the knife, to cut a paſſage round the walls, about half a yard in breadth. The hay which comes from the paſſage thus cut, may be put on the top of the mow: by this method, a free circulation of air is obtained, and the tainted ſmell which is contracted by the hay which lies up to the walls through the winter, is by this method prevented.

SECT. 4.—*Feeding.*

THE common average of the beſt lands, is one ſtatute acre per cow, for the ſummer's acre; but there are ſome thouſands of acres that will fall greatly ſhort, ſome paſtures being ſo very poor as to require three, nay four times that breadth of land, not to feed, but barely keep alive, thoſe poor beaſts who have the hard fate to be doomed to the great labour of collecting their food ſo ſcantily and widely diſperſed.

Lands under the higheſt ſtate of cultivation will keep and fatten even more than one beaſt upon an acre.—The ſurveyor's ſummer paſture in 1794, was about five ſtatute acres, which plentifully ſupplied five tolerably ſized cows, two large horſes, and one of a ſmaller ſize, and ſeven pigs, regularly turned out to paſture twice every day, between their meals. Theſe pigs conſumed a conſiderable quantity of graſs, were admitted into the ſtyes when their meals were prepared, and after having taken their reſt, were regularly turned to paſture again. This ſeems no bad practice in the management of hogs; they grow faſt, and their fleſh is rendered remarkably ſweet, which cleanlineſs and freſh air might probably be the means of contributing towards.

The hay conſumed by this ſtock was the produce of about ſix ſtatute acres.

The following information is from a reſpectable farmer upon a large eſtate about ſix miles from Mancheſter. He ſays, that it will take two Lancaſhire acres to ſummer a milch

cow

cow about Chorton, and along the river Merſey, for eight or ten miles; but that one Lancaſhire acre in other places will produce not only ſummer graſs, but alſo hay to keep a cow all the winter, if the ſummer be moderately kind. In the north of Lancaſhire it will take three acres for each cow.

CHAPTER IX.

Of GARDENS *and* ORCHARDS.

IN the neighbourhood of the large towns, there is a portion of land appropriated to Gardens.

Upon the banks of the Irwell, in the townſhip of Barton, about five miles from Mancheſter, there are ſixty-four ſtatute acres of land planted with apple-trees. The plants are upon borders of three feet wide, and ſeven yards diſtance from each in the rows, and from each other every way. The intervals in the rows, and between each apple-tree, are planted with pears, plums, cherries, and gooſeberries, which are intended to be removed as ſoon as they are found to incommode the apple-trees; and the borders are moreover dug, and cropped again with potatoes, beans, cabbages, &c. The intervals between each of theſe borders are under the following management: a part is appropriated to nurſery ground, for raiſing foreſt and fruit-trees; another large part is for meadow land, the graſs is mown for hay, and the eddiſh for ſoiling, and lets after the rate of 4*l.* 10*s.* per large acre. The plantation included in this acre ſome part ſown with grain. The plantation was begun about ten years ago, but was not completed till 1794, when the whole remaining was planted with crab-ſtock, to be ingrafted the enſuing ſpring. The trees look healthy in general, and if the kinds are well ſelected, and adapted to the nature of the ſoil, will moſt likely prove a beneficial concern in the iſſue, ſince Mancheſter and its environs will afford a ready market for an article much wanted, and but little cultivated.

It is generally believed, that there is not a town in the kingdom, London excepted, better provided with vegetables, roots, &c. than the town of Liverpool *.

* There are always ſome reaſons for diſtinguiſhed ſuperiority; and it has been ſaid, that the French neutrals (who were brought over from Canada in the war of 1756, and who reſided ſome years in Liverpool) required ſo many vegetables in their ſoups, &c. as to raiſe the market price of theſe articles, which excited a ſpirit of growing greater quantities than had before been uſually raiſed. As a ſea port, the quantities of cabbage, and other vegetables, taken out for the uſe of ſhipping; the quantities of dried herbs carried to Africa; and onions exported, may act as ſtimulatives.

Beſide

Beſides the vegetables brought in by the milk-carts, and which really amount to a conſiderable quantity; there is a certain farm in Kirkby, about eight miles north-eaſt from Liverpool, the ſoil of a ſmall part of which is a black loamy ſand, and which produces great quantities of early, and ſtrong, aſparagus; and another farm, a part of which is of the ſame nature, at a place called Orrel, about four miles north-weſt of Liverpool; both which produce this plant with leſs attention, and leſs dung, than requiſite in the rich vale of Kirkdale, about two miles from Liverpool, where the greateſt quantity of land in any place of this neighbourhood is appropriated ſolely to horticulture. In lands not favourable to the aſparagus plant, might not this unfavourable diſpoſition be corrected by ſoil brought from lands more genial to its production, eſpecially to grounds bordering upon the canals?—Forty tons would be probably ſufficient for a plantation for a moderate-ſized family, and which when once matured continues for a number of years. This plant, in its wild ſtate, is ſaid to grow upon the Bidſtone Hills in Cheſhire. The number of acres under horticulture in Kirkdale is about 28 of the large meaſure *; and upon which are only employed about one male to each acre for the year, and one female to weed, and gather the crops of peas, fruits, &c. The maſters, it is true, are all workmen, and join with the labourers in their taſks; by which is effected, what otherwiſe would not have been accompliſhed, without a greater proportion of hands to the quantity of acres; and yet, ſmall as this number at firſt ſight may appear, it is almoſt as wonderful how the maſter is enabled to pay his landlord, his labourers, and his ſeedſman, their reſpective claims, upon this portion of land, when the calculation is begun; and 25*l.* a year is allowed the man for his yearly labour; the half of that ſum for the woman's; about 15*l.* more for rent and dung; beſides the expence of marketing, and the profits that ſhould ariſe to the maſter for his attention, ſkill, and ſuperintendance, and towards the maintenance of himſelf and family, with a ſmall accumulating ſurplus, to ſupport the infirmities of

* Eight yards to the rod, or to the pole or perch.

old

old age. In the amount of theſe ſeveral particulars enumerated, a ſum of money will appear, that would have been ſufficient to have purchaſed the fee ſimple of the ſame lands, half a century ago.

The horticulture of this county is in many inſtances ſuperior to its agriculture. The mechanic is generally furniſhed with a ſmall patch of ground adjoining his cottage; and from this little ſpot is extracted not only health, but derived pleaſure, and which may not a little contribute to ſobriety; intemperance not unfrequently proceeding from want of recreation to fill up a vacant hour. This ſmall ſpace is devoted to nurturing his young ſeedlings, trimming his more matured plants, contemplating new varieties, in expectation of honours through the medium of gained premiums. Thus ſtarting at intervals from his more toilſome labours, the mechanic finds his ſtagnating fluids put in motion, and his lungs refreſhed with the fragrant breeze, whilſt he has been thus raiſing new flowers of the auricula, carnation, polyanthus, or pink, of the moſt approved qualities in their ſeveral kinds, and which, after being raiſed here, have been diſperſed over the whole kingdom.

Not only flowers but fruit have been objects of their attention. The beſt gooſeberries now under cultivation had their origin in the county of Lancaſter; and to promote this ſpirit, meetings are annually appointed at different places, at which are public exhibitions of different kinds of flowers and fruits, and premiums adjudged. Theſe meetings are encouraged by maſter-tradeſmen and gentlemen of the county, as tending to promote a ſpirit which may occaſionally be diverted into a more important channel.

At theſe meetings, gooſeberries have been produced which have weighed ſingly 15 dwts. 10 grains, *e. g. Lomax's Victory* *. *Woodward's Smith* * has weighed 17 dwts.; and the *Royal Sovereign* *, grown by George Cooke of Aſhton, near Preſton, at a meeting held 1794, weighed 17 dwts. 18 grains.

A ſingle gooſeberry-tree, the Mancheſter rough red, in a garden belonging to Mr. J. Sykes, in Gateacre, in the year

* Names of gooſeberries.

1792, yielded twenty-one quarts of fruit in their green ſtate, when they ſold at 3 *d.* per quart. The whole quantity weighed twenty-eight pounds avoirdupois *. The ſpace this tree occupied was three yards, and allowing an equal ſpace to walk round, and ſuppoſing an acre of eight yards to the rod planted with the ſame kind of trees, and producing the ſame quantity of fruit, and ſold at the ſame price, the produce would amount to £. 426. 16 *s.*

Requiring but little attention, the gooſeberry has leſs paid to it than it deſerves; and the fruit being rendered in ſuch abundance, with ſo little trouble, makes it of trifling eſtimation. But ſince it may be improved in flavour, increaſed in quantity, and its duration prolonged, by being allowed a ſolitary corner in a wall, *e. g.* on each ſide the nectarine or peach whilſt in their infancy, and they only occupy a ſmall ſpace; the gooſeberry may be nailed down, trimmed, and trained as their companions; but removed as ſoon as ever they appear to incommode theſe ancient tenants of the walls; for the firſt coſt of a gooſeberry-tree is ſo trifling, that it is not worthy of notice.

Theſe facts have been already proved by Daniel Daulby, Eſq; of Birch Houſe, near Liverpool, who for ſome years has had them planted againſt the walls, beſides his other plantations of ſtandards. Beſides the advantages above noticed, the fruitage ſeaſon may be advanced or prolonged according to the different aſpects of the walls; and an increaſe of crop was thoroughly proved by this treatment in the year 1793, when there was a general failure throughout the kingdom, and gooſeberries ſold at the advanced price of 6 *d.* per quart. Thoſe trees which had the advantage of walls were loaded as fully as in the moſt plentiful years.

* To aſcertain the weight of this fruit in different ſtates of its growth, the ſurveyor made the following experiments upon the Mancheſter red gooſeberry.—1794, May 3, one ale quart weighed 18½ ounces troy.—July 25, again from the ſame tree 20 ounces.—July 15, 21½ ounces.—July 29, 22 ounces.—Auguſt 4, 21½ ounces.—*N. B.* He has to regret that he did not number the fruit.

Except

Except the orchard on the banks of the Irwell, in the townſhip of Barton, containing about ſixty-four ſtatute acres, there no orchards worthy notice.—There is no cyder made in the county. The importation of apples from the cyder countries, and even from America, has of late been very conſiderable.

To cauſe fruit-trees to bear, particularly pears, cut a circle through the bark round the principal branches.—This operation ſtops the growth of the wood, alters the ſyſtem of vegetation, and gives the tree a tendency towards bearing fruit inſtead of making wood.

The off-ſhoots of pear-trees ſhould be taken off in Auguſt.

Lime diſſolved in water, and made into a white waſh, applied to the branches and ſtems of trees with a bruſh, effectually deſtroys moſs *.

It is unfortunate that orchards are not more attended to in this county, as cyder, with the aſſiſtance of honey, might be made into a vinous liquor, as ſtrong and as palatable as Madeira. The following is reckoned the beſt receipt for making it.

" Take new cyder from the preſs, mix it with honey till it bears an egg, boil it gently for a quarter of an hour (but not in an iron pot), take off the ſcum as it riſes, let it cool, then barrel it, without filling the veſſel quite full; bottle it off in March. In ſix weeks afterwards it will be ripe for uſe, and as ſtrong as Madeira. The longer it is afterwards kept the better."

Honey alſo renders hard crab cyder palatable. Colour and flavour are eaſily added. Honey from the flower of the buck-wheat may be made uſe of, if a dark hue is wanted.

There is every reaſon to believe, that currant, gooſeberry, and other home-made wines, treated in the ſame way, would equal what we are at ſuch an expence in importing from foreign countries. The art of making it, with the aſſiſtance of Father De San Martino's experiments on the fermentation of vinous liquors (ſee Dr. Scandella's Addenda to the Chapter on Manures) might ſoon be brought to ſuch perfection, as to make us independent on foreign nations for this important article.

* In gardens where ſhallots are ſown, to prevent the grub eating them, they ſhould be planted very ebb.

CHAPTER X.

WOODS AND PLANTATIONS.

THERE are no natural woods of any conſequence to merit attention. The plantations are in general intended as embelliſhments for gentlemen's ſeats, cover for game, or ſhelter from the blaſt, rather than with a view of ſupplying the country with timber, and preventing importation.

Towards the coaſt it is with great difficulty that wood of any kind can be raiſed: the tops of the trees, hedges, and even the corn in the fields (in general) bend towards the eaſt, as if ſhrinking from the weſtern gale, brought over the Atlantic ocean; yet, near the ſhore at Formby Hall, ſeveral acres of land have been planted with foreſt and fruit-trees, which are in ſo flouriſhing a ſtate as to afford general encouragement to the inhabitants of the ſea-coaſt, to fence againſt the wintry blaſt, and to raiſe wholeſome fruits for their tables. The foreſt trees were originally planted in holes when very ſmall, and were ſheltered by ſods from the winds till they had taken firm root in the ground. A mixture of rich ſoil and moſs was put with no ſparing hand beneath their roots. The Scotch fir, the ſycamore, the platanus, and the aſh, ſeem moſt congenial to the ſoil, which is of a ſandy nature, and are leaſt injured by the inclemency of the climate. In the northern part there are many acres of coppices cut down every fifteen years, and burned into charcoal. Toward the central part of the county there are ſome good woods; the timber healthy: there is alſo a conſiderable quantity grown in hedge-rows; but as ſun-ſhine is generally preferred to ſhade—timber wood ſeems on the decline. There are many excellent plantations about gentlemen's ſeats and pleaſure-grounds, well attended to, ſecured, and in a thriving ſtate.

Mr. Leigh Phillips obſerved, that the alder was of late years become an article of great conſequence, from the demand for its wood, which makes the beſt poles whereon to hang cotton yarn to dry, that wood acquiring a fine poliſh by frequent uſe, nor does it ſplinter by expoſure to the weather, and its bark alſo ſells at nearly one penny per pound, as an article for dye.

dye *. He added, that the alders planted on the ſide of the Duke of Bridgewater's canal, upon the looſe grounds, for a certain diſtance, by way of ſecurity to the banks, had not only anſwered the original purpoſe, but had proved a profitable plantation—the alder admitting of being cut down every fourth or fifth year. There are many acres of land, at preſent of little value, which, if planted with this wood, might probably turn to a good account.

The oſier willow is at preſent in ſuch demand for hampers, &c. and there is ſuch a ſcarcity of that article, that more than twenty pounds a year have been made out of a ſingle acre of land planted with it; and though very few acres are at preſent planted with them, there are ſome thouſands proper for their growth, but the management of them ſeems not to be underſtood at preſent.

On the ſea-coaſt there are ſome acres of land planted with foreſt-trees, which are flouriſhing and ornamental to the country. They were originally placed in holes (with a mixture of ſea-flutch and broken pieces of turf at their roots) four inches beneath the ſurface of the ground; and ſods were raiſed round them, to guard their tender ſhoots from the wintry blaſt. Its violence is leaſt injurious to the ſycamore, the aſh, the alder, fir, and platanus.—This obſervation is communicated by the Reverend Mr. Formby, of Formby, who has ſucceeded in raiſing plantations ſo near the ſea, that it was hardly thought practicable till he effected it.

* In Sweden they make beautiful tables of the root of the alder.

CHAPTER XI.

OF WASTE LANDS.

IN this county there are large tracts of waſte lands, not leſs than one hundred and eight thouſand five hundred acres, according to Mr. Yates's ſtatement, who took the pains to calculate the number for this particular purpoſe.—He makes the lands, under the denomination of moſs, or fen lands, to be twenty-ſix thouſand five hundred acres. Moors, marſhes, and commons, to amount to eighty-two thouſand acres. Why ſeek out diſtant countries to cultivate, whilſt ſo much remains to be done at home?

At Lancaſter there is an excellent ſalt marſh, adjoining the banks of the river Lune; and of which about 500 ſtatute acres belong to eighty of the oldeſt freemen of the corporation of Lancaſter, or their widows, and the truſtees of this charity, the corporation. This marſh is paſtured, and divided into what are termed *orl graſſes*; that is, a privilege of turning one horſe or two cows of any ſize to ſummer upon this common; ſo that a poney is reckoned equal to two oxen, however ſmall the horſe, or large the ox. The number of graſſes or gates is equal to that of privileged burgeſſes, namely 80, and two more to the truſtees of the charity, or 82 gates; and which, if let, are worth at preſent from £. 1. 10 *s.* to £. 1. 11 *s.* 6 *d.* per ſummer.—Seven years ago they would not let at twenty ſhillings a gate.

Now this marſh, if divided into fields of a proper ſize, is ſo fertile, that it would immediately be worth three pounds per acre; and, if improved, worth five pounds per acre per annum.

	£.	*s.*	*d.*	
The preſent value is 82 ſummer graſſes, at £. 1. 11 *s.* 6 *d.*	129	3	0	
And ſuppoſe the winter herbage worth — —	50	0	0	
Total — —				179 3 0

But,

			£.	s.	d.
But, if incloſed, its annual value would, at £. 3. per acre per annum, be —	—	—	1,500	0	0
		Exceſs	1,320	17	0
If improved, at £. 5. per acre, would be —	—	2,500 0 0			
		Exceſs	2,320	17	0

Such ſtatements cannot require any comment to recommend them to public attention, and that too in a neighbourhood of a town diſtreſſed for incloſed land; being bound up on one ſide by this marſh, and on the other ſide by a moor, which extends to the very borders of the town; a moor too, which manifeſts itſelf capable of being rendered fertile land, as is evident from ſmall incloſures under cultivation, which the induſtry of ſome cottager has improved from the waſte.

In the neighbourhood of Preſton lies Preſton Moor, about 500 acres of good land, and abounding with excellent marle, but which at preſent lies under water, which might be eaſily removed. Fullwood Moor, too, in the ſame neighbourhood, about 1000 acres, and Caddeley Moor, which belongs to the crown, with many more which might be enumerated, and which remain in a ſtate that diſgraces the county.

Many of theſe lands are incapable of tillage—ſome conſiſt of mountainous tracts, craggy, ſteep, and barren; theſe are employed for ſheep walks, though not the moſt fertile: others conſiſt of low ſwamps, overcharged with ſtagnant water; from which a ſufficient fall has not yet been diſcovered for draining them. Many of the waſtes are covered with underwood, and others have been planted with various kinds of foreſt trees. Sir Harry Hoghton propoſes to plant Withnell Moor, a tract of about eight hundred acres, with ſuch trees as upon trial ſhall be found to agree with the ſoil. Several parts are allotted out in what are termed dales, for the purpoſe of paring the ſurface for fuel—a pernicious practice, which injures the land, and affords but a very indifferent fire.

There are many thouſand acres capable of being cultivated, and made into either arable, paſture, or meadow land, of a very good quality, provided thoſe waſtes were incloſed, di-

vided, and improved; and, to effect this, there is neither want of inclination nor ſpirit amongſt the inhabitants. But there is a want of a general incloſure bill to facilitate that troubleſome buſineſs, and render it more expeditious and leſs expenſive.

A great improvement has been ſuggeſted by Mr. Wilkinſon, of Caſtle-Head, of embanking upon the ſands, and gaining thereby 30,000 acres. This great attempt has been already noticed in the Annals of Agriculture; but theſe patriotic and public attentions are at preſent defeated, by a difference of opinion amongſt individuals, claims of the lords of the manors, &c.

Mr. Wilkinſon alſo, by turning the courſe of ſome brooks, has recovered lands from the ſea; by which the flux of the tide, in the ſpace of about eight years, has raiſed the lands near ſix feet; ſo that, after the water is kept in narrower bounds, by the opening of a new channel, the tide alone does the work.

OBSERVATIONS ON THE EMBANKMENT OF LANCASTER SANDS.

"IT is a fact, conſonant to reaſon, and proved by experience, that when the courſe of a river where it enters the ſea, or rather tide mark, is turned another way into the ocean, the former channel, and adjacent ſand, is, from the perpetual influx of ſand, mud, &c. brought and left there by the tide, raiſed gradually, till, in the courſe of a few years, it becomes out of the reach of, at leaſt, ordinary tides; becauſe the freſh water ceaſes to prevent the accumulating of theſe materials, which it formerly did, by conſtantly removing them to the ſea.

"If that is the caſe, there muſt exiſt a poſſibility of recovering from the dominion of Neptune that extenſive tract called Lancaſter and Milthrop Sands; as alſo, part of the Ulverſtone, and Dudden or Millam Sands, by a diverſion of the rivers.

"The firſt queſtion naturally ariſing in the enquiry is, Whether an effectual removal of the rivers is practicable? and, ſecondly, Whether, in that caſe, the probable expence would not over-

overbalance the advantages that might be expected to ariſe therefrom?

" In regard to the firſt: an ingenious and reſpectable gentleman in that neighbourhood, Mr. John Jenkinſon of Yealand, had, for many years back, given the ſubject much attention, and minutely explored the track propoſed for the new channel of the Kent and other rivers running through the Lancaſter and Milthrop ſands, as pointed out in the plan. Some years ſince he communicated his ideas on the matter to Mr. Wilkinſon of Caſtlehead, a gentleman of fortune, patriotiſm, and univerſal knowledge. The ſcheme attracted the notice of Mr. Wilkinſon; he examined the ground, and was immediately ſtruck with the notion that it might be carried into execution without much difficulty. A ſubſcription was propoſed, in which Mr. Wilkinſon offered to lead off with 50,000*l.* if the neighbouring gentlemen would make up the reſt (having previouſly eſtimated the whole expence at 150,000*l.*) or, if they would begin with any ſum, he would produce the remainder, it being underſtood that each ſhould receive of the profits in proportion to his ſubſcription. The project being thus apparently pretty forward, a perſon was appointed to take the levels, &c. which he did; and his plans are now in the poſſeſſion of Mr. Jenkinſon, who alſo himſelf made an actual ſurvey of Lancaſter and Milthrop ſands, from whoſe plan I copied part of mine.

" Notwithſtanding theſe preparations, the projectors unfortunately met with ſuch oppoſition from the proprietors of ſome trifling fiſheries, who were nevertheleſs offered an indemnification for the loſs they might ſuſtain; and certain lords of manors, who, though they refuſed to contribute any thing towards recovering the ſands, were yet unwilling to relinquiſh any part of their claims to the ground when improved—that the matter was dropped at that time.

" The principal river to be taken off Lancaſter and Milthrop ſands is the Kent. I examined with attention the ground propoſed for the new channel, as marked in the plan, and found it remarkably adapted for the purpoſe. The whole length, where it runs inland, is a range of low moſſy or ſoft land, except a

ſmall tract of rocky or gravelly ground, the higheſt part of which is not more than 10 feet 5 inches above level; and I believe the average height of the whole cut would not exceed 3 feet 5 inches above level. In ſhort, I do not entertain a doubt of the practicability of diverting the courſe of the rivers, and taking them into the Loyne, below Lancaſter. The fall in that courſe is ſmall, yet ſufficient for the current of the water. Neither do I find a difficulty in believing that the ultimate conſequence would be the gaining a very large tract of ſand, which would become the fineſt land. This method of recovering ground from the ſea is now, where it is practicable, univerſally allowed to be a much ſurer, and often leſs expenſive, means than that of wholly depending on embanking on the ſand with any materials whatever.

" Whether it would be beſt to follow exactly the plan I have preſcribed, in diverting the rivers, is the province of an experienced engineer to determine. Equal knowledge and abilities are required to make a tolerably exact eſtimate of the expence in the execution of ſuch a deſign. I ſhall, however, from all the knowledge I could poſſibly acquire of the buſineſs, endeavour to make out an eſtimate, which may, at leaſt, convey a general idea of the ſcheme; but which, my inexperience in theſe matters bids me add, muſt not be too implicitly relied on in particular.

" Mr. Wilkinſon, as obſerved before, calculated the whole expence at £. 150,000; but in the opinion of many well-informed gentlemen 50 or perhaps £. 60,000 leſs might do. Various plans have been propoſed by different people; but it would ſeem beſt, in my opinion, to commence the work a little below Dallam Tower (as ſhewn in the plan) by throwing a bank of ſtone, or ſtone and bruſhwood, acroſs the channel there: plenty of theſe materials being at hand, on a common. The bank would ſerve for a road, and a bridge at the S. E. end would admit the freſh water. The ſand here is near thirteen feet deep, which it would be neceſſary for the ſtones to bottom; that would require little or no labour, more than tumbling in; as the weight of the ſtones and waſhing of the tide would ſoon bring them to the channel. This bank would

be

be about 880 yards long, and ſhould I believe be 7 yards high, 10 yards at the baſe, and 6 yards at top, and would conſequently contain 49,280 cubic yards, which, allowing each yard to coſt one ſhilling, would amount to £. 2,464. The bridge I ſhould ſtate at £. 1,000. The whole length of the cut from hence to the Loyne is about 21,340 yards: to contain the greateſt land floods it ſhould not, I preſume, be leſs than 34 yards wide, and the average depth 4 yards; the number of yards, upon that poſition, to be excavated, would, therefore, be 2,902,240, which at 4½*d. per* yard would coſt £. 54,417. Where rocks or high ground upon the coaſt renders it neceſſary to keep within the tide-mark, the earth to be taken out will form a bank on the ſea ſide of the cut. A number of bridges might be neceſſary to erect; however, till the profits of the land to be recovered ſhould enable the proprietors to build them of ſtone throughout, I ſhould propoſe temporary bridges of wood, except one, for the principal road; the expence of which we ſhall call £. 1,000, and that of the wooden ones £. 3,600.

" The next thing to be conſidered is the diverſion of Lindlepool, which might either be brought into the Kent, as ſhewn in the plan, or taken the contrary way into Cartmel ſands. In either caſe, as it is an inconſiderable rivulet, and the ground generally very low and ſoft, I ſhall not ſtate the expence at more than £. 5,300, including the neceſſary bridges.

" Afterwards, when the ſea had nearly embanked itſelf, it might be found convenient to raiſe ſand banks a few feet high, in order to keep off high ſpring tides: the expence of which, added to that of purchaſing ground for the new channels of the rivers, I ſhall ſtate at £. 13,000.

" Theſe ſands are the principal objects of attention, but ſhould their recovery be effected, it would be found very convenient, as well as practicable, to uſe ſimilar means in obtaining part of the Ulverſtone ſands. A bank might be thrown over the channel, as marked in the plan, with a bridge at the end of it, the freſh water then confined to the ſhore till it entered Ulverſtone moſs, through which an eaſy cut would bring it to the ſands again either at Plumpton Hall, or at the mouth of the new

canal, where there is plenty of rock at hand to ſecure it. At the latter place it might be of ſervice to the ſhipping, by opening the channel.

" By that operation, about 1,600 acres would be gained. Every expence attending which I eſtimate at £. 20,000.

" The acquiſition of at leaſt 4,600 acres may alſo be effected by the ſame means upon the Dudden or Millam ſands. A long ſtrip of marſh land extending along each ſide renders the taſk of diverting the rivers, comparatively, an eaſy one. The Dudden might be conveyed along the north ſide, and fixed, at its entrance into the ſand, with limeſtone rock: while the rivulet called Kirby-pool might with little obſtruction be taken down the other ſide, if we except the intervention of a little riſing rocky ground extending about an hundred yards. That, however, is no object in a work of ſuch magnitude. The whole expence of this undertaking I am perſuaded would not exceed £. 26,000.

Let us now collect the ſeveral ſums eſtimated:

Expence of the bank below Dallam Tower -	£. 2,463
Ditto of the bridge at the end thereof - -	1,000
Ditto of the cut from thence to the Loyne -	54,417
Ditto of the bridges over the cut - -	4,600
Ditto of ſand banks, and purchaſing ground -	13,000
Ditto of diverting Lindlepool - - -	5,300
Ditto of gaining part of Ulverſtone ſands -	20,000
Ditto of gaining part of Dudden ſands -	26,000
Intereſt of money ſunk, till the land to be gained becomes profitable; ſalaries of engineers, &c. with contingent expences, I ſhall call - - -	73,219
Total expences - - -	£. 200,000

The land that might reaſonably be expected to be gained upon the Lancaſter, &c. ſands, is -	Acres 32,510
Ditto upon the Dudden ſands - - -	4,600
Ditto upon the Ulverſtone ſands - -	1,600
Total number of acres -	38,710

" We

" We are now to conſider what benefits would accrue from the execution of the above projects.

" In the firſt place, a regular connection would take place between Lancaſter and Whitehaven, by a poſt road, which would doubtleſs be laid out between thoſe places; by which not only theſe commercial towns, but all the intervening country would be much benefited. Whereas at preſent, a perſon travelling between Lancaſter and Ulverſtone, Ravenglaſs, Whitehaven, &c. muſt either take a very circuitous rout through a wild mountainous country, or wait a precarious, dangerous paſſage over the ſands. A reflection on the number of unfortunate people, who are annually loſt in croſſing theſe deceitful ſands, touches the nerve of humanity. That dreadful circumſtance would be remedied by baniſhing the tide. But although the philanthrophic mind may conſider theſe matters as great grievances, others may look upon them as provincial evils only, and the effects of their removal equally confined. Another advantage that would take place would be more univerſally felt. Here are tracts of ſand containing 38,710 acres, which at preſent, inſtead of being beneficial to the community, are a general nuiſance. If this land could be recovered by laying out the ſum of £. 200,000, it would be a purchaſe of £. 5. 3 *s.* 3 ¾ *d. per* acre of land, which, I preſume, by the time all the money was paid, would be worth £. 40 *per* acre, conſequently a clear gain of £. 1,348,400.

" This would not be like a transfer of property, where one party loſes what the other acquires. It would be a property really gained, the produce of which (whoever were the immediate poſſeſſors) would expand itſelf, on every ſide, to a great diſtance; and by cauſing an increaſe of proviſions, muſt proportionably affect the price; whereby thouſands of poor families would find an additional morſel to their daily pittance, excluſive of the employment it would afford them in the execution.

" In hopes a little farther ſuggeſtion may not be offenſive, I ſhall obſerve, that, ſhould the project be attempted, it would be prudent, or rather neceſſary, after it is aſcertained in whom the preſent property of the ſands abides, with the aſſiſtance of parliament, to require the proprietors either to contribute their quota

quota towards the expence of obtaining the ſame, or for ever to forfeit their right thereto, which ſhould be transferred to the firſt who offered to make good the ſubſcription.

" As Mr. Jenkinſon, mentioned before, is perfectly acquainted with the place, and nature of the ſcheme, he would be a very proper perſon to apply to by any gentleman, wiſhing to have a further knowledge of the ſubject, in any particular."

MOSSES.

IN the pariſh of Eccles, is a large tract of moſs land called Chat Moſs, lying between the townſhip of Worſley and the navigable river Irwell, containing ſome thouſand acres; and on the ſouth ſide the river is another piece of land called Trafford Moſs, which adjoins to the park of John Trafford, Eſq; and contains about 500 ſtatute acres.

Theſe lands, which have hitherto been totally uncultivated and of no uſe whatever, except that of ſupplying the neighbourhood with peat or turf for fuel, are advantageouſly ſituated for improvement. The country round is populous: Chat Moſs approaches within ſix miles, and Trafford Moſs within three miles of Mancheſter. The Duke of Bridgewater's canal divides Trafford Moſs, and terminates at ſome diſtance in Chat Moſs. The lands lie upwards of thirty feet above the bed of the river; and materials for improving them, when drained, are found in many parts of the neighbourhood.

The nature of moſs lands is too well known to require any deſcription—they have probably originated from pools of water fed by adjacent ſprings or rain, which from the peculiar conformation of the ſtrata below, have not been able freely to trace a ſubterraneous paſſage, and have become ſtagnant. In courſe of time, theſe pools admit of vegetation of various kinds, which having annually ſubſided, afford a proper ſubſtance for the nutriment of ſuch other plants as are uſually found in theſe ſituations,

ſituations, which, beſides the various ſpecies of moſs, the growth of ſome of which is aſtoniſhingly rapid, are the *erica vulgaris*, the *ornithogalum luteum*, and the different ſpecies of *eriophorum* or cotton graſs.—As theſe plants decay and depoſit their ſubſtances, a conſiderable addition is yearly made to the moſs, in cutting a ſection of which it is not difficult to perceive, and to divide from each other, the vegetation of each year, which appear in lamina growing more indiſtinct, hard, and coheſive, according to the depth of the moſs. The plants before-mentioned, and particularly the moſſes, ſeem to find their proper nutriment in their own ruins, and grow more luxuriant as the ſubſtance of the moſs increaſes; at length the whole takes the appearance of a large fungus or homogene vegetable: continuing to increaſe, it at length riſes greatly above the level of the adjacent lands, till the weight of the ſurface becoming too great to be ſupported by the ſpongy ſubſtance below, it begins to overflow its banks, and cover the adjoining grounds, as happened of late years at Solway Moſs, and was formerly the caſe at Chat Moſs, a great portion of which detached itſelf into the Irwell; and, if we may believe our ancient chroniclers, was carried by the Merſey into the Iriſh ſea.

In the year 1793, Mr. Wakefield, and Mr. Roſcoe of Liverpool, undertook the improvement of theſe lands, and a contract was entered into with the proprietor, Mr. Trafford, for a leaſe of them for a term of years under a yearly rent. An act of parliament was obtained, enabling the proprietor to leaſe the ſame; and the improvement of Trafford Moſs was immediately begun by interſecting it with drains at ſix yards diſtance, which opening into wider drains at one hundred yards diſtance, convey the water ariſing from the moſs into the river Irwell.

In cutting theſe drains, one precaution has been found of the utmoſt importance. If the drain be cut to its intended depth at one operation, it will be impoſſible to prevent the ſides from falling in, and no labour can afterwards effectually repair the damage.

It is highly neceſſary, therefore, to attend to the nature and conſiſtence

conſiſtence of the moſs, and not to cut deeper at one time, than will ſuffer the ſides to remain perfectly firm. The method adopted on Trafford Moſs is, to open the drain at the firſt cut only about one foot deep, which is thus left to drain, and at proper intervals is cut again till it is three feet deeper, and about eighteen inches wide; by theſe means the ſides of the drain become not only hard and finer, but are perhaps of all other materials the moſt durable, being unaffected either by moiſture, froſt, or ſun. When the drain, thus cut, has remained ſo long as to have become tolerably dry at the bottom, a narrow drain is opened in the middle of it with a ſpade, about five inches wide and eighteen inches deep, which thus leaves a ſhoulder of about ſix inches on each ſide, intended for the ſod or turf, with which the narrow drain is covered, to reſt upon. The narrow or ſplit drain is then carefully cleaned, and covered with the firſt ſod cut from the drain, the ſurface or ſwarth being turned downwards; and the whole is then covered up ready for cultivation. A conſiderable part of Trafford Moſs is thus drained, and the reſt is interſected with drains at ſix yards diſtance, a great part of which will be covered in the preſent year. In conſequence of theſe operations, the moſs has ſunk conſiderably, and acquired a great degree of ſolidity.

This operation being completed, the ſurface of the moſs is to be levelled, and the ſod turned under, which may be done either by the puſh-plow, or the ſpade, both of which methods have been tried at Trafford; but the latter, though a more expenſive operation, is thought to be preferable, as the tough ſod is thus effectually covered, and a ſurface produced, which admits more readily the operation of the air, and more eaſily mingles with the materials employed in the propoſed improvement.

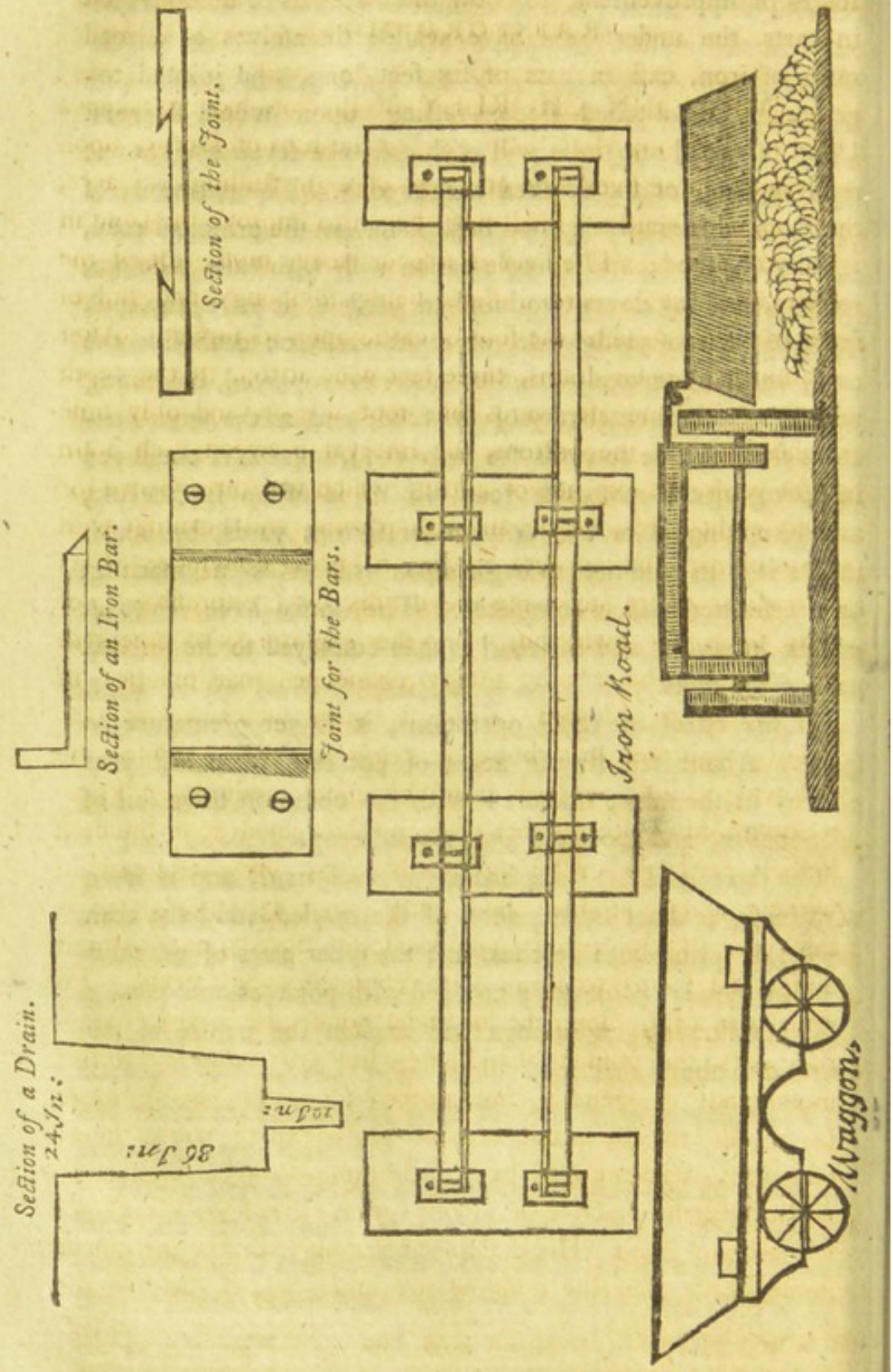
The materials which have hitherto been chiefly tried, are ſand and marl, both of which are found at the ſouthern extremity of Trafford Moſs, the latter of an excellent quality. Theſe have been uſed together (laying on the ſand firſt), and ſeparately, and it is expected the effect of each will, in ſome degree, be aſcertained in the courſe of the preſent

ſent year. The land not being ſufficiently hard, in the firſt ſtages of improvement, to allow the materials to be conveyed in carts, the undertakers have availed themſelves of a road made of iron, caſt in bars of ſix feet long, and jointed together by dove-tailed ſteps, reſting upon wood ſleepers. Upon this road one horſe will with eaſe take ſeven waggons of marl or ſand, of ſix hundred weight each. The extremity of the road, where it diverges on each ſide from the principal road, is daily changed; and a ſingle perſon will, with eaſe, take up, remove, and lay down two hundred yards of it in a day. A ſpace of ſixteen yards wide, or eight yards on each ſide the road, is then covered with the materials employed, beginning with the furtheſt extremity of the road, and as the work proceeds from thence towards the main road, a perſon is employed in taking up the moveable road, which is of no further uſe, and removing it to the diſtance of ſixteen yards, by which means it is in readineſs to begin upon as ſoon as the marling, or the former road is completed. The horſes have relays at proper intervals, and the marl is thus conveyed to the furtheſt part of the moſs.

Of the effect of theſe operations, it is yet premature to ſpeak. About ten ſtatute acres of potatoes were laſt year planted in the moſs, manured with the common town ſoil of Mancheſter, and produced a very good crop.

The ſame land has ſince had a cover of marl, and is ſown with barley; about twenty acres of the marled land have been ſown this ſpring with vetches, and the other parts of the moſs in cultivation are principally cropped with potatoes and oats.

The following engravings will explain the nature of the operations above deſcribed.


Section of the Joint.
Section of an Iron Bar.
Joint for the Bars.
Iron Road.
Section of a Drain.
24 In.
10 In.
36 In.
Waggon.

RAINFORD MOSS.

MR. JOHN CHORLEY of Preſcot, having taken a part of Rainford Moſs, belonging to the Earl of Derby, upon a leaſe of three lives, and at a rent of eight ſhillings *per* acre, *per annum*, beſides a ſmall fine, began to improve the ſame in the year 1780. The land is a poor barren moſs, not of the leaſt value in its natural ſtate, being ſo ſpongy and full of water, as not to admit the foot of cattle upon its ſurface. After draining, by open drains, three feet wide at top, to the depth of two feet, and afterwards one foot deeper, and only nine inches broad at the bottom, the interval between each drain eight yards, the expence of cutting which was three-pence for every eight yards, he began with pareing and burning, with crops of oats, barley, and clover; till being convinced of its *deſtructive effects* (to make uſe of his own expreſſion) not only upon his own, but from the experience of others in the neighbourhood*, he totally abandoned that practice in 1787, and has adopted (amongſt others which he has regularly regiſtered in a book he keeps for that purpoſe) the following courſe, copied from his memorandums. Potatoes with dung, for the firſt time, produce about four hundred buſhels *per* large acre of eight yards; next year potatoes again without dung—produce about three hundred buſhels. He is this year (1795) trying potatoes for a third time, without dung, and ſeems to ſpeak with confidence of ſucceſs. To return, in 1789, upon the lot under notice, he ſowed Tartarian oats, the produce handſome—but Mr. Chorley thinks moſs lands in general not proper for grain, being more favourable to the production of graſs, which comes ſpontaneouſly, if encouraged by a little dung—and he intends to diſcontinue the practice of ſowing grain; he ſows his clover without any grain. His practice at preſent is to ſow the clover immediately after the potatoes are taken up, if early in the

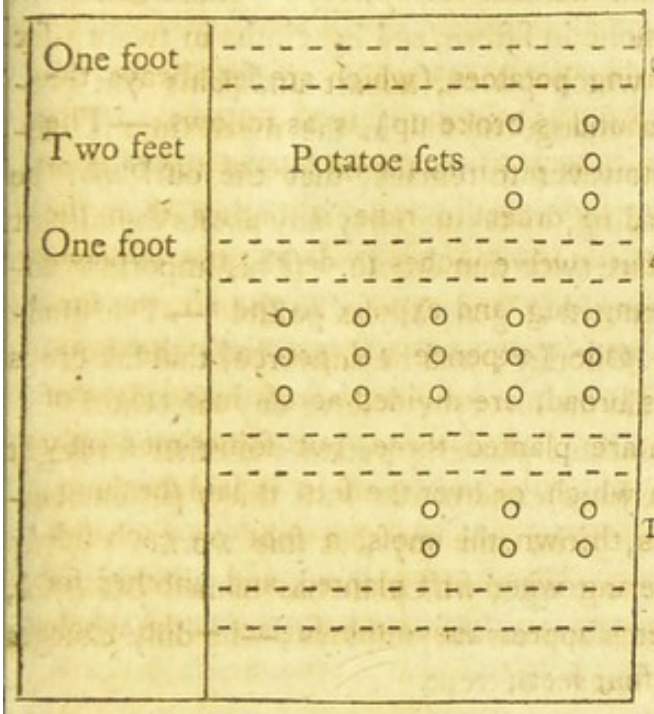
* The land he has improved without paring and burning, certainly has a ſuperior appearance to that of his neighbours, who continue the practice; but that may be owing to their exhauſting the land by too many crops of corn after they have pared and burnt.

ſeaſon. Along with the oats was ſown clover, and in 1790 two handſome crops were taken; 1791 mown, afterwards marled, about one rod of ſixty-four cubic yards, laid upon an acre; 1792, 1793, and 1794 mown. The eddiſh was not eaten off, but harrowed and raked away in the ſpring, and uſed as litter for horſes.

His manner of planting potatoes (which are ſet always the firſt year when the ground is broke up) is as follows:—The moſs taken from the drain is put into the middle of the butt or ridge, and dug under, in order to raiſe it higher than the ſides. The ſpit is about twelve inches in depth, the expence 7*d. per* rod.—After being dug and expoſed to the air, the ſurface is broken with a ſpade (expence 2*d. per* rod) the butts or plots, of eight yards broad, are divided acroſs into ridges of two feet, acroſs which are planted three, but ſometimes only two potatoe ſets, upon which, or over the ſets, is laid the dung; and over the whole is thrown the moſs, a foot on each ſide being reſerved for covering when firſt planted, and another for covering when the ſtems appear above the ſurface—the whole breadth of each being four feet.

The whole will be beſt underſtood from the following ſketch:

PLOT or FIELD of 8 Yards.



The expence of draining, digging, dung, planting ſets, &c. for an acre of potatoes, he eſtimates at £. 50 *per* acre, but thinks he is repaid the whole in the courſe of three crops.

Mr. Chorley has about thirty large acres under cultivation, about ten more ditched out, and about twenty acres under potatoes.—He prefers good horſe or cow-dung * to marl, which he thinks ſhould not be laid on till after two or three crops—after it has lain ſome time under graſs, it begins to run wild, and requires turning over again.—By a change of his potatoe ſets from this moſs, to his old incloſed lands, Mr. Chorley preſerves his crops from the *curl*.—His ſets are become famous on that account, and readily purchaſed for the purpoſe of planting by his neighbours.

It is with regret we add, that the curl is a general com-

* The dung brought from Liverpool coſts him 10 *s.* 8 *d.* *per* ton when laid down upon the moſs.

plaint

plaint this year (1795); that there is greater appearance of this diſeaſe amongſt the potatoe crops than have been obſerved for ſome years paſt.—Recourſe muſt at laſt be had to the ſeed, for renewal;—bulbous roots, it has been found by experience, decay after a certain number of years—"Ranunculus in "twenty-five, anemone in fifteen, and hyacinths in twenty-ſix "years *." After which period, no art and pains can preſerve them, though a change of ſoil in the mean time is uſeful. It is proper however to remark, that the curl may be prevented from ſpreading, by taking away any plants the inſtant they ſeem to be affected with that diſeaſe. This important diſcovery ought to be known as generally as poſſible.—The queſtion was put to Mr. Chorley; and he anſwered, that his crops appeared clear, nor did the ſurveyor obſerve any infection.

He propoſes to continue planting potatoes another fortnight from this date (15th June) and has at leaſt thirty perſons employed, men, women, girls, and boys, at this work.

He has built nine cottages, which he has named *Cheapſide*, as habitations for the labourers he employs;—he only charges them with 20*s.* *per annum* of rent.

Profit from improving Waſte Lands.

Bootle Marſh, in the neighbourhood of Liverpool, was let before being improved at ten ſhillings per acre, and is now worth about £. 3.—Trafford Moſs was formerly not worth one ſhilling per acre; but ſuch of it as has been drained, is now reckoned worth about £. 3 per acre per annum.—Bolton Moor, after an act of incloſure in 1793, was divided into lots, and only 170 ſtatute acres was diſpoſed of for the immenſe ground rent of £. 2,600 per annum. But it was in ſome meaſure intended for building. Some of the lands in this moor have ſince been cultivated. One incloſure was covered about two inches with ſoil; ſown with vetches, without ploughing. An excellent crop. White clover ſown amongſt the vetches. The preſent year (1795) a very good paſture. In 1794, incloſures of 12 ſtatute acres produced 600 buſhels of oats, Win-

* See Madox's Floriſt's Directory, p. 91.

cheſter,

cheſter, which ſold at 3*s.* 6*d.* per buſhel. Cultivation, one furrow, manure, a compoſt of lime and earth. 4,000 buſhels of potatoes grown upon this moor 1794. Before incloſure, the ſurface of inſignificant value for paſture. Produce only coarſe bent graſs. Under ſtratum, clay, from which bricks were made.—Dean Moor lies contiguous, about the ſame ſize, and nearly as valuable; and near Bolton alſo there are other moors, capable of being improved at no very conſiderable expence, and rendered worth four pounds per acre.—Kearſley Moor is very extenſive, ſome bad, and ſome exceeding good land; moſt of it capable of cultivation, and contiguous to marle and lime. At preſent, being overſtocked, the cattle ſtarved, and of little advantage to the owners.—An act has been obtained for incloſing Edgworth Moor the preſent ſeſſions. But the vexatious trouble attending this work, operates as powerfully as the expences of obtaining the act. If incloſed and improved, it would add much to the produce of this county.

Whitworth Moor alſo, near Rochdale, a very large tract, is capable of improvement, and of being rendered good land.

Many of the moors, if only incloſed (which, in their preſent ſtate, are of little conſequence) would immediately become of very conſiderable value.

CHAPTER

CHAPTER XII.

IMPROVEMENTS.

SECT. I.—*Draining.*

THERE has been much draining done in many parts of the county; but there remains much ſtill to be done: but the ſpirit is gone forth, and the good effects are evident, ſo much ſo, that in many inſtances that have been mentioned, the land has been ſo far improved, as to repay the coſts by the ſuperior crops which followed this improvement, even the very firſt year, after the work was executed.

All draining is trifling, in compariſon of the practice of Mr. Elkington, of Prince Thorp, near Coventry, who is now employed in many parts of the kingdom with ſurpriſing ſucceſs.

The moſſes in general might be effectually drained, and at a ſmall expence, were the ſprings that feed them cut off and carried away from the high lands before they reach the moſſes. Mr. Elkington has improved ſeveral as above, and rendered the lands of great value.

Were Mr. Elkington's principles of draining made public, this county would in particular be benefited by his diſcovery.

"The cheapeſt and moſt effectual method of improving "moſs lands, as Mr. Taylor juſtly obſerves, is that practiſed "by Mr. Elkington, who diſcovers and carries off the ſprings, "that cauſe the bogs."

His ſyſtem is ſo ſimple and ſo rational, that it ſtrikes with immediate conviction. As the Board is already in poſſeſſion

of the principles of his mode of draining, it is unneceſſary to dwell longer upon the ſubject. One example of its importance, however, it may not be improper to give, though on a ſmall ſcale. A ſingle drain in a field of four acres of the large meaſure, was calculated to coſt four pounds. The advantages to be derived might be reaſonably eſtimated at not leſs than eight pounds per annum upon that field alone; but its beneficial effects probably extend beyond the limits of one ſingle field; to what extent, further experience will prove. The ſource of a wide ſpreading evil is thus, with one ſtroke, diverted into another channel, and its bad effects totally cut off.

J. Wilkinſon, Eſq. on the borders of the county, has drained to the amount of 1,000 acres of fen lands; Warton Moſs has alſo been drained. Trafford, and a large part of Chat Moſs *, are taken by Mr. Wakefield and Mr. Roſcoe, on a long leaſe, with intention to drain. Near one hundred acres are already cut upon Trafford Moſs, upon which Mr. Wilkinſon's plan is purſued, of making uſe of the materials upon the ſpot; cutting through the moſs at different intervals of time; by which is given opportunity for the water to eſcape, the ground to acquire more firmneſs, the walls to grow harder; and as the ground would otherwiſe cloſe, at a diſtance from the bottom, a large ſhoulder is left, whereupon a lintel is to reſt, cut from ſome ſolid turf, about 18 inches in length, and 9 inches ſquare, and which, being expoſed to the ſun and air, contracts its dimenſions to nearly one half, acquires firmneſs, hardneſs, and ability to ſupport the matter with which the ſurface of the drain is covered.

The fens or moſs lands thus drained have acquired ſolidity, and become fertile meadow, and corn lands; and, in conſe-

* "Chartley-More braſt up within a mile of Morley-hall, and deſtroyed much grounde with moſſe thereabouts, and deſtraid much freſch water fiſch thereabouts, firſt corrupting with ſtinking water Glaſebrooke, and ſo Glaſebrooke carried ſtinking water and moſſe into Murſey water, and Murſey corrupted, carried the rowling moſſe part to the ſhores of North Wales, part to the Ile of Mann and ſum into Ireland. In the very topp of Chartley-More, where the moſſe was higeſt and brak, is now a plane valley as was in tymes paſte, and a rille runneth in hit, and peaces of ſmaul trees be found in the bottom."

LELAND, Vol. VII. p. 49.

quence of the drainage, have ſunk ſome feet lower *. Warton moſs, and Mr. Wilkinſon's, are become very rich meadow and paſture land.

The only effectual means of ſpeedily forwarding irrigation throughout the kingdom, to the utmoſt extent, would be to eſtabliſh a company of able practitioners in that line, to whom individuals could apply for advice, to direct the works in the beſt and moſt effectual manner, or who would undertake to compleat the whole for certain ſums *per* acre, according to ſituation, &c.

If the above aſſiſtance could be eaſily obtained, there is no doubt but that thouſands of acres would be turned to that moſt valuable mode of management, in the courſe of a very few years.

The ſame may be ſaid of draining, and were Mr. Elkington's (or any, if poſſible, other ſuperior mode) made public, and a company able to direct, formed, there would not appear in this county ſo many thouſand acres of moraſs, within a very ſhort period.

There is a variety of drains beſides the above; a piece of peat, the uſual ſhape and dimenſions of the common turf, has been made uſe of, after piercing the turf with a kind of punch when wet, by which a hole is left about three inches ſquare, a little arched at the top in this form  , and after being hardened in the air, the two pieces of turf are placed ſide by ſide. For this the Agricultural Society at Mancheſter rewarded the inventor with a premium.

Common brick, with thin ſlates at the bottom of the drains, have been frequently uſed. A double brick, with a hollow through the middle, is an article cheap, ſoon made, durable, and ſufficient for the purpoſe. Broken ſtones have been frequently uſed, laid looſe and open, the drain firſt cut in this form  , and filled up as far as the dotted line. But the

* Mr. Wilkinſon's moſs is, in ſome parts, ſuppoſed to be ſunk ſix feet lower :—before the drainage, the windows of the third ſtory of Mr. Wilkinſon's houſe juſt appeared from a certain point; but from that place, at preſent, the windows on the firſt floor are plainly ſeen.

Since writing the above, Mr. Wakefield obſerves, that an actual meaſurement has been made, and the fall of the moſs is about four feet and a half.

cheapeſt

cheapeſt are the ſod drains, made by T. B. Bayley, Eſq. of Hope near Mancheſter. The implements and manner are particularly deſcribed in Dr. Hunter's Georgical Eſſays. I viewed the drains, which have already ſtood twenty years. The entrances have generally a fence of brick, or ſtones, to ſecure them from the feet of cattle. This work is performed at ſixpence per rod: men were employed in cutting new drains when this well-managed eſtate was ſurveyed.

More attention ſhould be paid to draining marle-pits than is generally practiſed; the ſtagnant water frequently overflows, and ſtarves a large ſpace of land, till its effects are deſtroyed by ſome ditch, &c. which cuts off the nuiſance by carrying the water off *, but the draining of the pits not only removes this evil, but is the means of gaining a conſiderable ſpace of ground.

A good practice, by S. Fazakerly, Eſq. ſhould be noticed. When fall ſufficient into the main drain, to take off the water from ſome particular ſpots, is not afforded, he ſinks a kind of well where the ſpring ariſes, the ſide of which he ſecures by ſtones or brick, and thus collects the ſtagnant water into one point, and by this means he can get rid of it. Mr. Bayley of Hope mentioned an improvement upon this mode, namely, an auger-hole has been found effective if properly applied.

Mr. Eccleſton has applied his miner, this preſent year, for the firſt time, with apparent ſucceſs. The ſurveyor walked over a field where the miner had been drawn through certain intervals, only once; the run of water was not trifling, and the ground ſeemed firm.—The expence of this operation is very inconſiderable.

Obſervations on the BRICK TAX, *by* T. B. BAYLEY, *Eſq.*

"Very important and *extenſive* ſchemes of draining *moſſes*, &c. in this county are projected, and depend on taking off this tax; and I have frequent applications on the ſubject, as the ſeaſon for making bricks approaches. The preſent ſeaſon muſt ſurely convince every man who has eyes to

* J. J. Atherton, Eſq. has done much in this way.

ſee, that a ſpirited agriculture muſt be our final and beſt reſource. Perhaps the moſt ſimple mode would be to allow a drawback of the duty for bricks uſed in draining; though I have a great objection to the principle of drawbacks, as temptations to fraud—*effected* by *perjury*.

"From the quantities of rain which fall in Lancaſhire, and the nature of our ſoil in general, draining is, of neceſſity, the *firſt* requiſite ſtep to improve our lands. Moſt parts of the county have not any *ſtone*, and the tax on *bricks* has operated as a *total prohibition* of *their* uſe in draining. This circumſtance has been of the greateſt poſſible diſadvantage to our agriculture, and was communicated by our county members and other gentlemen to adminiſtration laſt year, when the new duty was laid on bricks. The repreſentation was kindly received, and attended to—The impolicy of obſtructing the *means* of national improvement, eſpecially of its agriculture, was ſeen and acknowledged by the ſecond ſection of the 34th Geo. III. chap. 15. But the great ſize and preſcribed ſhape of the *tile* or brick for draining, effectually prohibits its uſe, and takes away the indulgence meant for us.

"A common brick of the uſual ſize and ſhape is, on every account, beſt adapted for *draining*, as it forms the *bottom*, the *walls*, and the *covering* of the drains *; and I really think the revenue would not be injured, if the legiſlature was generally to exempt bricks made for the *expreſs purpoſe of draining* from the tax. To prevent frauds and abuſes, perſons might be ſtill obliged to enter their bricks at the exciſe office, and to pay a ſmall duty of three pence per thouſand to defray the expence of the officer's attendance, and be ſubject to a *very heavy penalty* for applying thoſe bricks to any other uſe or purpoſe than that of draining; they might be further required to certify to the exciſe officer the time, place, and manner in which theſe bricks are uſed.

"The uſe of ſo bulky a material as brick cannot be eaſily *ſmuggled*; numbers muſt be privy to it, and the fear of detection, and of a heavy penalty on the owner and *workmen*, would,

* *Bricks* are chiefly uſed in main drains, or ſoughs laid at conſiderable depths, and have ſtrength to bear a weight of earth which tiles have not.

I am

I am perſuaded, *totally* prevent all illicit attempts to defraud the revenue.

" Should not this ſimple expedient be adopted, perhaps ſome irregularity in the ſides, ends, and alſo the ſurfaces of the draining bricks may be deviſed, which might not at all unfit them to form the *bottoms*, *walls*, or *coverings* of a drain, and yet render their uſe in building difficult or impracticable, as A

" This circumſtance is worthy the IMMEDIATE attention of the Board of Agriculture as a *national* concern.

" Or perhaps, on producing a certificate of the bricks uſed in draining, farm culverts, &c. to the collector of exciſe, the brick duties may be repaid; inſtead of the brick duty (which is a VERY *unequal* impoſt) it has been ſuggeſted to lay a tax *per* foot on all houſes and walling of every deſcription, calculated on the *mean* numbers of bricks ſuppoſed to be uſed, and applied to *every ſort of material*, *always* excepting cottages and dwellings for the *labouring poor*. The exceſſive brick tax is a ſtrong temptation to builders to erect ſlight and *dangerous* edifices, which would be obviated by the above regulation."

SECT. 2.—*Of paring and burning.*

ON the moſs-lands, where paring and burning is practiſed, both ſeed time and harveſt is very late, owing to the uncertainty of the weather; if wet, the burning proceeds but ſlowly, the ſeed time is conſequently retarded, and the crops are by theſe means ſo late as to become precarious, from the advanced ſeaſon, being frequently expoſed to froſts and ſnows. If the barley from the moſs lands be well houſed, it is in high eſtimation, and fetches an advanced price from the farmer, who prefers corn raiſed upon thoſe lands for his ſeed. Mr. Eccleſton ſowed one year a field of barley about the middle of June, which he houſed the following year, January 1; and this crop was all eagerly purchaſed by the farmers, in the next ſpring, for ſeed corn.

Paring

Paring and burning has been too much practiſed *, its deſtructive effects are but too apparent upon many farms where it has been frequently repeated. Great crops may have been procured, by this means, for a few years; but the ſoil in the end is deſtroyed. Upon ſtrong bent, heath, fungous moſs, matted ruſhes, or turfy peat lands, the practice may be good, and if only repeated till thoſe bodies are deſtroyed is attended with ſucceſs.

Paring, with the burning, is a laborious and troubleſome mode of cultivation; its ſucceſs depends upon circumſtances, and one crop out of three is, in many inſtances, the amount of what may be expected to be reaped in ſecurity. After the ſods have been dried and burned in ſmall heaps, the aſhes are ſpread upon the ground whilſt yet warm, and the ground ploughed, ſowed, and harrowed in immediately, if the weather permit. If the aſhes get wet or grow cold before this operation can be effected they are injured.

Among thoſe who have much diſtinguiſhed themſelves by their exertions in draining, and other improvements, James Okill, Eſq. Lee Woolton, merits being noticed in the Lancaſhire Report. By draining and marling he has improved the value of the eſtate he occupies (about 60 acres, of 8 yards to the rod) to the increaſed amount of 30*s.* per acre per annum, ſince the year 1780. The advance of the value of land, in this ſpace, is, to be ſure, to be taken into the account. This eſtate was gone over the 9th of June, 1795, and is in excellent condition. Above 1000 yards of under-draining with ſtone was completed in a very ſufficient manner the year 1794.

At an expence of ſix ſhillings per rod of 8 yards, what a ſaving might have been made by Mr. Elkington's mode! Mr. Okill has filled up and drained ſeveral old marle pits, and gained, by this method only, ſome acres of land. It may deſerve notice, that Mr. Okill ſtepped forward, contrary to the advice of ſome of his more cautious and timid neighbours, and gave excellent anſwers to moſt of the agricultural queſtions.

* Paring and burning is not practiſed in this county for green crops, but for grain.

SECT.

SECT. 3.—*Of Manuring.*

MARLE is the great article of fertilization, and the foundation of the improvements in the agriculture of this county; and this earth, or foſſil, is fortunately wanting but in few places. There are ſeveral kinds of this article, valuable in proportion to the intrinſic quality of each, or the calcareous matter which it contains, or the nature of ſoil to which it is applied. To the ſtiff clay lands, the blue or reddiſh ſlate marle, full of calcareous earth, is more beneficial; but to the light ſand lands, the ſtrong clay marle is more genial. Thus not only a calcareous ſtimulus is given, but additional matter is afforded, to correct the nature of the ſoils, by looſening the texture of the one, or giving adherence to the particles of the other, by the oppoſite qualities of the different marles applied. Barren ſand lands, and poor heaths, in the ſouth of this county, have been, under the effects of marle, rendered productive, but this has been done at no ſmall expence *.

Of the beneficial effects of marle let the following fact, amongſt many hundreds that might be produced, ſerve as a convincing proof.

There was a ſandy loam land, exhauſted by repeated ploughing, under the worſt ſyſtem of management. Major Atherton took the land under theſe circumſtances into his own poſſeſſion. After a four years lea, and the land well dunged, he gave a coat of marle, carted the diſtance of more than a mile at conſiderable expence, and laid on to the amount of 7½ rods to the acre, of eight yards to the rod. The ſummer following a crop of oats was taken, and the enſuing year the ground was ſpring-fallowed, dunged, and cropped with turnips, which were repeatedly hoed; after which, in 1793, five acres of the large meaſure were cropped with barley, the produce of which was 552 buſhels to the maltſter, ſold at 5 *s.* 2 *d. per* buſhel, beſides 24 buſhels of ſmall corn dreſſed out, (a very ſmall

* Improving, marling, and fencing, of Bootle marſh, coſt 22 *l.* 14 *s.* 1 *d per* acre, of eight yards to the rod.

proportion

proportion to the quantity) and beſides the tythe, which is an eleventh of the whole. It ſhould alſo be noticed, that the buſhel by which it was meaſured was the Liverpool buſhel of 36 quarts, which being reduced into Wincheſter buſhels, and the tythe added, with 24 buſhels of ſmall corn, the total amount would be 706 Wincheſter buſhels, or 141 buſhels *per* acre, including the tythe, and value *per* acre 31 *l.*

The average produce of American lands, is ſaid to be ten buſhels wheat *per* acre.—*Information from Mr. Cooper, late of Manchester.*

At Knowſley Hall, in the year 1794, 92 buſhels of wheat, of 70 lb. to the buſhel, were reaped from one acre of land, of 8 yards to the rod; after a crop of pink-eye potatoes of near 700 buſhels to the acre. Mr. Warling (the ſteward) ſeemed to think, that if the land had been previouſly marled, the land would have given 20 buſhels *per* acre more. Sort of wheat, ſouth cone.

Theſe are two rare inſtances, and more than double the common average of either diſtrict; but may ſerve as a proof what ſuperior culture is capable. Marle has been tried as a manure after being burned, which may be in a kiln after the manner of lime, or laid over a gutter, under which faggots, &c. for fuel, have been previouſly laid. It has alſo been burned in a common oven, and been found to anſwer at about ten buſhels *per* ſtatute acre, after being bruiſed into a kind of powder, and ſown with the hand as a top dreſſing. Marle is an excellent improver of the ſoil, under ſo many different circumſtances, that it cannot be recommended too often, nor praiſed beyond its real merits. It adds to the ſtaple of the ſoil, and improves its quality, and renders manure, of whatever kind, more effectual, with leſs in quantity; it will admit a repetition of the proceſs, with equal advantage, again and again. In ſhort, ſo far as experience proves in Lancaſhire, it ſeems the grand baſis whereon every agricultural improvement ſhould be eſtabliſhed.

The ſummer is the beſt ſeaſon * for laying marle upon the land,

* Where there is a dry head of marle, the winters in which there is a long froſt is the propereſt time for marling, as both men and horſes are leſs

land, ſometimes immediately after a crop of hay has been taken. Its effects upon the graſs are ſoon viſible, from the rich verdure which it produces. Long experience has ſufficiently proved the propriety of the general practice of the county; which is, to lay the marle upon graſs lands—the older the better; the ſward and graſs united cauſes a fermentation and putrefaction, which ſeems neceſſary to produce a proper effect.

The quantity laid on is from two to three, or three and a half, cubic roods of 64 yards to every ſtatute acre; the expence of which is, according to the diſtance carried, if in the ſame field, or within the diſtance of ſixty rods, on the average, at about eight pounds *per* acre. It is reckoned a much better practice to have the marlings repeated, with a gentle covering, than a ſtrong thick coat of marle, which is intended to laſt a number of years. If theſe dreſſings of marle were repeated more frequently (and no huſbandry has been found to pay better), the lands in Lancaſhire, in general, would be found much more productive.

The marle ſhould partake both of one ſummer's ſun, and one winter's froſts, at leaſt. After being expoſed to the effects of the weather, in large lumps, it begins to fall, or melt; the particles appear unctuous and ſoapy, and the quality of the ſubſtance ſeems quite changed from its original ſtate. Then, in the enſuing ſpring, it ſhould be divided (the parts now ſeparate with eaſe), and equally diſtributed upon every part of the ſurface, this is, with facility, effected by harrows, &c. after which it is uſually ploughed under; but, if permitted to remain a year or two longer, the lands would be more improved in the iſſue, by the length of time given previous to the marle being ploughed in. But the marle does not produce its full effects upon the ſoil, till intermixed and incorporated by a repetition of plough-

leſs exhauſted in that cold ſeaſon by violent exertions, and the work is done at leſs expence to the farmer, as in moſt neighbourhoods, at that time of the year labourers, are moſt plenty. Some few individuals lay marle pits dry, and have paces or roads ready made, in order to take advantage of a long froſt.

ings, and an intermixture of dung, or other manure, for marle is not effectual without ſuch addition.

This ſubject cannot be too often brought under review, as from the different reports it appears ſo little noticed in many parts of the kingdom. The following fact may ſerve to prove, that whatever defects the Lancaſhire agriculturiſt labours under in his general proceſs, he at leaſt does not labour under a poverty of ſpirit.

In the year 1793, S. H. Fazakerly, Eſq; of Fazakerly, purchaſed nine acres of land upon Warbreck Moor, being an uncultivated part of that wretched, poor, black, ſandy waſte, laid out for improvement ſo long ago as the year 1761.

In the preſent year, 1794, this hitherto uncultivated lot of nine acres was marled, at the rate of nearly twelve rods, of 64 cubic yards to the acre of eight rods.

Prime coſt of land, £. 33. 6 *s.* 8 *d.* *per* acre -		£. 300 0 0
Marling and carting, £. 27. 15 *s.* 6 *d.* *per* acre - - - - - - - -	250 0 0	
Extra expences, with fencing - -	50 0 0	
		300 0 0

So that it appears, the expence of improvement by marle only, and before a ſingle crop has been taken, amounts to the purchaſe of the fee ſimple of the land; beſides a moſt extravagant coat of dung, the expence of which is actually £. 12. 15 *s.* *per* acre.*

1794. Nov. 14.—Major Atherton, travelling in a chaiſe over Baſſage Heath, on the road from Coleſhill to Litchfield, obſerved a wretched gravelly common under improvement by marling, a kind of ſlate marle. He judged the quantity laid on was four rods, of 64 yards to the acre of eight yards. The land the property of Lord Middleton.

The above is noticed, as the road is frequently travelled, to

* A farmer who was preſent at this calculation ſaid, that the real expence of dung ought to have been £. 15 *per* acre, Mr. Fazakerly having allowed himſelf too little in the calculation for carting ſix miles. The dung laid on is cow-dung, purchaſed at Liverpool at the rate of 5 *s.* *per* ton.

call

call forth the attention of the paſſenger, that the effects may be hereafter obſerved.

The quantity laid on was leſs than would have been generally given by a Lancaſhire farmer by nearly one half: it was one third leſs than the coat given by Mr. Fazakerly, as appears from the preceding ſtatement.

Anecdote.—Talking over the ſubject of marling one day in company, the following ſtory was told, which ought to be preſerved.

A Lancaſhire farmer, on obſerving the great advantage that might be obtained from the uſe of this article in a county where its uſe was not known, after ſome deliberation hired a farm, with intent to improve it by marle at his own expence. Having obtained a ſufficient length of leaſe to be reimburſed, he began the operation at the proper ſeaſon; but the practice was ſo novel in that neighbourhood, as to attract the attention of by-ſtanders, and was ſoon conveyed to the ears of the ſteward, who immediately came over to ſtop ſuch proceedings. Arguments were in vain; for what ſervice could *dirt* laid upon *dirt* prove? beſides the injury done to his lord's lands by the digging of holes, which, as a good ſervant to his maſter, it was his duty to prevent.

The ſtory concludes, as the farmer's deſigns were thus fruſtrated, he, for ſome trifling conſideration, obtained a releaſe from his contract, and left the county.

By way of contraſt, the opinion of an intelligent Lancaſhire farmer may be given, in his own words.

" Marle is a never-failing friend to moſt lands in this county; but here is a large field for improving the management of this uſeful article: the firſt and grand object is the diſpoſition of the pits. Thouſands of acres, I can ſafely ſay, are waſted, and in many places the land worſe than before. It ought to be a ſtanding rule not to ſuffer a pit to be made, unleſs it could be laid dry, which I verily believe may be done in three fourth parts of the county. One ſingle drain in many places would lay dry fifty acres, of, from 8 to 15 feet of marle a-breaſt: care ſhould likewiſe be taken, to take off the upper clay, which is

generally from two to three feet. Now this uſeleſs top is excellent for the making of bricks, and when ſtones are not to be had, a coarſer kind (not paying duty) might be made to anſwer the purpoſe of draining at a very trifling expence, if nothing but ſun-dried: where a pit is laid dry no land is loſt, and the farmer may marle any ſeaſon of the year, and beſides the ſaving of land, and expence in many places (according to Mr. Elkington, which is the only true ſyſtem) the land below would be drained, and many ſprings cut off."

Notwithſtanding there is a general propenſity to convert arable land into paſture and meadow, as moſt convenient to the populous ſtate of the county, yet an intelligent gentleman * judiciouſly obſerved, that it might be occaſionally neceſſary to break up graſs lands, if only for the ſake of reaping the ſuperior effects of marle, which not only adds to the ſtaple of the ſoil †, but to a certain degree improves and enriches the quality of the graſs; and a greater attention to green crops during the proceſs of the plough, would certainly afford food for a greater quantity of ſtock. Beſides, in old lays, the graſs, if for hay, becomes too ſoft; if in paſtures, ſour. Turning over the ſoil changes and improves the nature and quality of the graſs. In

* J. J. Atherton, Eſq. Walton-Hall. And likewiſe old meadow land, that has been a deal manured. The hay will ſometimes, upon ſome land, grow not ſo good in quality, nor ſo ſaleable, if for market; but by being ploughed two or three years, more or leſs as occaſion may require, will greatly enrich the quality. Likewiſe an old paſture the ſame, when it can be made convenient. Land that has been exhauſted by long ploughing, &c. and laid down poor, is generally a long time before it will come to a proper ſward of graſs, if ever ſo well manured at the top, which the report is, let it lie and manure it well, and it will do in time; which to be ſure it will. But my mode is, after it has been well manured twice, and paſtured three or four years, if it then does not do as expected, to plough it again for a year or two, as may appear the beſt, and then let it lie again, and by ſo doing it will ſooner come to a ſward of graſs, and the graſs will be much richer and better; for by the manure that has been laid on the top of the land being well mixed with the ſoil, and ploughed as deep as the land will bear, it makes it much better, and leſs manure will do for the future time, and the land much improved by it.

† A cubic rood of marle, of 64 yards to the rood, adds nearly half an inch to the ſtaple of the ſoil to a ſtatute acre of land.

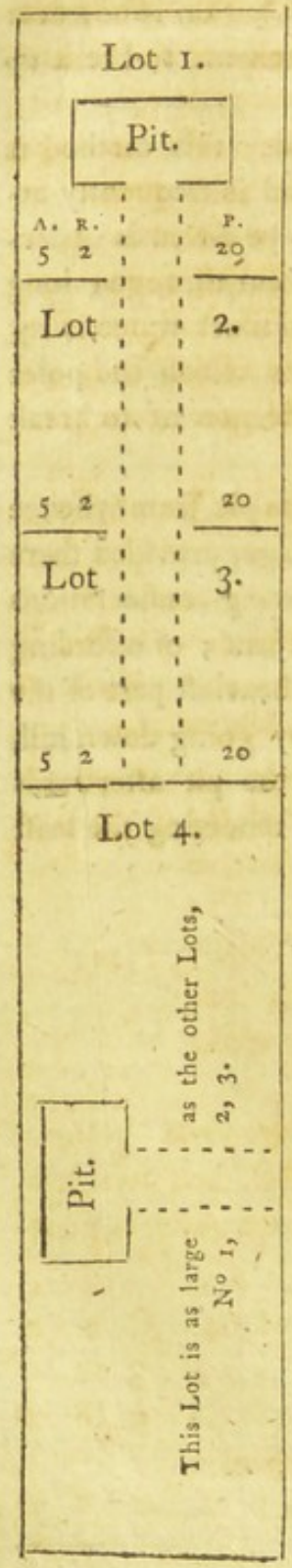
ſtiff

ſtiff ſoils, the change from arable to paſture or meadow may not be ſo neceſſary to be frequently repeated. But all ſoils improve by a judicious change of culture. Caution is however neceſſary, not to yield to importunities of tenants to break up old lays, without proper reſtraints.

Marle is got by falling it in large clods; this method is expeditious, but requires great caution, and is frequently attended with danger; the piece intended to be fallen is undermined, and looſened at each ſide, by being cut through; long piles are then driven in at the top, and ſometimes water is required to inſinuate itſelf into the interſtices which the poles have made. The clod falls with ſuch violence as to break the maſs into pieces.

It is no ſmall conſideration where to fix the pit, from whence the marle is to be obtained to moſt advantage, provided there be a choice; and when there is, the following conſiderations ſhould be weighed: of deſtroying the leaſt land; of affording the leaſt length of carriage, which is the heavieſt part of the expence; of affording the leaſt draught, by going down hill, if poſſible; that the water ſtagnating in the pit afterwards may not be injurious to the land; and of rendering the leaſt damage to the lands in future.

The expence of carting at different diſtances may be conceived from the following rough draught here given.



Suppoſe the Lot 1. be thirty rod ſquare, and the pit right in the center, ſo that its greateſt diſtance from the pit be fifteen rods every way. The cartage will be 18 *s.* *per* rod; and, to ſave fractions, call the field ſix acres; then the account will ſtand as under:

Cartage, *per* rod -	18 *s.*
N° of acres - -	6
	108
N° of rods laid *per* every acre	6
	648

£. 32. 8 *s.* Total amount of expence of Lot 1.

Now, if Lot 2 be marled out of the pit in Lot 1, the additional expence will be 12 *s.* per rod, or £. 54, being forty-five rods from the pit.

And, if Lot 3 be to be marled ſtill from the ſame pit, the additional expence will be 26 *s.* per rod, or 44 *s.* the whole; the diſtance from the pit being ſeventy-five rod, and the expence £. 79. 4 *s.*

Again, Lot 4. being as large as the other three, and the pit in the center, the extreme diſtance will be forty-five rods each way, and the cartage will be 21 *s.* *per* rod, of ſixty-four cubical feet, and which will amount to £. 113. 8 *s.*

The comparative eſtimate ſtands thus: Lot 1, £. 32. 8 *s.*—Lot 2, £. 54.—Lot 3, £. 79. 4 *s.* Total amount of which is £. 165.

£. 165. 12 *s.*—Three times £. 32. 8 *s.* is £. 97. 4 *s.*—Balance ſaved by having a pit in each field would be therefore £. 68. 8 *s.*——The expence of Lot 4 is £. 113. 8 *s.*; and from which ſubtract £. 97. 4 *s.* and the balance is £. 16. 4 *s.*

The above will evidently prove the advantage of proximity to the marle; but a pit in the middle of a field is not only an eye-ſore, but a nuiſance; therefore, if poſſible, ſhould be avoided. Nor is the advantage ſo great in the middle as at firſt may be thought; ſince, in coming out of the pit, there being only one pace, ſome part of the ground muſt of neceſſity be gone twice over; whereas, if on one ſide of the field, and Central, all the land lies immediately before the pace of the pit.

Expence of marling upon Bootle Marſh, about the year 1780, *beſides fencing, &c.*

	£.	*s.*	*d.*
Getting and filling, per rod of 64 cubic yards -	0	10	0
Spreading - - - - - - -	0	2	2
Carting; the average diſtance from the middle of the pit to the middle of the land, 60 rods -	1	9	0

N. B.—In this calculation there are ſix carts, five in motion, each goes the diſtance of twelve rods, whilſt one ſtands in the pit to be filled. The ſize of each cart is 20,736 inches (cubical), uſually drawn by three horſes; the weight of the load about 15 cwt. and two cubical yards of marle make about three loads.

The number of workmen are ſix fillers and getters; uſually two right-handed men at one wheel, and two left-handed at the other, with one filler behind—one getter is generally ſufficient.

Getting, filling, and ſpreading, to the acre of 64 yards to the rod, on Bootle Marſh, was - -	£. 3	*s.* 19	*d.* 1
Cartage - - - - - - -	9	8	0
Digging for the marle, clearing the head, expences at finiſhing, &c. per acre - - - -	2	7	0
	£. 15	14	1

There

There were about 6½ rods laid upon the acre on this occaſion.

The men got 2 *s.* 6 *d.* and the carts 7 *s.* 6 *d.* per day.

Getting and filling marle is very laborious work, and requires the utmoſt exertion to obtain theſe wages; and this work, after all, can only be effected by young men in their prime, cheared by the company of fellow-labourers, and frequent refreſhments. Five working davs are reckoned equal to ſix, for they uſually begin at half paſt four in the morning, and reſt one hour at breakfaſt, from eight to nine; reſt again from twelve till two, and then work till ſix; and generally get out nine rods per week.

The preſent price is—	£.	*s.*	*d.*
For getting and filling, per rod - - -	0	12	0
Spreading - - - - - -	0	2	6
Carting - - - - - - -	1	13	0*

ADDITIONAL INFORMATION ON MARLE.

Marle is the foundation of all improvements in the agriculture of this county; and here the huſbandmen of Lancaſhire and Cheſhire may afford an uſeful leſſon to the reſt of the kingdom: ſo well are they convinced of the neceſſity of attending to this primary object, that neither labour nor expence deter them from the moſt vigorous application of it. There are ſeveral varieties of this foſſil manure valuable in proportion to its intrinſic qualities, or the nature of the land to which it is to be applied. Shell marle or ſlate marle are more deſirable in the ſtiffer and more clayey diſtricts, inaſmuch as they contain a large proportion both of calcareous matter and of ſand—clay marle in an inverſe ratio more ge-

* This ſubject has been detailed to a greater length than ſome may think requiſite; but marling is in this county performed in a maſterly manner. The particulars here collected may be uſeful, on future occaſions, to the farmer, as the documents are only regiſtered in the memory of old practitioners. It is with no ſmall difficulty that the ſeveral *data* are ſometimes obtained and aſcertained, and it was with ſome labour they were collected for the preſent purpoſe.

nial

nial to a light and ſandy diſtrict, as in both theſe circumſtances the natural defects of the ſoil are in ſome meaſure obviated. Undoubtedly the calcareous matter contained in either marle is of the higheſt importance; but obviating the natural deficiencies of the ſoil, by adding ſand to clay or clay to ſand, is of more conſequence than the mere calcareous ſtimulus, which might be obtained at a much lighter expence. Innumerable inſtances are to be found in this part of Lancaſhire, where barren heaths and wretched ſands of all deſcriptions have been rendered in the higheſt degree productive b this admirable foſſil; indeed there is reaſon to believe that by far the greateſt part of the diſtrict has been reclaimed by marle. The great conſequence of making ſuch a practice more generally known need not be expatiated upon. It is of the utmoſt importance to attend to the *application* of marle. The general cuſtom is to lay upon the great Cheſhire acre, of eight yards to the rood, from three to ſeven roods, of ſixty-four ſquare yards each. From four to five rood may be conſidered the average quantity to the acre (one Cheſhire acre contains two acres and eighteen perches and a half of the ſtatute meaſure) more and leſs are frequently applied, but the quantity ought indiſputably to be in proportion to the quality of the ſoil and quality of the foſſil. The general experience of this country has proved to a demonſtration the propriety of its univerſal practice, *viz.* to lay it upon graſs land which is intended to be broke up the enſuing ſpring. This ſyſtem is however carried by ſome of the old farmers to an abſurd length, as they will not marle any land, however neceſſary ſuch an operation may be, unleſs it has been a given number of years under graſs. Sometimes what is provincially called a *coat* of marle has been ſpread upon the green ſward, and left unploughed many years; in this caſe the graſs ſometimes receives conſiderable detriment, as the marle ſinks downwards in a body without incorporating with the ſoil; though when marle has lain ſeveral years in this ſtate, the ſubſequent crops of corn have been found to be enormous.

The general rule is to begin marling about May or June, in ſhort when ſpring ſeedings are over, continuing as oppor-

tunity ſerves throughout the ſummer months; it is not, however, unuſual to take a crop of hay before the marling is begun; in either inſtance, the effects of the marle become ſpeedily viſible by the rich verdure of the graſs, which affords a paſturage of the moſt beneficial nature. Marle is ſpread immediately after carting, but left in a rough lumpy form, that it may be expoſed as much as poſſible to the viciſſitudes of the ſeaſons; if it contains a large proportion of clay it will remain for many weeks, perhaps months, in large unwieldy lumps, though in general the rains of the latter end of autumn, and the ſucceeding froſts of winter reduces it into the form of an unctuous but friable material, the further diſperſion of which is eaſily effected with clotting beetles, ſpades, or harrows; this diſperſion however ought not to be attempted till a week or a fortnight before ploughing, as the moſt beneficial effects are produced by alternate rains and froſts; and by this long expoſure it is more than probable that the foſſil * may acquire by attraction the moſt nutritive qualities:—the turf, when ploughed under, anſwers the purpoſe of a rich vegetable manure.

So far the Lancaſhire farmers have conſiderable merit, but their ſubſequent conduct deſerves the higheſt cenſure; many of them taking repeated crops of oats with the interval of one ſummer fallow for wheat, by way of cleanſing the land; after which barley and oats again, as long as the land will produce any thing; and then laid down again, as uſual, with weeds and couch-graſs.—The courſe I ſhould recommend would be, to take one crop of oats the ſpring ſubſequent to the marling—plough the ſtubble immediately, in order to expoſe the marle again to the influence of the froſt—fallow with manure for turnips, a crop that under this management is never known to fail—then barley, clover, wheat, turnips fed off with ſheep, and barley again, with well-dreſſed hay-ſeeds, and white clover and trefoil, for a perennial lay, or at leaſt for ſome years.—Land thus huſbanded produces in a moſt exuberant degree, and at the ſame time is rendered perfectly clean from all weeds, without being in the leaſt haraſſed. Poor ſandy ſoils are thus rendered capable of producing a covering of the rich-

* See Kirwan's Diſſertation on Manures, An. Ag. vol. XXIII. p. 105.

eſt

eſt graſſes, and under proper management may be depended upon in all ſeaſons. If this proceſs of marling is again repeated, the nature of the land is totally altered, nor is it probable that any ſtranger to marle will give credit to the immenſe benefit to be derived from ſuch management, without ocular demonſtration.

Some time ago I gave the ſurveyor of this diſtrict, Mr. Holt, the particulars of a field of eight acres marled by me in 1790; as I underſtand he has ſent an account of it to the Board of Agriculture, I cannot but add the following particulars—that it had been ploughed and haraſſed in the moſt barbarous manner for many years previous to my getting poſſeſſion of it, the out-going tenant paying about £. 2. per acre for it, and under no reſtrictions—that ſome years ago one of the beſt acres in the field was manured for barley, which did not produce more than one quarter in return, the crop being moſtly deſtroyed by weeds, and the land incapable of nouriſhing grain—that when in graſs it was frequently unfit for mowing before September, and then the graſs not more than ſix inches long—that in 1786-7, when I took poſſeſſion, it was manured at the rate of 50 tons per acre of horſe and cow muck and night-ſoils from Liverpool—that it was attempted to be paſtured from that time till 1790, but that the cattle were all always diſcontented with the graſs, and the land was returning by degrees to its original ſtate of moor—In 1790 I marled it at the rate of ſeven roods and a half per acre—the expence was very great, as I carted the marle near a mile and a quarter.

	£.	s.	d.
1791.—Oats, 720 meaſures, of 36 Wincheſter quarts each, at 3 s. the meaſure - -	108	0	0
1792.—Turnips manured, and twice hoed—drawn for cattle:—paid the expences of the manure, the hoeing, &c. &c.			
1793.—5 acres barley produced 576 meaſures, of which 552 meaſures ſold to a maltman at 5 s. 2 d. - - - -	142	12	0
3 acres oats, 330 meaſures, at 3 s. -	49	10	0
1794.—Clover, two excellent crops, and now in wheat.			

March 1795.—I ſent 4 ſpecimens of the marle from the ſame pit the above-mentioned eight acres were marled from, to Mr. M. Renwick, Chymiſt, in Liverpool, to be analyſed: the products were, from 100 grains of each:

	N° 1.	N° 2.	N° 3.	N° 4.
Flinty Sand - - Gr.	40½	40½	34	32 7/10
Clay and ſilicious Earth -	39½	39	44	47 3/10
Calx - - - - - - -	19½	20½	22	20
Loſt - - - - - - -	0½			
Gr.	100	100	100	100

This average, however, is not ſtrictly juſt, becauſe the depth of the ſtrata were extremely unequal:—of 14 feet, probably there were, of N° 1, 2, and 4, not more than 1 foot each; the remainder of N° 3, which is beyond all compariſon the beſt marle in itſelf, and beſt adapted to a deep loomy ſand.

The reaſon the Leiceſterſhire farmers object to marling, is, that it is inimical to graſs,—in Lancaſhire we know we can get no good graſs without it. What is the reaſon of this difference of opinion? It ariſes from the application; if marle, according to the Leiceſterſhire ſyſtem, is put upon a turnip fallow, and immediately ploughed under in its crude ſtate, no wonder it produces no graſs and little corn.—In Lancaſhire, it is expoſed at leaſt five months, and always to a winter's froſt: and hence ariſes the benefit to graſs. The ſheep walks and rabbit warrens of Norfolk were reclaimed by marle; the original marlers and their ſucceſſors grew rich, and the land

produced exuberantly: at preſent we are told, that the land will not bear marling twice (an *idea* utterly diſcountenanced by the *practice* of this country); and from this miſchievous idea it ariſes, that the county of Norfolk is ſaid to want another ſyſtem of cropping, that turnips and clover come round too often, &c. &c. (See Kent's Survey). What are we to infer from this? that the ſame material which cauſed the original improvement will reſtore it to its former fertility—at any rate the experiment is worth trying.

During the late hard froſt, 1794-5, I have been marling about $4\frac{1}{4}$ ſtatute acres of ſandy loam, in order to keep my labourers employed, who muſt otherwiſe have applied to the pariſh for aſſiſtance. I carted the marle near a mile in the large three horſe carts of this country, which I ſhould conceive brought about 26 cwt. at a load.

I find, in the Ann. Agr. Vol. XIX. p. 476. that Mr. Colhoun performs his claying in carts that cube 35 feet; my carts cube about 21 feet; of theſe 175 loads bring about two roods the ſtatute acre,

$$175 \times 21 = 3{,}675$$
$$105 \times 35 = 3{,}675$$

But Mr. Colhoun prefers 80 loads per acre on a blowing ſand; that is, 1,400 loads to 2 Cheſhire acres—

2 Cheſhire acres = 4 0 37 ſtat.

I bring 350 loads to a ſandy loam. This matter merits the attention of the Board.

Herefordſhire, which is *all marle*, produces from 2 qrs. 4 b. to 3 qrs. 1 b. per acre of wheat; about 4 qrs. 5 b. of barley; about 3 qrs. of beans; peas the ſame *.

* Clark's Report, Heref. p. 26.

Corſe

Corſe Lawn, and the Foreſt of Dean, in Glouceſterſhire, are all marle. The clay pits of Feverſham, and the brick earth of Kent, in general, are marle. The clays of Nottinghamſhire contain excellent marle. The fineſt marle I ever ſaw in England is dug out of the coal road near Mr. Tate's houſe by Loughborough. Mr. Bakewell has marle upon his farm. What are we to think of the abſurdity of carrying Norwich marle 40 miles by water, to a ſandy country abounding with a clay, that in the open air breaks into ſmall die-like pieces, and which, upon analyſis, yields from 100 grains

Of impalpable clay — —	50 grains.
Of ſand — —	7
Calx — — —	43
	100 grains*.

Sea ſlutch, from the Ribble and Wyre, is, in ſome places adjacent, made uſe of as a ſubſtitute for marle, to which it is reckoned equal, but in general not ſo durable †. It is frequently uſed as a ſubſtratum for fruit trees at Formby. The quantity is a load to each tree; its effects are wonderful. This practice, however, may not prove beneficial where the ſoil is denſe. At Roſſal in the Filde, where there is no marle, after a ſtratum of ſtrong clay under the ſoil, they paſs through a ſand with cankered veins, next a ſand with ſky-blue veins, with thin ſhells like barnacles, called in the provincial phraſe henfiſh; and this proves a good ſubſtitute for marle. Sea-ſlutch, particularly at Weſton, a village in Cheſhire, near Frodſham, is found to be much more fertilizing and more permanent than marle, I mean that part of a ſalt marſh which has been graſſed over for a few years; for that which is overflowed daily contains more ſand, and is leſs enriching. I do not think that all

* See Marſhall's Norfolk, Vol. I. p. 24. and Vol. II. p. 193.

† Mr. Standen, ſteward to Bold Fleetwood Heſketh, Eſq. ſays, more durable than marle.

the

the manures in uſe in the kingdom combined could have a better effect either upon arable or graſs land than the above-mentioned ſoil has. This manure, where the plough is not immoderately uſed, will laſt thirty years. It is uſed in much the ſame manner and quantity as marle.

Beſides the dung got from the farm-yards, there are great quantities raiſed by the cowkeepers and ſtablekeepers in the large towns. At Liverpool horſe-dung ſells at about 5*s.* 6*d.* *per* ton, cow dung from 4*s.* 6*d* to 5*s.* 6*d.* *per* ton, butchers' dung 6*s.* *per* ton, the aſhes mixed with privies, ſcraping of the ſtreets, &c. under the denomination of night ſoil, about 2*s.* 1*d.* *per* ton *. Liverpool alſo occaſionally has the dregs of blubber from the whale fiſhery after boiling the oil, which mixed with ſoil, is a rich manure, but not laſting. Soap aſhes alſo, if put upon old lays, have been found very advantageous, and very durable in paſtures, but not ſo durable either on ploughed land or in meadow †. Soap aſhes, like lime, do not at all anſwer upon a black ſoil with ſand underneath, neither have they their immediate effects, like dung upon any ſoil, but are very fertilizing and durable after the firſt year, when applied upon dry paſture or meadow lands if they be fox ſoils, and very much change the nature of the graſſes; viz. from very indifferent ſorts to wild clover, trefoil, &c.—Rape duſt has been found to anſwer, laid on at about ſixty buſhels to the acre, and coſts about 10*d.* *per* buſhel ‡. Soot is alſo uſed in the ſpring, and thrown with the hand upon the corn; this is often practiſed upon poor exhauſted lands, and, if rain immediately enſue, with ſucceſs; but there ſeems ſomething at preſent inexplicable about the proper application of lime, or its operation upon different ſoils. It has been frequently tried without any apparent utility, and it ſhould appear that lime requires ſome

* At Mancheſter, cow and horſe dung are about 1*s.* *per* ton higher.

† Quantity 40 to 50 ton *per* acre, from 8*s.* to 10*s.* *per* ton at Liverpool.

‡ There muſt be an error in the price of rapeduſt, as it is no where to be had under 2*s.* *per* buſhel, and ſome places 2*s.* 6*d.* it is a very uſeful village upon cold lands, eſpecially upon meadows, but not durable.

particular

particular ſubſtance in the ſoil whereon to act, to produce any good effect. Lime has in general not been found to anſwer ſo well a ſecond time as at the firſt operation. It alſo requires a ſward, or vegetable roots, to produce fertility *; and it more frequently ſucceeds when mixed properly with earth either on fallows or ſwards. *Lime* is the beſt manure for graſs lands, either laid on by itſelf or in compoſt, if uſed in *ſufficient* quantities. In a farm of a cold clay ſoil, after draining near twenty years, the *lime* was laid on the ſward in *May and June* to the amount of two hundred buſhels on a *ſtatute* acre; the lands have not been ploughed, but have yielded the *fineſt graſs* for hay and paſture, and yet appear to be in a ſtate of improvement. The uſe of lime as a manure has nearly ſuperceded that of *marle*. Immenſe quantities of lime-ſtone are brought by the rivers and canals from *Wales*. Great was our alarm laſt year when the tax on *ſtone* was propoſed, but although the ſixth ſection of the 34th Geo. III. c. 51, exempts our *lime-ſtone* imported from the tax, yet the requiring the *uſual coaſt diſpatches*, and certificates for the ſloops employed in this trade, occaſion great expence and delay, and operate as an heavy and unneceſſary impoſt, without any advantage whatever to the revenue. This is an overſight eaſy to be remedied, and from good authority, I learn has in a great meaſure *fruſtrated* the wiſe intentions of the legiſlature relative to the taking off the duties on *coal* and *ſalt* exported coaſtwiſe in *Scotland*, and calls for the *eſpecial* attention of the repreſentatives of *North* Britain.

But neither marle nor lime produces any good effects upon the exhauſted lands of the Filde, which have undergone the *centennial ordeal*. Upon theſe occaſions the farm-yard dung ſeems to be principally wanted, to reſtore the oily part extracted by ſuch a continued ſucceſſion of exhauſting crops. So great a quantity of land is ploughed without a proper rotation of green crops, for the ſtock which ought to be kept, there is no reſource for raiſing dung but from the cattle, as there are no towns ſufficiently large to afford proper aſſiſtance, nor yet canals to bring it from diſtant places.

* There are ſome exceptions, nevertheleſs, even to this.

In

In the Leiceſter Report it is mentioned, that ſome perſon had burned bones with lime for manure. In November 1794, the ſurveyor mixed about equal quantities of bones with lime (of the latter what is ſold at Liverpool for 40 meaſures, at 8 *d. per* meaſure) in different ſtrata, and cloſely covered with fine mould, well cloſed with the ſpade. This heap continued burning about ten days, after which the whole was mixed together with earth, the bones being chiefly reduced into ſmall parts, or if the parts yet adhered, flew aſunder with a ſmart ſtroke. It is imagined that the moſt eſſential or oily part of the bone would eſcape with the ſmoke during this proceſs, the ſmoke being great and the ſmell fœtid. Not having convenience to bruiſe the bones, this method was adopted by way of experiment upon the hint given.

Bone-duſt, or bones ground in a mill, have been uſed with ſucceſs by William Mayor *, the farmer at Aſhworth-hall, near Rochdale. He has two fluted iron rollers placed at the end of a corn-mill ſhaft, which grinds them expeditiouſly; he applies them to his own grounds, and diſpoſes of them to different purchaſers. Near the ſea good compoſts have ſometimes been made of land-lime, earth, dung, and ſea weeds, with a ſpecies of ſhell-fiſh growing upon the rocks, which is found to be an excellent manure for barley. The ſcrapings from the ſtreets, along with aſhes and night ſoil, have by an experienced farmer † been mixed together with lime in the following proportion: to every twenty tons weight of this black muck (as it is ſometimes called) he adds about forty buſhels of lime, which he mixes together before the lime runs to mortar (his own expreſſion) which deſtroys the good effects, and prevents a proper incorporation, and which anſwers well upon either dry or wet lands, particularly when laid down to either paſtures or meadows. The drainings from the farm-yard have been of late, by ſome good farmers, collected into one place, and, if they cannot be thrown over the lands any other way, are conveyed in caſks by carts, and diſtributed upon the land by means of a trough perforated with holes.

* And by George Clayton, Eſq. Loſtock, near Preſton.

† Mr. Henry Harper, Bank Hall.

The ſkimmings of ſugar under refinement, when boiling, is a rich manure; ſo much ſo, as to take three parts of ſoil to mix together. Three loads of earth, and one load of theſe ſkimmings, which conſiſts of American clay and other fertile ingredients, make four loads of rich and durable manure.

Experiments on Manures, by Mr. Henry Harper.

" The following experiments of different kinds of manure will ſhew the difference of both quantity and the quality of produce on the different kinds of land on my farm, on which I manured half an acre of eight yards to the rod with every kind of the following manures; and when made into hay, as nearly all alike as poſſible, I weighed one average ſquare rod from every lot.

Lot the 1ſt.—Horſe, cow, and butchers dung, all mixed together, of each about an equal quantity, which lay in that ſtate about two months, and then turned it over, and let it lie eight or ten days, and then put it on the land before it had done fermenting, and ſpread it immediately. This was ſet on in September 1793.—The produce 3 ſtone 15 pound per rod, at 20 pounds to the ſtone.

Lot the 2d.—Horſe and cow dung, mixed and turned over the ſame as Lot the 1ſt, and ſet and ſpread on the land at the ſame time.—Produce 3 ſtone 14 pound per rod.

Lot the 3d.—Horſe dung, turned over and ſet on the land the ſame as Lot the 1ſt.—Produce 3 ſtone 13 pound 8 ounces per rod.

Lot the 4th.—Cow dung, turned over and ſet on the land the ſame as Lot the 1ſt.—Produce 3 ſtone 13 pound 8 ounces per rod.

Lot the 5th.—Night-ſoil, coal-aſhes, and cleaning of the ſtreets, and about 40 meaſures of lime to every ton weight, and turned over while the lime was in its floury ſtate, and not ſuffered to run to mortar, for then it is of little benefit; one part of this was ſet on in September 1793, the other part the middle of March 1794, but no difference in the crop to be perceived.—Produce 3 ſtone 13 pound per rod.

Lot

Lot the 6th.—Night-ſoil, coal-aſhes, and cleaning of ſtreets, ſet on the land in the ſame manner and times as Lot the 5th, and no difference in the cropping part.—Produce 3 ſtone 2 pounds 8 ounces per rod.

Lot the 7th.—Marle freſh got, and mixed with an equal quantity of horſe and cow dung, and lay about three months and then turned over, and lay a month and then turned over again, and put on the land in ſix or eight days, and at the ſame different times as the two laſt lots, but no difference in the cropping.—Produce 3 ſtone 8 pound 12 ounces per rod.

Lot the 8th.—Water from a reſervoir that all the urine from the ſtables, cow-houſes, and all drainings from the dung-hills, farm-yard, hog-ſtyes, and all the waſte water from the houſe runs into, and is carried on the land in a watering-cart made on purpoſe that holds four hundred gallons; and the water was put on the land in April, about 12,000 gallons to the acre of 8 yards to the rod, and again in May 12,000 more.—Produce 3 ſtone 5 pound per rod.

Lot the 9th.—Blubber, the offal of whale-oil, mixed with ſoil, and ſet on the land the 1ſt of April 1794.—Produce 3 ſtone 2 pound 8 ounces per rod.

Lot the 10th.—Soot, ſowed on the land the middle of April 1794.—Produce 3 ſtone 1 pound per rod.

Lot the 11th.—Plaſter of Paris (gypſum) ſowed on the land in April, the weather then ſhowery and favourable for it.—Produce 2 ſtone 2 pound per rod.

Lot the 12th.—No manure at all.—Produce 2 ſtone 2 pound per rod: ſo much for gypſum, that has been made ſuch account of.

Lot the 13th.—Soap-aſhes or muck, ſet on in March 1794.—Produce 2 ſtone 10 pound per rod.

Lot the 14th.—Lime, ſet on in March, clean by itſelf.—Produce 2 ſtone 8 pound per rod.

An improvement by way of experiment upon Lots the 1ſt, 2d, 3d, 4th, and 5th, water from the reſervoir put on theſe lots the beginning of May 1794, at the rate of 12,000 gallons per acre.—Produce 4 ſtone 8 pound per rod.

		£.	s.	d.
Lot the 1ſt.—Produce 3 ſt. 15 lb. per rod, is 600 ſtone per acre, at 5½ d. per ſtone — —		13	15	0
Horſe, cow, and butchers dung.	After-graſs, per acre — —	2	2	0
		15	17	0
Manure 30 tons, at 5 s. per ton — —		7	10	0
Balance in favour of the farm — —		8	7	0
Lot the 2d.—Produce 3 ſt. 14 lb. per rod, is 592 ſtone per acre, at 5½ d. per ſtone — —		13	11	4
Horſe and cow dung.	After-graſs, per acre — —	2	2	0
		15	13	4
Manure 30 tons, at 5 s. per ton — —		7	10	0
Balance in favour of the farm — —		8	3	4
Lot the 3d.—Produce 3 ſt. 13 lb. 8 oz. per rod, is 588 ſtone per acre, at 5½ d. per ſtone — —		13	9	6
Horſe dung.	After-graſs, per acre — —	2	2	0
		15	11	6
Manure 30 tons, at 5 s. per ton — —		7	10	0
Balance in favour of the farm — —		8	1	6
Lot the 4th.—Produce 3 ſt. 13 lb. 8 oz. per rod, is 588 ſtone per acre, at 5½ d. per ſtone — —		13	9	6
Cow dung.	After-graſs, per acre — —	2	2	0
		16	11	6
Manure 30 tons, at 5 s. per ton — —		7	10	0
Balance in favour of the farm — —		8	1	6
Lot the 5th.—Produce 3 ſt. 13 lb. per rod is 584 ſtone per acre, at 5½ d. per ſtone — —		13	7	8
Night-ſoil, coal-aſhes, cleaning of the ſtreets, and lime.	After-graſs, per acre — —	2	0	0
		15	7	8
Manure 30 tons, at 4 s. 6 d. per ton —		6	15	0
Balance in favour of the farm — —		8	12	8.
Lot the 6th.—Produce 3 ſt. 2 lb. 8 oz. per rod, is 500 ſtone per acre, at 5½ d. per ſtone — —		11	9	2
Night-ſoil, coal-aſhes, cleaning of the ſtreets.	After-graſs, per acre — —	1	11	6
		13	0	8
Manure 45 tons, at 2 s. per ton — —		4	10	0
Balance in favour of the farm — —		8	10	8

Lot

				£.	s.	d.
Lot the 7th	—Produce 3 ſt. 8 lb. 12 oz. per rod, is 550					
Marle, horſe and cow dung.	ſtone per acre, at 5½ *d.* per ſtone	—	—	12	12	1
	After-graſs per acre	—	—	1	11	6
				14	3	7
	Manure 45 tons, at 2 *s.* 6 *d.* per ton		—	5	12	6
	Balance in favour of the farm	—	—	8	11	1
Lot the 8th.	—Produce 3 ſt. 5 lb. per rod, is 520 ſtone per					
Water from reſervoir.	acre, at 5½ *d.* per ſtone	—	—	11	18	4
	After-graſs, per acre	—	—	1	11	6
				13	9	10
	No expence for manure only labour, and that not ſo much as the other manures.					
	Balance in favour of the farm	—	—	13	9	10
Lot the 9th.	—Produce 3 ſt. 2 lb. 8 oz. per rod, is 503 per					
Blubber and ſoil.	acre, at 4 *d.* per ſtone	—	—	8	7	8
	After-graſs per acre	—	—	0	15	0
				9	2	8
	Manure, the expence per acre	—	—	3	0	0
	Balance in favour of the farm	—	—	6	2	8
Lot the 10th.	—Produce 3 ſt. 1 lb. per rod, is 488 ſtone per					
Soot.	acre, at 4 *d.* per ſtone	—	—	8	6	0
	After-graſs, per acre	—	—	0	15	0
				9	1	0
	Manure, expence per acre	—	—	2	10	0
	Balance in favour of the farm	—	—	6	11	0
Lot the 11th.	—Produce 2 ſt. 2 lb. per rod, is 336 ſtone per					
Gypſum.	acre, at 5½ *d.* per ſtone	—	—	7	14	0
	After-graſs, per acre	—	—	1	5	0
				8	19	0
	Manure, expence per acre	—	—	2	10	0
	Balance in favour of the farm	—	—	6	9	0
Lot the 12th.	—Produce 2 ſt. 2 lb. per rod, is 336 ſtone per					
No manure.	acre, at 5½ *d.* per ſtone	—	—	7	14	0
	After-graſs per acre	—	—	1	5	0
				8	19	0
	No expence for manure.					
	Balance in favour of the farm	—	—	8	19	0

Lot

		£.	s.	d.
Lot the 13th.—Produce 2 ſt. 10 lb. per rod, is 400 ſtone per acre, at 5½ *d.* per ſtone — —		9	3	4
Soap-aſhes. After-graſs, per acre — —		1	10	0
		10	13	4
Manure 16 ton of ſoap-aſhes, at 9*s.* per ton —		7	4	0
Balance in favour of the farm — —		3	9	4
Lot the 14th.—Produce 2 ſt. 8 lb. per rod, is 384 ſtone per acre, at 5½ *d.* per ſtone — —		8	16	0
Lime. After-graſs, per acre — —		1	10	0
		10	6	0
Manure, 12 ſcore meaſures of lime, at 13*s.* 4*d.* per meaſure — — —		8	0	0
Balance in favour of the farm — —		2	6	0
Experiments upon Lots the 1ſt, 2d, 3d, 4th, and 5th.—Produce of all theſe five lots equal, 4 ſt. 8 lb. per rod, is 704 ſtone per acre, at 5½ *d.* per ſtone, is — —		16	2	8
After-graſs on all the five lots equal — — —		2	5	0
		18	7	8
Amount of produce of Lot the 1ſt — — —		15	17	—
Balance in favour of the reſervoir-water — —		2	10	8

Now theſe lots are all in one field, which is old meadow land all of one quality, the ſoil 11 inches deep, and a ſtrong loam betwixt ſand and clay with a reddiſh caſt, and is what I call fox-land; and under the ſoil is a black loam ſand ſix inches deep, and then marle of four yards deep, and bottoms on a red ſand.

This field is not to be conſidered as a poor worn-out field, but has been regularly manured every third year; which if it was worn out and kept poor it would not produce one-third part of neither hay nor after-graſs, which I daily ſee on ſome adjoining land of the ſame quality, for which I take one-third part of the value of Lot the 4th, both of hay and after-graſs, which is £. 5. 3*s.* 10*d.*

Lot

	£.	s.	d.
Lot the 4th.—The amount of hay and after-graſs, at £. 15. 11 s. 6 d. per acre for three years, is — — —	46	14	6
Diſcount for three years manure —	7	10	0
Balance to the farm — — —	39	4	6
The amount of hay and after-graſs for one year, without manure, is £. 5. 3 s. 10 d. which ſay three times — —	15	11	6
Balance in favour of manure — —	23	13	0

Now it is to be conſidered that the farm ſupports the expence of all labour and other expence: but to ſhew the neat balance in favour of manure, ſay, the manure brought to this field on my farm is four ſhillings for every thirty hundred weight —

Thirty ton twenty load, at 4 s. per load, is — — —	£. 4	0	0
To ſpreading on the land, allowance, &c. — —	0	7	6
	4	7	6
Clear balance to the farm for three years in favour of manure, for one acre	£. 19	5	6

I approve moſt of the manure the five firſt lots are manured with, although it comes higher; they require the leaſt labour, which moſtly pays the beſt in the end, although it appears that ſome of the other lots afford more clear profit; but the moſt profit comes from that manure that continues its ſtrength the longeſt in the land.

The moſt clear profit I experience is from lot the 8th, water from the reſervoir, which is no coſt but labour, and that not ſo much as any other kind of manure; but it will not anſwer put on in hot dry weather, for it burns up all before it,

except it was to be kept conſtantly wet, of which the ſupply is moſtly ſcarce at that time.

Lots the 9th and 10th.—Blubber and ſoot I would not put on land for meadowing upon any condition, for the hay is bad; and, by a conſtant uſe of them, they exhauſt the land, ſo that it won't produce any thing at all; and they are only manures for juſt the crop, with little or no after-graſs.

Soot is good for wheat, and other ſpring corn, if it is ſown in ſhowery weather.

Lot the 11th.—Gypſum is of no uſe on my farm, neither for corn nor graſs.

Lots the 13th and 14th.—Soap aſhes and lime, they do not anſwer on my farm; they keep me too long out of the profit. What they might do in time, I have not experienced; but I always think the quickeſt return pays the beſt, ſo that the manure is not exhauſting to the land.

The water from the reſervoir paid not amiſs, which was ſet on the five firſt lots, which was an equal improvement of 2*l.* 10*s.* 8*d.* per acre; and if the extra labour was to be charged, it would be a diſcount of fifteen ſhillings, which would reduce it to 1*l.* 15*s.* 8*d.* clear profit per acre.

Now, to try the quality of all the lots, I put a ſmall handful from every lot in a dry clean place, where there was little or no graſs, and they were laid promiſcuouſly down, and regularly marked and numbered, to avoid miſtake. And I had for the experiment ſix horſes up in the ſtable, all well fed with clover freſh cut: and I turned one out, and let him go of himſelf amongſt the lots promiſcuouſly, and when he got amongſt them, ſome he ſmelled at, and others he taſted (there were 19 different lots); the firſt lot that he ſettled at was N° 8, and he eat it all clean up; and he then ſauntered about as before, and got to lot the 5th, and eat it all clean up; and then ſauntered as before, and got to lot the 7th, and eat it all clean up; he then ſauntered as before he had done, and ſmelled, and taſted, and went off from amongſt them. I then put him up, and turned another out, which did exactly in the ſame manner as the firſt had done.——*N. B.* And he then fixed upon the ſame lots as the firſt horſe had done, which were immediately taken away with care,

care, ſo as not to diſturb the horſe, which through the whole of the lots were always replaced with the ſame kind of hay; and out of the whole ſix horſes there was little or no variation, for the next horſe that came out always fixed on the ſame lots as the laſt had eaten up, after being replaced. —— And he then fixed upon lot 8, as the firſt horſe had done, and eat it all clean up; and then upon another of the ſame; and continued till he had eaten four out of the five, and then went off from amongſt them. I then put him up, and turned another out, and he did as the others had done, and fixed upon the firſt lot, N° 8, and eat it all clean up; and then to lots the third and fourth, which he eat all up, and then ſauntered off. I then put him up, and turned another out, which did exactly the ſame as the others had done, and fixed upon lot the 2d, and eat it up; and then he fixed upon lot the 11th, and eat it up; and then he fixed upon lot the 6th, and eat it up; and he then went off. And I put him up, and turned another out, which did exactly the ſame as the others had done; and he fixed upon the laſt experimental lot, and eat it all up; and then to lot the 13th, and eat it all up; and then to lot the 14th, and eat it all up; and he then went off. And I put him up, and then turned the laſt horſe out, which did exactly the ſame as the others had done, and juſt taſted of lot the 12th; but the 9th and 10th lots ſtill remained, and never a horſe out of the number of ſix taſted of them, only ſmelled at them. And I then turned them all out together, and they made to where the lots had been, and eat up the remains of lot the 12th; but they all went off and left the 9th and 10th lots unnoticed.

And I ſtill let them remain in their places till the cows came up in the evening, and never a cow, out of thirty, taſted of them (9th and 10th lots); they ſmelled, and even bellowed and roared, and ſcraped with their feet, and flung it about with their horns.

Now I will leave it to every reader to judge for himſelf, which of the lots were of the beſt quality, and the moſt nutritive; for myſelf, I prefer thoſe that were eaten the firſt.

The before-mentioned ſtatements fully prove the profits ariſing from manuring, to that of letting it lie by in a ſtate to

produce what it will do with little or no improvement, and the land to be equal as good in quality.

But the difference of improving good land, and land of inferior quality, differs from five per cent. to a hundred per cent. in its return of produce; but there is little or no land but what will anſwer in ſome degree of profit towards the encouragement of improving, except ſome barren mountains, and low boggy land, that lies ſo low that there is no fall for draining to be come at; but the naked eye is often deceived, whence I ſhould recommend a level, for this kind of land moſtly anſwers the beſt if it can be laid dry.

There is a great difference in different kinds of manures, anſwering in different diſtricts; and there are ſeveral in this diſtrict that have not been brought to trial, ſuch as burnt marle, &c. I have an experiment of it now on trial, which, as a top manure, by hand, appears to anſwer every expectation for graſs land.

The mode I prepare it is, to get the marle quite freſh out of the pit, not to take any that has been expoſed to the weather, and burn it in a brick oven; and when burnt through, draw it out, and pound it into duſt, which is done with little labour; and then ſow it on the land quite dry, at the rate of about 15 meaſures to the ſtatute acre; and the expence of fire, and all trouble attending it, is eight pence per meaſure.

But this is a new experiment with me, and I have only tried it this latter end of the year 1794; I mean to proceed with it for freſh experiments for different crops of both corn and graſs this next year 1795; and as ſoon as I have proved its qualities, I mean to explain them to the public.

I manured the ſame quantity of lots of land that had lain two years, for a third crop of hay, with the ſame kinds of manure as the firſt mentioned lots were manured with, and with the ſame experiments in regard to the quality, which nearly anſwered every deſcription of the before-mentioned lots, only ſeventy ſtone leſs in quantity per acre, of eight yards to the rod.

The mode of burning marle above alluded to, and the uſing it when burnt as a top dreſſing, is particularly recommended to the attention of the Norfolk farmers.

COAL

COAL ASHES.

This ſort of manure has been known to kill ruſhes. The ſurveyor has tried their effects this year (1795), not with total, but ſome effect. The beſt cure, without doubt, is draining the land. Take away the pabulum, and the plant periſhes.

LINSEED.

Dr. Ormerod of Rochdale made the following trial, which he thus relates:

"With linſeed flour (it is linſeed ground to powder) this I ſtrewed on meadow ground, but ſo lately that I cannot perceive any evident difference in my crop of graſs, but, perhaps it may anſwer in the fog; it appears to do well to corn, and to paſture ground, and I find the cattle extremely fond to eat where it has been, but fear the expence of it will prevent it being of any ſervice to the ſociety, as it coſt me £. 1. 1*s.* for every cwt. I uſed. I have alſo been trying the blue and white ſoap manure, which anſwers well to corn, but not better than aſhes with neceſſary manure.

"I have been uſing lime in a variety of forms, both next the ſoil upon black manure, and mixed intimately with mould, and laid up together."

SEASON OF LAYING ON DUNG.

Much has been frequently ſaid on the beſt ſeaſon of laying dung upon the lands—the ſurveyor has been favoured with the following obſervations on this ſubject, by an experienced farmer *.

"If cow-dung, the freſher the better, provided it be the proper ſeaſon for putting it upon the land; which is, if meadow, from the time of getting the hay off the land, till the middle of October. For, if the graſs has done ſpringing, the dung lies expoſed all the winter to rain, ſnow, froſts, and the viciſſitudes

* Mr. Henry Harper, Bank Hall.

of ſeaſons, which exhauſt the ſtrength, ſo as to deſtroy much of its good qualities: if it cannot be accompliſhed in autumn, then the enſuing ſpring; and if the ſeaſon ſhould not ſuit, the ſtrength of the manure will be reaped the enſuing crop."—He recommends turning over the dung previous to its being put upon the land, and to lie till it begins to ferment; then to carry it upon the land, and even ſpread it before the heat be gone off, and by which the dung *takes* to the land the better. He prefers mixing cow-dung, horſe-dung, butchers-dung, and night-ſoil, together, in preference to each ſeparate; and this mixture is in its beſt ſtate from ſix to eight months old.

SECT. 4.—*Weeding.*

A GOOD crop of grain and weeds cannot exiſt together; therefore, in order to ſecure the former, if the latter abound, they muſt either be eradicated, or the crop greatly injured. Except in the potatoe culture, and what little has been done in hoeing turnips, hand weeding is in general alone practiſed. Fallows are introduced to kill weeds, where the lands are foul by ill management. When lands have been full of couch-graſs, a crop of hemp upon ſuch lands, if well dunged, has proved an effectual remedy *. But at preſent, there is very little of either hemp or flax ſown in the county.

There are many ſlovens, who too much neglect clearing their foul crops; and many are as remarkable for their great attention, and employ both women and children to hand-weed the corn, when about ſix inches high. Many paſtures and meadows are carefully overlooked that no dock, &c. appear. Mr. Bailey's eſtate of Hope is a ſpecimen of cleanlineſs.

SECT. 5.—*Watering.*

WATERING Lands is much neglected in this as well as moſt other counties in England, but more particularly in the hilly or mountainous parts of this province, where they have the greateſt abundance of water.

* This communicated by an old and experienced farmer.

Trials

Trials of throwing water over the lands, have been made in different parts of the county; and it appears, that wherever the trial has been made, and conducted upon proper principles, the attempt has proved highly beneficial to the grounds over which the water * could be thrown, except it had a mixture of metallic, or other noxious matter.

Notwithſtanding the fact has been ſufficiently proved, in a variety of caſes, upon different ſoils, it is a matter of aſtoniſhment, that ſo rich a ſource of improvement has been hitherto neglected, when ſuch an extent of ground is capable of receiving the advantage.

The value of water, in this point of view, is not yet ſufficiently known †; like many other bleſſings of life, being, when very liberally beſtowed, the leſs valued. Streams of water, which for ages have paſſed unnoticed, have within a few years proved a ſource of wealth to individuals beyond conception. What was probably conſidered a nuiſance, has proved, in many inſtances, of more real value than the fee-ſimple of the whole manor, through the vales of which it had ſo long ſtrayed, by turning machinery, &c.

The many rivers, rivulets, and rills, flowing through the mountainous part of the county, offer their rich ſtreams to meliorate the lands through which they deſcend. Many thouſand acres might partake of their fertilizing effects, at an inconſider-

* See Treatiſe on watering Meadows, by Mr. Boſwell; and Mr. Davis's excellent account of Wilts.

† The value of water is not known in a variety of ſenſes, as it ſhould ſeem from the following fact: the ſame freehold had been in poſſeſſion of the ſame family for three generations; the preſent poſſeſſor had enjoyed it about fifteen years; and all this while, without having a drop of water for any purpoſe whatever, but what was carried at great pains for a conſiderable diſtance from a ſtagnant pool upon the head, in a pail. A reſolution was however formed, and the work begun in 1794, of ſinking a well about two yards diſtance from the kitchen-door; and the whole work was completed for the ſum of ſeven ſhillings and ſixpence. For this ſmall ſum an excellent ſpring of water has been obtained, and no ſmall portion of labour ſaved.

In ſome places, where they are almoſt drowned in winter, as in Altcar, by the overflow of the river Alt, till lately drained, the families were frequently in ſuch diſtreſs as to flee from home, and ſeek refuge at the Hill-houſe; and yet, in ſummer ſeaſons, this country is diſtreſſed for want of water, and that to a degree, as to require driving the cattle the ſpace of a mile to drink, the ſprings being exhauſted.

able

able expence; lands too, at preſent poor, barren, and unproductive, at a diſtance from other manures, might be rendered competent to maintain an increaſed number of valuable animals, by which the quantity of yard-dung would be increaſed, and applied, in much more abundant portions, to thoſe lands which are beyond the ſalutary effects of the overflowing waters.

The preſent ſyſtem of converting the arable into meadow and paſture grounds, to which the water, with peculiar propriety, may be applied, is a ſtrong argument in favour of irrigation.

The following neat practice may be worthy of record, as the thought of an ingenious man, game-keeper to R. W. Bootle, Eſq. Latham; for which he was honoured with a ſilver cup, by the Agricultural Society of Mancheſter. From the ditches above his houſe, he collects the water, and brings it paſt his buildings, from which his lands have a regular deſcent. This water carries along with it all the drainings from the farm-yard, which is thrown upon the lands according to the uſual cuſtom of irrigating:—but he has ſunk a reſervoir, the ſides of which are ſecured with pounded clay: in this reſervoir he preſerves his water, ſometimes till a dry ſeaſon; then throws it upon the land, when the earth wants moiſture. He puts marle into the rivulet through which the water runs, and finds it of great ſervice.

William Fitzherbert Brockholes, Eſq. of Claughton, near Garſtang, has made a moſt maſterly improvement upon a large moraſs, by means of draining and irrigating—it is a good example, and deſerves the attention of the farmers in the vicinity: alſo by Mr. Richard Jones, of Peel, in Little Hulton, near Bolton.

CHAPTER XIII.

LIVE STOCK.

SECT. I.—*Cattle* *.

THE Lancaſhire long-horned cattle are known all over the kingdom, and found in almoſt every part of the county, the prime ſtock of which is bred in the Filde, whither the purchaſers from different parts of the kingdom have uſually reſorted; but applications have not of late been ſo frequent as formerly †. The breed having been almoſt *entirely neglected*,

* The following obſervations merit to be preſerved.

To trace the origin of the breed of cattle now prevailing in Lancaſhire, would probably, at this time, be a difficult taſk. But that they were famous over the whole kingdom, is evident from being ſo frequently noticed, and in ſuch eſtimation as to be ſought after from all parts of the kingdom. In ſuch repute were they, and of ſuch ſuperior quality, that that great judge in cattle, Mr. Bakewell, thought proper to make them the ſource from which he has, by croſſing, &c. made ſuch improvement. But as the breed has been under a progreſſive ſtate of melioration in Leiceſterſhire, it ſeems to have been in an equal ſtate of retrogradation in Lancaſhire, as if over-awed by competition, has ſilently yielded to a conqueror.

It is not long ſince, however, that a celebrated traveller made the following obſervations in his tour through Lancaſhire.

"Breakfaſted at Garſtang, a ſmall town remarkable for the fine cattle produced in its neighborhood. A gentleman has refuſed thirty guineas for a three year old cow; has ſold a calf of a month's age for ten guineas, and bulls for one hundred; and has killed an ox weighing twenty-one ſcore per quarter, excluſive of hide, entrails, &c. Bulls alſo have been let out at the rate of thirty guineas the ſeaſon; ſo that well might honeſt Barnaby (*a*) celebrate the cattle of this place, notwithſtanding the misfortune he met with in one of its great fairs.

Veni Garſtang, ubi nata
Sunt armenta fronte lata.
Veni Garſtang, ubi malè
Intrans forum beſtiale,
Forte vacillando vico
Huc & illuc cum amico,
In juvencæ dorſum rui
Cujus cornu læſus fui."

(*a*) Better known by the name of Drunken Barnaby, who lived the beginning of the laſt century, and publiſhed his four itineraries in Latin rhyme.

Pennant's Tour in Scotland in 1784.

† Alexander Butler, Eſq. of Kirkland, has frequently ſold young heifers at the advanced price of 50 *l. per* head.

§ the

the pail is become the material object; and as it is an eſtabliſhed fact, that animals calculated for ſpeedy fattening are ſeldom if ever prime milkers, good points of ſhape and make are leſs attended to than the milk vein.

Some years ago, the Lancaſhire breeders ſuffered thoſe of the more ſouthern counties, as Leiceſterſhire, Warwickſhire, &c. to pick and purchaſe their beſt ſtock. Thus the northern breeders leſſened the value of their own remainder: and the others made improvements upon that which they had obtained from them on the new principles laid down by Mr. Bakewell, and adopted by Mr. Fowler of Oxfordſhire, and others. Nothing valuable is now brought ſouthwardly, out of the more northern counties, once ſo famous for breeding ſtock.

Amongſt the cow-keepers all varieties are found; they change ſo frequently, that when a cow, likely to be uſeful, and at the point of dropping calf, is brought to the market, they purchaſe it, without paying much regard either to the ſpecies or country.

Thomas Eccleſton, Eſq. of Scarſbrick-hall, has introduced upon his farm the Suffolk polls; and he remarks, they ſtand the climate, although they have a thin ſkin and fine coat; and they have, upon proof, been found to anſwer ſo well in milking, that frequent applications have been made by the ſurrounding neighbours to purchaſe them *.

Mr. Wakefield of Brook farm, near Liverpool, and Mr. George Green of Aughton, have hitherto preferred the Holderneſs. But the long horn of the true Lancaſhire breed is the prevailing ſtock of the county, and ſeem in general well adapted to the ſoil; doing leſs damage to the clay lands, than the heavy Holderneſs; and being much eſteemed by the feeder and butcher for their carcaſe.

Mr. Orme of Derbyſhire, tried nine Holderneſs cows againſt nine Derbyſhire cows of the improved ſort; the former gave the greateſt quantity of milk, but that of the latter was conſiderably more productive of butter and cheeſe. By the im-

* Theſe ſtock ſeem well calculated for the ſpongy ſoft lands, being lighter upon the ſurface than the long-horn.

proved

proved Derbyſhire cow is meant ſuch as was bred by croſſes from Lancaſhire, Warwickſhire, &c. and what the Leiceſterſhire breeders and others call the old-faſhioned ſort, before delicacy of fleſh, and the feeding properties, were ſo much attended to. This ſort of cow is generally the home-bred ſtock of Derbyſhire. The milch cows brought by the dealers to Derby market throughout the ſpring in great numbers, are chiefly of the Yorkſhire kind, from the neighbourhood of Rotheram. Theſe the farmer croſſes with a Derbyſhire bull of the above mixed breed. Shortly there will be few bulls in the ſouthern parts of Derbyſhire, without much of the Bakewell, or, which is the ſame thing, the Fowler ſort in them.

More attention is requiſite in Lancaſhire, in the choice of good bulls, than has hitherto been paid by the breeder towards the improvement of his ſtock. Mr. Bakewell has fully convinced the world, what may be effected by perſevering attention on this ſubject *.

Of the importance of dairy farming, no doubt can be entertained.

It is true that cheeſe may be imported; but milk muſt be raiſed nearly upon the ſpot where it is conſumed, and freſh-butter does not improve by carriage. Milk is the cheapeſt food, and probably the healthieſt, that can at this day be purchaſed. It is no wonder then that the demand for this article ſhould be great in this populous country, and near the great towns on the north-eaſt part.

There is much cheeſe made in this county, and alſo of excellent quality; in many reſpects equal to the Cheſhire, in ſome ſuperior. The cheeſe made in the vicinity of Leigh, Newborough, &c. for its mildneſs and rich flavour, always bears an advanced price at market †; and it is ſomewhat remarkable that the very beſt dairy (as is uſually reckoned) is the very worſt land; the ſoil not being above two or three inches deep. ‡ Superior, if only on the following account—

* Mr. Bakewell may have improved ſtock for the *grazier*, particularly where oxen are kept; but who will ſay he has been a friend to the dairy?

† About 10*s. per cut.*

‡ The lands in Weſt Leigh and Weſt Houghton.

the Lancaſhire cheeſe is free from that mixture of colouring matter, which, through the artifice of factors, or the folly of the conſumers, particularly thoſe of the metropolis, is, contrary to the inclination and better judgment of the Cheſhire dairy-women, infuſed into the milk. Nay, the factor not only refuſes to purchaſe without, but ſupplies the arnotto at his own expence, which, inſtead of adding the leaſt benefit, is known to injure the good quality of the cheeſe: ſuch is at preſent the infatuating folly of faſhion.

Many of the Lancaſhire people, as well as thoſe of other counties, are in the habit of colouring their cheeſes, and this is a very growing evil; for this purpoſe they uſe foreign arnotto, but the Cheſhire people uſe Engliſh arnotto, which is often made of ſoap and Venetian red, &c.; the laſt article is of a pernicious quality.

Dalton, belonging to Richard Wilbraham Bootle, Eſq. is unrivalled in Lancaſhire for cheeſe, and is undoubtedly the richeſt tract of land in the county; for, beſides being rich fox land, there are infinite beds of ſtone, flag, ſlate, and coal. Timber thrives here uncommonly.

Copy of a Letter to the Surveyor, on the Subject of Leigh Cheeſe.

"THE Method of manufacturing Leigh Cheeſes; with ſome Obſervations on the Quality of the Cheeſe, the Nature of the Land, and the Quantity made from a Cow.

"I ſuppoſe the method of making cheeſe is pretty well underſtood, and is nearly the ſame all England over; but as the cheeſes of different countries differ ſo much in quality, it may be well to enquire from what this difference ariſes, whether from the method of making it, or from the nature of the land on which it is made; and if both together do not contribute to this material difference.

"The farmers in Leigh pariſh make their cheeſe of two meals

meals of milk, the night's milk and the morning's, ſometimes the night's milk is ſkimmed, and part of the cream taken from the cheeſe, but this not every where, for the beſt dairies put all in; in the morning when the cheeſe is to be made, the night's milk is to be heated till it is juſt as warm as from the cow, and then mixed with the new milk as ſoon as it is milked;—into this is put a ſmall quantity of rennet juſt ſufficient to come the curd, and no more; for on this juſt proportioning of rennet and milk, they tell me, the mildneſs of the cheeſe greatly depends. The rennet is made from the ſtomach-bag of a calf, ſalted and dried, which they call a bag-ſkin; a piece of this, no bigger than a much-worn ſixpence, is put into a tea-cup-full of water, with a little ſalt, about twelve hours before it is wanted, and this is ſufficient for 18 gallons of milk, which it will come in about an hour and a half, if the bag-ſkin be good; then the curd is broke down, and, when ſeparated from the whey, is put into a cheeſe-vat, and preſſed very dry, and after that broken very ſmall, by ſqueezing it with the hands; the new curd uſed is mixed with about half its quantity of yeſterday's, and which has been kept for that purpoſe; and a part of this new curd is put by for to-morrow, if it can be ſpared; if not, all to-morrow's is put by to mix with new, as convenience ſuits, for the beſt cheeſe is always made with part old curds. Some mix the old and the new together, after both have been worked very ſmall: others put the old curds in the middle of the cheeſe: either of which ways will do very well, as I have often noticed. When the curds have been thus mixed, and well preſſed and cloſed with the hands in a cheeſe-vat, till they become one ſolid lump, it is put into a preſs for four or five hours; then taken out of the cheeſe-vat and turned, by means of a cloth put into the cheeſe-vat for this purpoſe, and again put into the preſs, where it ſtands till night; then taken out, well ſalted, and put into the preſs again till morning, when it is taken out, and laid upon a flag, or board, till the ſalt is quite melted, which will be in a day or two; then it is wiped, put into a dry room upon a turning board, turned every day, till it becomes dry enough for the market. The uſual thickneſs of the cheeſe, when dry, is

not more than three inches, ſo that in five or ſix months it is hard enough to carry to market; and a great deal of it at this age is ſent to London, by perſons who are commiſſioned to purchaſe it from the farmers. At a year old I think it is in its greateſt perfection, for if it is kept longer it grows too dry; and for this reaſon it is always ſold off as ſoon as poſſible it can be carried without damaging. The cheeſe is mild; and when toaſted it keeps all its butter within it, which makes it eat ſoft and rich. This property of its mixing together when hot, is ſaid to be owing to its being put together cool when made, for this makes the curd mild and tender, and likewiſe the cheeſe, ſo that its more ſolid particles, when heated, are eaſily ſeparated, and the whole ſo looſed and broken, that room is made for the butter, which adheres to the ſmall particles of cheeſe, and forms one pulpous conſiſtence. Not ſo when the cheeſe is overheated in making, for then more of the butter runs out, and the curd is faſter bound together than before; and when toaſting, the parts are looſened, the butter is run out, and the remainder of the cheeſe is left hard and dry.—The land round Leigh is chiefly barren, being ebb of ſoil and clay under, which makes it cold and wet. A few years ſince ſome of the farmers, encouraged by the high price of corn, marled and ploughed their farms, which had been grazed time immemorial; the conſequence was, the plough ſoon wore them out, and left them poorer than ever. The graſs that came was coarſe and dry, and the cheeſe made off theſe ploughed farms of an inferior quality, which had like to have brought the whole into diſrepute. But ſince the plough was laid by, the paſtures have come about, and the cheeſe made upon them begins to fetch as much at market as the others do. Of cheeſe, the quantity made from a cow is about 360 lb. fit for the market; beſides a ſmall quantity made before and after the proper cheeſing time, which begins when the cows go to graſs, which is generally the old May-day, and ends when they are taken up for the winter, which is commonly in the beginning of November.

COW-KEEPING.

The cows kept in the neighbourhood of Liverpool, and within the compaſs of ſix miles, are, after ſupplying the family, principally for the purpoſe of furniſhing the Liverpool market with milk * and butter †. There is milk, it is true, brought to town ‡ from a conſiderable greater diſtance (10 miles) but the general diſtance ſeems no more than what is above ſtated. In the town of Liverpool alone, there are a conſiderable number of cows kept, to the amount of 5 or 600. A ſingle field, for an outlet in the day-time, is procured at a very advanced rate; but the principal food is hay, and grains from the breweries.—In the town of Mancheſter, at the preſent juncture, there are not more than ſix cows kept within the precincts of the town, for the ſupply of its inhabitants. There comes a quantity every day by the Duke's canal.

Thoſe who are ſuppoſed to follow the beſt ſyſtem of management, with a proper capital, ſeldom keep the ſame cow more than one calf, except ſome particular favourite. They are purchaſed at the time of calving, and the calf is immediately ſold to feeders for the market, and who keep cows for that purpoſe, and diſpoſe of their milk, and procure a livelihood that way. The cows, when they fail of yielding a certain quantity of milk (about 6 quarts per day) are, if in proper

* A few farmers there are that do not carry their milk to market, but diſpoſe of it at home.

† Butter-milk is an article of food throughout the greateſt part of this county. When made into porridge, and thickened with a little oatmeal, and ſweetened with treacle, it becomes an agreeable, nouriſhing, wholeſome, and cheap food: the ſweet, mixed with the acid of the milk, makes it very pleaſant; mixed with water it is rendered a good beverage at meals, cool, refreſhing, and quenching in ſummer. It is ſometimes mixed with butter, and thus uſed to potatoes.

‡ The conveyance of milk has of late years been in wooden veſſels in carts, inſtead of the backs of horſes, as formerly. One horſe can convey a greater quantity in a cart, with more eaſe, than on his back, beſides affording more comfortable accommodations to the good woman, who alſo can carry along with her milk ſome little garden-ſtuff, according to the ſeaſon of the year; and there are but few milk-carriers that do not take a few greens, &c. from their gardens, which they can diſpoſe of amongſt their cuſtomers, whilſt they are ſelling off their milk. Of late theſe milk-carts have been covered with painted canvas upon hoops, affording a very good ſcreen from the ſeverity of the weather.

condition,

condition, diſpoſed of to the butcher; and, if properly kept, to advantage, *i. e.* for more than the firſt coſt. Mr. Mayo, who has a milk farm upon the eſtate of T. Butterworth Bayley, Eſq. of Hope, near Mancheſter, informed us, that he generally ſold his ſtock off to the butcher, at an advance of two guineas more than the original purchaſe*. But his landlord has furniſhed him with the greateſt conveniencies, and the compleateſt farm-yard obſerved in this ſurvey†, from which he has profited, and merits praiſe for his great induſtry and excellent ſyſtem, which is to feed them with the choiceſt hay, and opening food in winter; tempting their appetites, by offering his cows only ſmall quantities at once, but this is frequently repeated; and during the ſeaſon they are upon graſs, they eat corn, ground or bruiſed in a mill, of ſuch different kinds as can beſt be purchaſed; a very ſmall portion of time is employed in grazing, for being well ſupplied in the ſtalls, and from the luxuriant rich graſs in the fields, they lie at their eaſe and ruminate. Mayo generally keeps his cows about 18 months, and contrives to ſell off in the ſpring, when beef is at the deareſt.

* "I do not underſtand the mode of Mayo's cow-keeping, to keep his cows only one note of milking, and generally to keep them 18 months; which way he keeps them to profit is a myſtery to me that I cannot find out, and ſelling them at two guineas *per* head more than the firſt coſt.

"The general mode with me, and the cowkeepers in and about Liverpool, when they are kept only one milking note, is from ſix to nine months at the longeſt, for that is as long as any cow can pay at one note, except a prime cow that may be kept for ſeveral calves, or as long as ſhe does well. Cows, that only milk one note and calve, from July to November and December, are moſtly turned off in the ſpring following, when beef begins to be more ſcarce, and to ſell at the deareſt; by which means the paſture is eaſed at the beginning, when milk is the moſt plentiful, and coming in great plenty out of the country at a far diſtance. Some cows that are turned off, when beef is ſelling the deareſt, and with additional keep, may ſell for more by two or ſometimes three guineas than the firſt coſt; and as that additional keep is ſeldom or never accounted for, it always appears as if it was ſo much clear profit; but without the debtor and creditor account be clearly ſhewn, it is not fairly explained to the public. I generally ſee groſs amounts given of prime cows, but never the amount of an improving cow, of which there are more than prime cows, particularly for milking."—*Mr. Harper.*

† Among other conveniencies, a ſtream of fine water runs through the yard; and by opening a cock, he can throw a ſtream through the cowhouſe, to waſh away the dung, &c. left after emptying, and this water is obtained by draining the higher lying lands.

All

All the cow-keepers do not follow this good practice; and ſome, who regularly change their cows, do this frequently at the loſs of two guineas *per* head. A cow at dropping calf, is generally worth, *cæteris paribus*, two guineas more to the cow-keeper than ſhe would be to the butcher.—If ſhe can be ſold after nine months milk, for the firſt coſt, or any advance, it muſt depend upon the beaſt being well bought, the ſeaſon of the year when ſold, or extra keep to promote feed.

1794. October 22d. Mr. Edward Aſhcroft, farmer, at the Spellow houſe in Walton, ſent down, for the ſurveyor's inſpection, the butter of a prime cow, collected the preceding week, the milk kept by itſelf, and churned the day before: the amount of which was 16 lb. of butter of 18 oz. each. The butter had a fine yellow colour, and acknowledged by all who viewed this great curioſity an excellent ſpecimen.

The cow which yielded this aſtoniſhing quantity of butter, has had five calves, is eight years old, calculated to weigh about five hundred. The colour a light red, a good deal of white, of the Lancaſhire breed, a very long horn, which was unuſually thick towards the root. She had calved about a month before; her food eddiſh, but not of the firſt bite, or beſt quality, with grains from the brewery, or ſcalded bran; the quantity of milk ſhe gives at preſent *per* day 22 quarts; a ſpecimen of which accompanied the butter, and was tried by Dicas's lactometer, and which was 96; after ſtanding 30 hours, and the cream taken off, 103. There ſeems no ſuperior richneſs in the milk, therefore the great quantity of butter ariſes from the large quantity of milk yielded.—But this is her prime ſeaſon, ſhe will gradually fall off in quantity, but not it is ſaid inferior to the general quantity by the remaining ſtock.

It muſt appear aſtoniſhing that notwithſtanding the progenitors of this beaſt poſſeſſed, and her ſucceſſors ſtill inherit, the good qualities of this prime cow, yet there appears an indolent negligence in the propagation of the breed. A bull has never yet been thought of to propagate from full blood; for, beſides this diſpoſition to milk, when that can be got rid of, there is a general diſpoſition to fatten.

The Liverpool cowkeeper does not aim at making butter;

his ſyſtem is, to ſell milk and cream; but in the ſummer ſeaſon, when milk flows into the town from many quarters, a market ſufficient to take off the whole may not always be found, and then he is under the neceſſity of churning it, and making butter, or diſpoſing of it in cheeſe, or ſome other way; but the conſumption of milk and cream is univerſal; and to theſe two articles his greateſt attention is directed.

A good cow ſhould give daily 12 quarts, and the price of cream is generally 1 4*d.* *per* quart; new milk 2*d.* *per* quart, and inferior milk 1*d.* *per* quart *. A cow ſtands the keeper in about 1*s.* per day, for food, atttention, &c. ſo that with contingencies, and loſſes that frequently happen to the ſtock, there is but barely a living profit † left to a buſineſs, which requires much attention, and not a little ſkill in purchaſe and management.

Mr. Henry Harper's ſtatement of the expence of keeping, and produce of a cow per ann. averaged out of a ſtock of twenty-five cows, kept upon the Bank Hall eſtate. —The ſales of produce, and expence of keep, according to the preſent price of the different articles mentioned, 1794.

	£.	s.	d.	£.	s.	d.
Average butter of one cow for 52 weeks is 4 lb. per week; 208 lb. of butter, at 11*d.* per lb. - -	9	10	8			
Milk of all kinds, 52 weeks, at 3*s.* 3*d.*	8	9	0			
Price of calf - - - -	0	4	0			
Three tons manure, at 4*s.* 6*d.* -	0	13	6			
Cartage ſaved, by the dung on the premiſſes - - - -	0	7	6			
				19	4	2

* Dearer at Mancheſter market a trifle; probably the quality may be ſuperior.

† In calculations we too frequently find that no allowance is made for contingencies, or falling off of quantity. Twelve quarts *per* day is the prime milking quantity; and though ſome cows may have given more at the firſt, theſe kind of ſtock more rapidly fall off in quantity, whilſt, at the ſame time, the quality was of leſs value, in proportion to the exceſs of quantity.

Expences

	£.	s.	d.	
Expence of graſs for the ſummer -	2	5	0	
Hay, 160 ſtone, at 8½ *d.* - - -	5	13	4	
* Provender, 26 weeks, at 3 *s.* 6 *d.* -	4	11	0	
After graſs or eddiſh - - -	1	10	0	
Loſs in cattle 5 per cent. 9 *s.* per head	0	9	0	
Cart-horſe and keep (to carry the produce to market) - - -	0	2	6	
Dairy-maid - - - -	1	0	0	
Attendance to milk - - -	1	2	6	
Wear and tear, mugs, &c. - -	0	1	6	
Salt for 208 lb. butter, 16 lb. -	0	1	9	
				16 16 7
Profit per ann. -				£. 2 7 7

The average milk of Mr. Harper's ſtock is ſeven quarts of milk per day the year through; although ſome prime cows in their full perfection, and in the height of graſs, may yield when freſh calved eighteen, twenty-four, or even thirty quarts, of milk in a day; but this ſuperabundance is but of ſhort duration.—From every twelve quarts of milk is produced one pound of butter, of 18 oz. to the lb.

* The provender conſiſts of two feeds, morning and evening, each day, half a peck of potatoes or turnips cut and given raw, value one penny halfpenny; one pint of oats and one pint of barley mixed together, and boiled with chaff, cut ſtraw, bran, or malt-duſt, mixed with the potatoe or turnip, value one penny halfpenny, or three pence each meal. The corn is boiled in plenty of water till it burſts, and the water is uſed in the mixture.

Average Price of BUTTER in the Liverpool market from the ſame, for the years 1791, 1792, and 1793.

1791.				1792.				1793.			
Weeks.	d.		s. d.	Weeks.	d.		s. d.	Weeks.	d.		s. d.
7.	12	—	7 0	16.	11	—	14 8	18.	12	—	18 0
19.	11	—	17 5	4.	12	—	4 0	8.	13	—	8 8
2.	11½	—	1 11	12.	10	—	10 0	11.	11	—	10 1
1.	10½	—	0 10½	1.	13	—	1 1	4.	10½	—	3 6
18.	10	—	15 0	9.	11½	—	8 7	7.	11½	—	6 8½
5.	9	—	3 9	8.	9½	—	6 4	2.	14	—	2 4
				2.	10½	—	1 9	2.	12½	—	2 1
52 Weeks		-	45 11½	52 Weeks		-	46 5½	52 Weeks		-	51 4½
Average in 1791.				Average in 1792.				Average in 1793.			
10½ 12/52 per lb.				10½ 42/52				11¾ 22/52			

Average price of butter for the three years is, per lb. 11 6/13 *d.*

The ſyſtem at Mancheſter is nearly the ſame as at Liverpool, (ſee the preceding note upon Mayo's good management). It does not, however, appear, that ſo many cows are kept within that town, it being ſupplied by a whole circle of ſurrounding country; whereas Liverpool has only half the quantity of land, from its maritime ſituation. The price of labour too, about Mancheſter, is ſuch, that the milk paſſes through the hands of retailers, who buy it wholeſale from the farmers,—who carry it generally upon horſes, and whoſe ſervant, upon diſcharging his load, can immediately return and become uſeful at home.

There have been lately introduced milk ciſterns, formed out of a black cloſe-grained ſtone, ſomewhat ſimilar to black marble. The Rev. Mr. Johnſon has one, containing 13½ feet, another 15½, the expence of which were 2*s.* 2*d.* per foot, theſe are furniſhed with lead pipes at that price. Theſe ciſterns are remarkably neat, and eaſily cleaned.

The practice of managing the milk for butter in this county, might be of ſervice, if followed in other places. Except in the county of Cheſter, it ſhould ſeem (as the ſurveyor underſtands) peculiar to this diſtrict. The mode is, dividing the milk into two parts; the firſt drawn, being ſet apart for family uſe, after being ſkimmed; the cream of which goes into veſſels appropriated to receive it; as alſo the whole of the ſecond, or laſt, drawn milk, provincially called *afterings* *; theſe two being mixed together, are ſtirred, but not a great depth, to prevent the bad effects of foul air accumulating on the ſurface: and kept, according to the ſeaſon of the year, expoſed to the fire, to bring on fermentation and fourneſs; which is accelerated by that which may remain in the pores of the veſſels; to prepare this fermentation, they are not ſcalded, except after having contracted ſome taint: and then to accelerate it (the quicker it is the better) the veſſels are ſometimes rinſed out with ſour butter milk; in which ſtate the milk is ready for the churn; and, in conſequence of this treatment, more butter is obtained, and of a better quality, than if the milk was churned ſweet. And the butter-milk, as it is called, after the butter is extracted, inſtead of being given to the hogs, as is generally the practice in many counties, becomes, under this proceſs, an excellent food for man, both wholeſome, and pleaſant, as before-mentioned. This is the ſort of butter-milk which, it has been remarked, is neceſſary for ſuch labouring poor as live on potatoes.

EXPERIMENTS REGARDING MILK.

Thomas Wakefield, Eſq. Brook-farm †, about two miles

* About one half from each cow, each meal; but the quantity taken firſt in ſome meaſure depends upon the conſumption of milk in the family.

† Mr. Wakefield has applied the ſteam of warm water for ſome time paſt, in his ſtoves; and, by its effects has produced ſome very luxuriant fruit, both pines and melons. Mr. Wakefield ſeems to think that a new field, in the proceſs of vegetation, may be diſcovered through the means of this application. But he is preparing to lay before the public the particulars of the proceſs, and its effects.

and a half from Liverpool, keeps a regular account of the produce of his milk, butter, and amount of ſales, poſted up every fortnight; with remarks upon the effects of different food, change of weather, or any other particular cauſe, which may occaſion any conſiderable variation in the amount of the different produce. Theſe remarks are entered into the margin—from theſe regiſters the ſurveyor has been favoured with the following extracts:

1ſt. An experiment made on ſeven cows, for three ſucceſſive weeks. Firſt week, they produced 289 quarts of milk. This week he took only one pint of drippings, or afterings, from each cow, each meal; which, together with the cream of the former or fore-milk, produced 25¾ lb. of butter.

The amount of this week's ſales of ſweet and churned milk and butter, from this method, was £. 2. 7 *s.* 4 *d.*

2d. Second week. The ſame cows produced 294 quarts of milk. This week he took half of the milk each cow gave each meal, as afterings or drippings; theſe, with the cream of the fore-milk, produced 28½ lb. of butter.

Amount of ſales this week, from this management, was £. 2. 4 *s.* 2 *d.*

N. B.—Although there was more butter produced, there was leſs new milk brought to market.

3d. Third week. The ſame cows produced 287 quarts of milk. This week he took only half a pint of drippings from each cow each meal, which, with the cream of the fore-milk, produced 23¾ lb. of butter.

Amount of ſales this week was £. 2. 5 *s.* 4 *d.*

N. B.—The fore-milk, or firſt-drawn milk, is put into leaden ciſterns, and is found to anſwer beſt, if not above three inches deep. The amount of ſales includes the amount of ſweet-milk, butter-milk, and butter, as produced from new-milk.

From the foregoing experiment it appears, that though the ſecond week's produce of both milk and butter was the greateſt, yet the amount of ſales was the leaſt; which deficiency ariſes from the ſmall quantity of ſkim milk, by churning ſo much afterings. Butter-milk being only ½ *d.* per quart, ſkim-milk 1 *d.*

4th.

4th. From the 1ſt of May 1790, to 30th April 1791, 100 cows produced 271,270 quarts of new milk, 23,632 lbs. of butter, and amount of ſales £. 2,854. 2 *s.* 9 *d.*

It would have been ſatisfactory if the foregoing curious ſtatements, had been attended with a regular debtor and creditor account, with profit and loſs, account of ſales of cattle, with a number of other particulars; ſo as to have clearly ſtated the clear gains of ſuch large groſs receipts.

5th. The following ſtatements may prove the advantage of regular churning, or rather diſadvantage of irregular work. Theſe operations being ſo very heavy, it became too much for a couple of men to ſupport, which occaſioned a machine to be procured, a cog-wheel, &c. and by which is effected, with a horſe and a boy to drive, in one hour and a quarter, what was uſually the labour of two men five hours *.

Quantity of new milk.	Quantity of butter by hand-churning.			
Quarts.	Pounds.	£.	*s.*	*d.*	
6,471	364	47	1	7	Amount of Sales.
6,644	397	49	0	9	
6,995	348	49	0	9	
Quarts 20,110	Pounds 1,109	£. 145	3	1	

Quantity of new milk.	Quantity of butter by machinery.			
Quarts.	Pounds.	£	*s.*	*d.*	
7,261	469	55	4	1	Amount of Sales.
7,675	482	56	14	11	
8,120	574	65	3	8	
Quarts 23,156	Pounds 1,525	£. 177	2	8	

The above quantities of milk were the produce of ſix ſucceſſive fortnights.

* *Hand Churning and Machinery.*

"There can be no difference in the churning, if the hand-churning be worked briſk till it offers for butter; if prepared in the ſame manner, which always may not have been the caſe with Mr. Wakefield, therefore machinery may have the advantage with others as well as Mr. W."—*Mr. Harper.*

There-

Therefore if 20,110 quarts yield 1,109 pounds of butter, how many pounds will 23,156 quarts yield?

Anſwer 1,277

1,525 produced by machinery

248 pounds more than would have been produced by hand-churning; which, at 10*d.* per lb. is £. 10. 6*s.* 8*d.*

Quarts.	£.	*s.*	*d.*	Quarts.
Again, if 20,110 ſell for	145	3	1	what will 23,156 ſell for?
Anſwer	167	2	8	
	177	2	8	did ſell for.

£. 10 0 0 profit by new mode of churning.

Again, if 23,156, gain £. 10. what will 271,270 quarts gain?

Anſwer - £. 117. 2*s.* 11*d.*

Hence it appears, that a churning machine, on one hundred cows, in twelve months, will gain £. 117, beſides the expence of labour.

A ſhort-horned cow, upon an average of twelve months, yields nine quarts of milk per day, and 4½ lb. of butter per week.

A Lancaſhire long-horn yields eight quarts of new milk per day, and four pounds of butter per week for twelve months.

N. B.—In making the foregoing experiments, the cattle have had always the ſame kind of food. But to know the clear reſult, the quantity of food conſumed by the two breeds of cattle ſhould be clearly aſcertained, before any deciſive concluſion can be drawn. The produce of milk and butter is in favour of the Holderneſs—neat balance, not yet apparent, whether in favour of long or ſhort-horn. The fleſh of the latter is ſaid to be of inferior quality.

THE SURVEYOR'S EXPERIMENTS.

I directed the uſual quantity of milk generally churned at one time, and collected according to cuſtom, to be meaſured previous

vious to the operation: 15½ gallons milk, three pints warm water added. After the butter was extracted, the milk meaſured again thirteen gallons five pints. Quantity of butter produced 8 lb. 4 oz.

Again, directed the cream from all the cows for the ſame ſpace of time only, to be collected and churned without any other milk. Quantity, cream four gallons, and three pints of water added. Produce of butter, 4 lb. 14 oz.; of milk, after butter was extracted, four gallons one pint.

Obſervation. More butter, from quantity, in the laſt experiment; but a great deficiency of butter this week from this mode.

Leſs quantity is loſt by extraction of butter than might have been expected, conſidering abſorption of veſſels, ſplaſhing over of milk, &c.

Both theſe experiments prove the great advantage of ſelling cream at 14*d.* per quart, in preference to churning.

	£.	*s.*	*d.*
Ergo. Firſt, ſay butter worth, at 12*d.* per lb. -	0	8	3
Butter-milk, at 2*d.* per gallon, worth - -	0	2	2¼
	0	10	5¼
But the milk of the firſt 62 quarts, even at 2*d.* per quart only, without the trouble of churning, was worth - - - - -	0	10	4
Again, 4 lb. 14 oz. butter worth, ſay - -	0	4	10
Butter-milk 4 gallons 1 pint, at 2*d.* per gallon -	0	0	8¼
	0	5	6
But 4 gallons of cream, at 4*s.* 8*d.* per gallon. or 14*d.* per quart, worth - - -	0	18	8
In favour of cream - *£.*	0	13	2

Upon his farm at Aughton Mr. G. Green obſerves, that the average milk by his cows has been nine quarts of milk by the ſhort-horn, and ſeven quarts of milk per day by the long-horn cows; and of butter eight pounds per week by the former and

ſeven

ſeven pounds per week by the latter. This quantity is three pounds per week more than either Mr. Wakefield's or Mr. Harper's cows yield, which are equal in quantity, namely each 4lb per week. The two farms are about equal diſtances from Liverpool, *e. g.* Bank Hall, two miles north weſt.—Brook Farm two miles ſouth eaſt.

LACTOMETER.

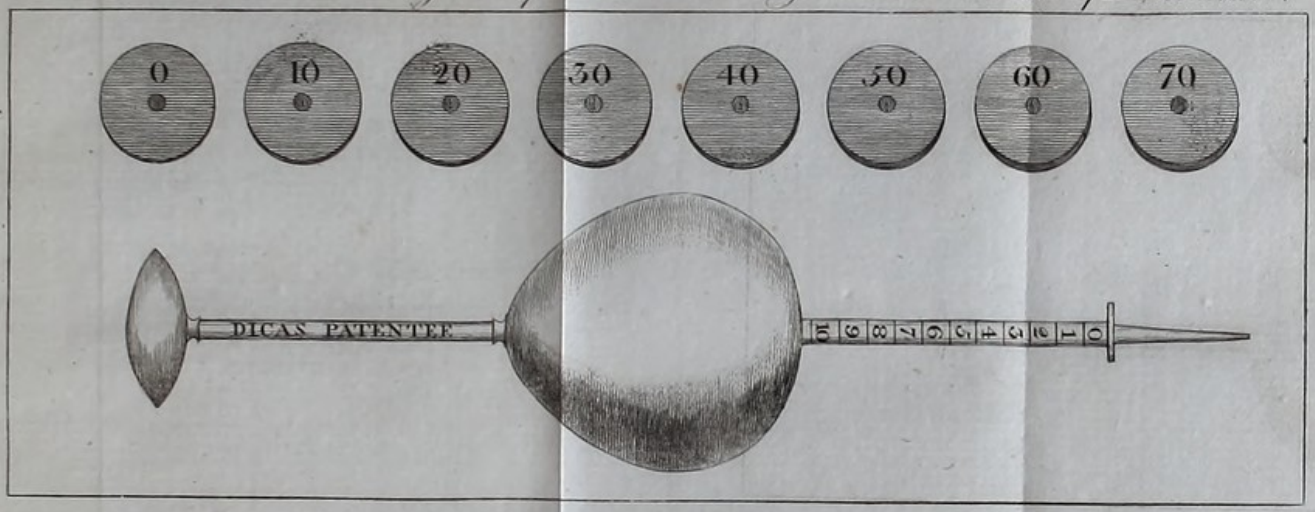
A lactometer, to try the different qualities of milk, has been invented by Mr. Dicas, mathematical-inſtrument-maker, in Liverpool, and patentee of a neat, ſimple, and acurate inſtrument to try the ſtrength of ſpirituous liquors and worts.

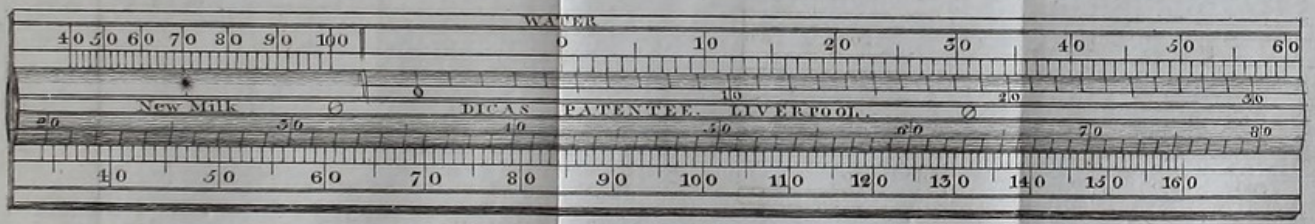
This lactometer aſcertains the richneſs of milk, from its ſpecific gravity, compared with water, by its degree of warmth taken by a ſtandard thermometer, on comparing its ſpecific quality with its warmth: on a ſcale conſtructed for this particular purpoſe, and by which, if the principle be right, may be diſcovered not only the qualities of the milk of different cows, paſtures, foods, as turnips, potatoes, grains, &c. but alſo probably which may be the beſt milk, or beſt paſtures for butter, and which for cheeſe. This inſtrument, however, is yet in its infancy. The ſurveyor took one with him upon his journies, and made experiments at different places; but time ſufficient for a full and complete experiment ſeldom offered: other circumſtances intervened, and prevented a fair trial; but, at his own houſe, he has made a number of varied experiments, upon different milks from different farms.

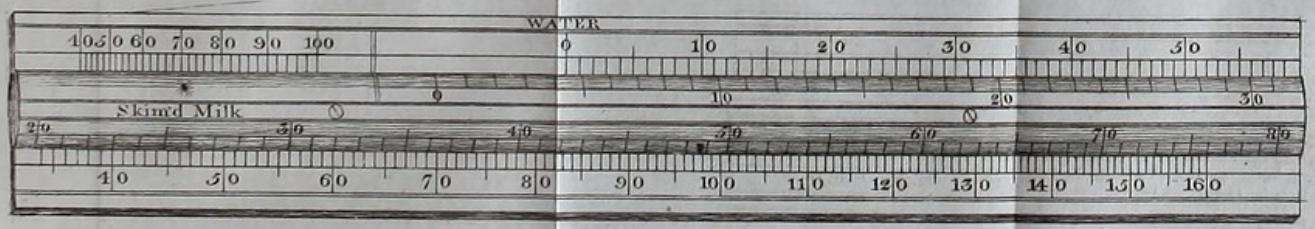
Obſervations on the conſtruction of the LACTOMETER *for determining the goodneſs of Milk, and the advantages to be derived therefrom: By* Mr. DICAS.

The LACTOMETER is conſtructed with ten diviſions upon the ſtem (ſimilar to the patent brewing-hydrometer) and with eight weights, which are to be applied only one at a time upon the top, to obtain the weight of the milk: an ivory ſliding-rule accompanies this inſtrument, upon the middle or ſliding part of which is laid down the lactometer weight of the milk, going from

Dicas's LACTOMETER *Engraved for Mr. Holt's Agricultural Account of Lancashire.*







from 0 to 80; and oppoſite thereto are placed the various ſtrengths of milk, from water to 160—100 having previouſly been fixed upon, from a number of experiments, as the ſtandard of good new milk, and each of the other numbers bearing a proportionate reference thereto.

At one end of the ſliding-rule the degrees of heat from 40 to 100 are placed with a ſtar oppoſite, as an index to fix the ſlide to the temperature of the milk.

The whole being graduated to ſhew the exact ſtrength of the milk as it would appear in temperature of 55 degrees of heat, although tried in any inferior or ſuperior temperature between 40° and 100°; thus the great inconvenience which would attend bringing the milk at all times to one temperature is avoided, and a ſimple mechanical method of allowing for the contraction and expanſion ſubſtituted.

And as ſkimmed milk, being diveſted of the particles of butter which exiſted before ſkimming, appears to have a leſs degree of affinity with that than the new milk has, one ſide of the ivory ſliding-rule is adapted to ſkimmed, and the other to new milk.

GENERAL RULE.

Firſt, find the temperature of the milk with the thermometer, and fix the ſliding-rule ſo that the ſtar ſhall be facing the degree of heat the mercury riſes or falls to; then put in the lactometer and try which of the weights, applied to the top, will ſink it to ſome one diviſion upon the ſtem; add the number of the weight upon the top, and that of the diviſion together, and oppoſite the ſame formed upon the ſide, will be ſhewn the ſtrength of the milk.

EXAMPLES.

OF NEW MILK.—If in the temperature of 72°, the lactometer with the weight 40 ſinks to 9 upon the ſtem, fix the ſlides ſo that the ſtar ſhall be facing 72°; then oppoſite 49 will be found 100, the ſtrength of the milk.—Again, if in 60° the lactometer with 50 on the top, ſinks to 6 upon the ſtem, the ſlide being fixed for new milk ſo, that the ſtar ſhall be at 60° of heat, then

facing 56 will be found 110, the ſtrength of this milk in proportion towards the other, provided it is equally replete with cream.

To diſcover which, it becomes requiſite theſe two ſamples ſhould ſtand a certain time that the cream may riſe, which being taken off, they are to be tried with the lactometer again; and as the cream is evidently the lighter part, the milk will appear by the lactometer denſer or better in quality than before. Suppoſe the milk in the firſt example to be 57 by the lactometer in 60 degrees of heat, then the ſtrength by the ſkimmed-milk ſide of the rule will be 112. And admit the ſecond example of new milk to be 58 in 64° when ſkimmed, the ſtrength would be 116.

As a compariſon—

Say No. 1. New milk	- - -	100
Ditto ſkimmed	- -	112
	Difference -	12
No 2. New milk	- - -	110
When ſkimmed	- - -	116
	Difference -	6

From which it appears that No. 1 has produced a larger quantity of cream than No. 2, and conſequently may be deemed the better milk.

Some inſtances have occurred where the ſtrength of new milk has only been about 80, and when ſkimmed near 100.

Thus it may, without the leaſt impropriety, be called a milk much better adapted for making butter than cheeſe. And the experiment No. 2, a milk more advantageous for cheeſe than butter, it being conſiderably denſer, and conſequently containing a much larger portion of the curd, or more ſolid parts, which conſtitute the baſis of cheeſe. The ſerum or whey in general being near the ſame denſity.

Inſtances wherein the LACTOMETER *may be uſeful.*

In diſcovering what breed of cattle are moſt advantageous.

What food in the winter ſeaſon, whether carrots, turnips, potatoes, &c. are beſt.

What the effects of different paſtures may be.

How far particular farms are beſt adapted to making butter or cheeſe.

How far the inconvenience of large cheeſes in ſome dairies being too rich to ſtand, may be prevented, by diſcovering when this redundancy of richneſs exiſts in the milk.

And in fixing a ſtandard for the ſale of this uſeful article of life.

A ſtandard for ſkimmed milk may readily be fixed by ſaying what ſtrength the common ſaleable ſkimmed milk ſhall be by the lactometer, or what its ſpecific gravity ſhall be in relation to that of water in the temperate degree of heat, and that an eaſy compariſon may be made between the ſpecific gravity of any milk, and its lactometer ſtrength: this inſtrument is ſo conſtructed that one of ſpecific gravity ſhall exactly correſpond with three of ſtrength—that is, the ſtrength of 90 by the lactometer is a milk whoſe ſpecific gravity is 1030, to common pump-water 1000.

From a number of experiments and obſervations, the common ſaleable ſkimmed milk in Liverpool is from 52 to 64 of ſtrength, and that of new milk from 70 to 80; but it would be difficult to fix any ſtandard for the latter, unleſs ſome mode could be deviſed to diſcover whether it was mixed with old milk or not. The only method would be, after fixing the ſtrength of it, to try, by letting it ſtand, to diſcover if it produced that quantity of cream, which, as new milk, it might reaſonably be expected to do.

FEEDING CATTLE.

The following practice, by an experienced farmer, (Mr. Henry Harper, Bank Hall) is given in his own words.

" I HAD one year ſix cows that I houſe-fed, all at one time, and nearly all of an age; and by way of experiment, I fed two with turnips and ground corn; and two with boiled potatoes and ground corn; and two with raw potatoes and boiled corn: they were all put to feed at one time, and when I thought them fit for the market, I ſold three, one from every lot, and went to ſee them dreſſed. In thoſe two fed with ground corn and turnips, and ground corn and boiled potatoes, there was little or no difference; but that which was fed with raw potatoes and boiled corn, was better in fleſh, and more fat within ſide, than the other two, by a fortnight's keep; and this was not only my opinion, but the butcher's who killed them: the other three I kept three weeks longer; and when killed, they were proportionably nearly in the ſame ſtate with the others, but better by being kept the longer; ſo I prefer boiled corn to any ſort of grain, and think it more forcing, either for milk or feeding. They had all one and the ſame quantity of corn, &c."

Boiling corn has been practiſed by ſome others, with good ſucceſs. A little linſeed improves the quality. Hay ſeeds, that drop out of the hay, ſhould be carefully preſerved, and worked up in mixtures of potatoes or oats, either ſcalded or boiled. The ſurveyor has experienced the good effects of hay-ſeeds upon his cattle, for many years; an ingenious farmer, lately talking upon this ſubject, obſerved, that the ſeeds of many weeds might be converted to good uſe; and ſpoke with confidence of the feeding quality of ſome of them.

Inſtead of oil cake, the lint ſeed boiled, and inſtead of ſpent grains from the breweries, barley boiled and mixed together, with the addition of chopped ſtraw, hay-ſeeds or chaff, have been tried by Mr. J. Balmer, of Toxteth Park, both upon milch and feeding cattle; and with more profit than with either of the reſiduums.

Method

Method of feeding Cows, by MR. HENRY HARPER.

There are ſeaſons in which it is ſo very difficult to make good hay, that much will be damaged although the greateſt attention be paid. The conſequence of which is, the milk given by the ſame cows is leſs in quantity, and of inferior quality; the butter both loſes its natural colour and good flavour; to remedy which, Mr. Harper takes the following method.

He provides ſome ſort of provender for his cows; that is, ſome ſpecies of ground grain; and to mix with it, he procures ſome hay of the beſt quality, and from the moſt fertile lands, which he treats in the following manner. This rich hay is to be uſed as an ingredient for tea *, by pouring boiling water upon it; and the infuſion he makes uſe of to ſcald his ground grain, chopping the hay, before it is infuſed, with an engine, deſigned for the purpoſe of cutting ſtraw; and this hay, ſo cut to the ſize of one inch long, is to be mixed with ſcalded provender, to the amount of two or three quarts to every beaſt. This mixture of bruiſed grain, ſcalded with the infuſion of rich hay, and the addition of the hay to the amount of two or three quarts to each beaſt, improves the flavour of the butter, and reſtores it to its proper yellow colour.

The milk cows in general, not in the vicinity of towns, are wintered moſtly upon hay. Were they, according to circumſtances, fed with turnips or cabbages, they would be kept at leſs expence to the farmer, and ſummer fallow be exploded. Some few, who have begun to ſow turnips, ſell the overplus to their farming neighbours at from 6*d.* to 8*d.* per buſhel, which has produced from thirty to 40*l.* and upwards, per acre, eight yards to the perch.

* "If hay be damaged, it is not proper food for milk cows; and making good hay into tea is both tedious and unneceſſary, as the ſtomach of the cow will beſt digeſt the food, and do all that is neceſſary; and in my opinion, the beſt engine for chopping hay is in the cow's mouth, which nature has provided. True it is, the better a cow is kept, the more milk and butter ſhe will give. If damaged hay cannot ſafely be given to the young cattle, it may be uſed as litter."—*J. B.*

Vegetables

Vegetables boiled for Cattle.

Before concluding this article, it may be proper to obſerve, that a college of Roman catholics reſiding at Stony Hurſt, near Clithero, in this county, keep their horned cattle within doors, and fed them upon boiled vegetables; amongſt which were included all ſorts of weeds, dock, nettles, &c. It is well known that on many parts of the continent they feed their cattle on the leaves of trees.—What a reſource here opens for the attentive and ſkilful agriculturiſt!

SECT. II.—*Sheep.*

THIS is not a ſheep diſtrict, therefore they cannot be any where numerous in the county.—There are flocks (but flock is an undeterminate number) it is true of half-ſtarved creatures upon the mountains, but in ſuch proportion, that Mr. Eccleſton is of opinion there is not a ſingle ſhepherd, properly ſo called, in the whole county.

Thoſe which are kept upon the feeding diſtricts are bred in Scotland, and purchaſed by the Weſtmorland farmer from thence at a year old, and afterwards by the Lancaſhire grazier from Weſtmorland at four years old, fatted and ſold for ſlaughtering.

There is a ſingular cuſtom prevails in the northern part of the county, and which is univerſal amongſt the mountains and waſte lands, which is as follows: Whenever a tenant enters upon a farm upon which *there is a heavy-bred flock of ſheep*, that the ſheep are ſeparated and ſorted; viz. the wethers aged, ewes, one year old (provincially hogs) two years old (twinters) and then valued at certain but different prices; and the tenant by covenant in his leaſe to leave an equal number of each ſort upon his farm when he quits, or to pay the value in money, according to the deficiency which may appear in each ſort; but if proved, on ſtating a balance, that it is in favour of the tenant; he either paid for the overplus number, or his landlord takes them at a proper valuation.

The ſheep are generally delivered to the coming-on tenant about Martinmas, and marked when delivered with red (a ſpecies of ochre) in the forehead. The red is provincially called *ſmit*; and every different farmer marks his ſheep upon the back, buttock, ſhoulder, or in ſome other part, in a different manner from his neighbour, and alſo cuts the ear of his ſheep, when lambs, different from the other, as a mark of diſtinction between the two flocks; theſe two marks, that upon the ear, and the other upon the wool, are never altered, that is, each farm preſerves its own peculiar mark, although the tenant be changed, and is looked upon as hereditary to the eſtate. Initials of the owner's name are avoided, though ſometimes practiſed, becauſe the largeneſs of the mark depreciates the value of the wool.

In the mountainous parts of the country, fleece wool, weighing 16 *lb.* the ſtone, ſells for 7 *s.* Skin wool at 8 *s.*

"Sheep delivered to a farmer, when he enters upon a farm, are valued at about 8 *s.* When ſold to the butcher, from the common, 10 *s.* 6 *d.* and when fatted in the incloſed ground from 16 *s.* to 21 *s.* As to the quantity kept on commons, it is very hard to aſcertain, becauſe there is ſo much difference between the high commons and the low; for inſtance, on the high commons, ſuch as Seathwaite fell, not more than four or five upon an acre; incloſed land in Lowfurneſs, is allowed to fat ſeven or eight on an acre, but theſe are twice the weight of fell ſheep. Theſe are frequently ſold from 32 *s.* to 40 *s.* per ſheep.

There are but few ſheep kept in the ſouthern part of the county, except thoſe purchaſed in diſtant parts, by the butchers, and kept a few weeks on graſs for their own convenience—or, by a few gentlemen †, for the convenience of their families, curioſity, or occaſionally to feed upon, or eat off, their turnips, previous to laying down the land. In the northern part of the county, ſheep are bred and kept upon the

* Generally of Culley's breed from Northumberland.

† Mr. Eccleſton, before mentioned, has a Spaniſh ram, a preſent from his Majeſty, which has already improved the quality of his wool.

mountains

mountains and moorland. There is alſo a breed called the Warton, or Silver-dale cragg ſheep, which is much eſteemed for the fine flavour of its fleſh, fineneſs of its wool, and tendency to fatten. They paſture upon very rocky lime-ſtone land. Their wool commonly ſells at about twelve ſhillings per ſtone, of 14 lb.

Annotations.

1. The ſmall number chiefly owing to the number of *dogs* kept in the towns, and univerſally by the cottagers in the manufactories.

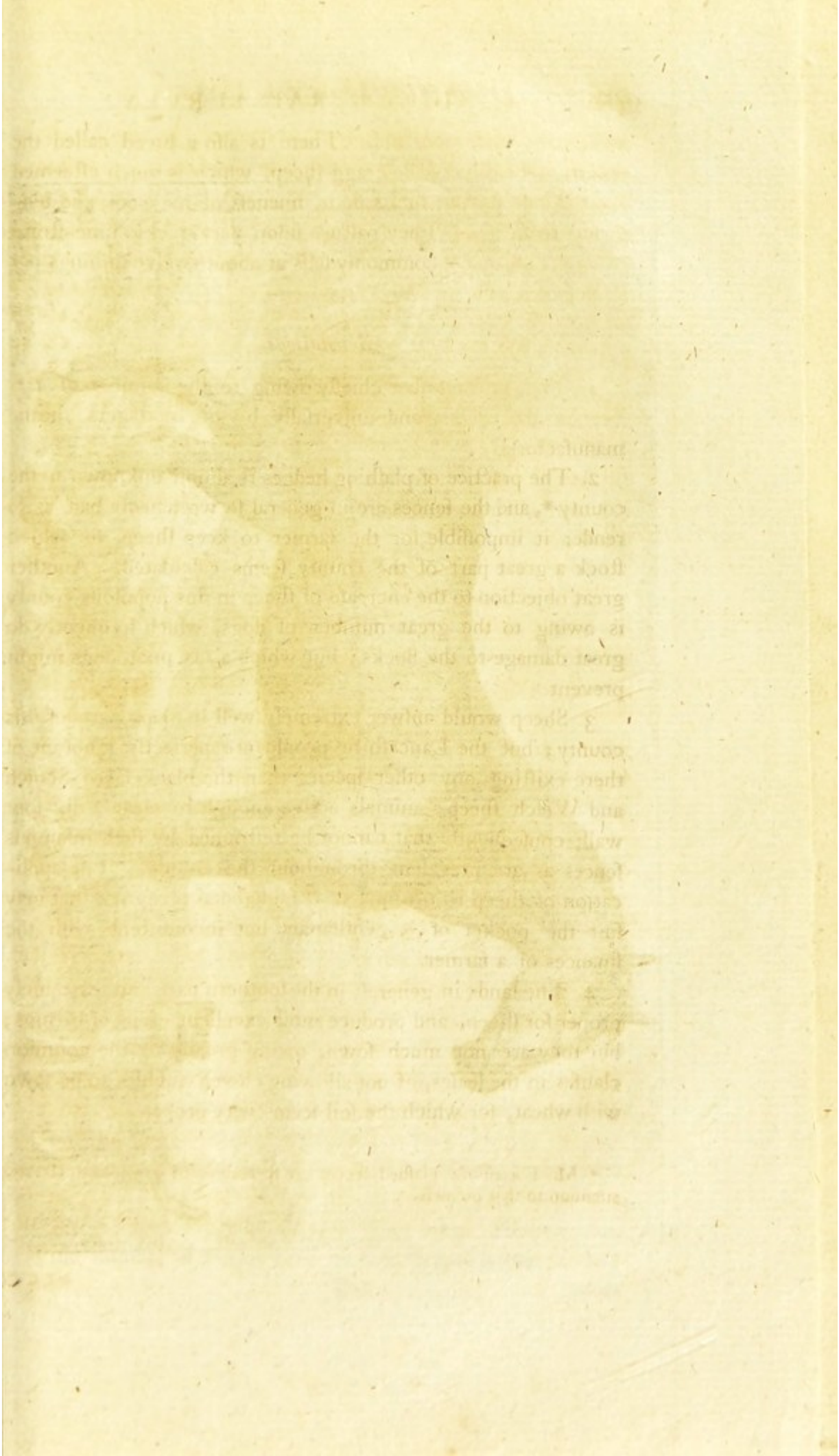
2. The practice of plaſhing hedges is almoſt unknown in the county *, and the fences are in general ſo wretchedly bad, as to render it impoſſible for the farmer to keep ſheep, for which ſtock a great part of the county ſeems calculated. Another great objection to the encreaſe of ſheep in this populous county is owing to the great number of dogs, which frequently do great damage to the flocks; but which a tax upon dogs might prevent.

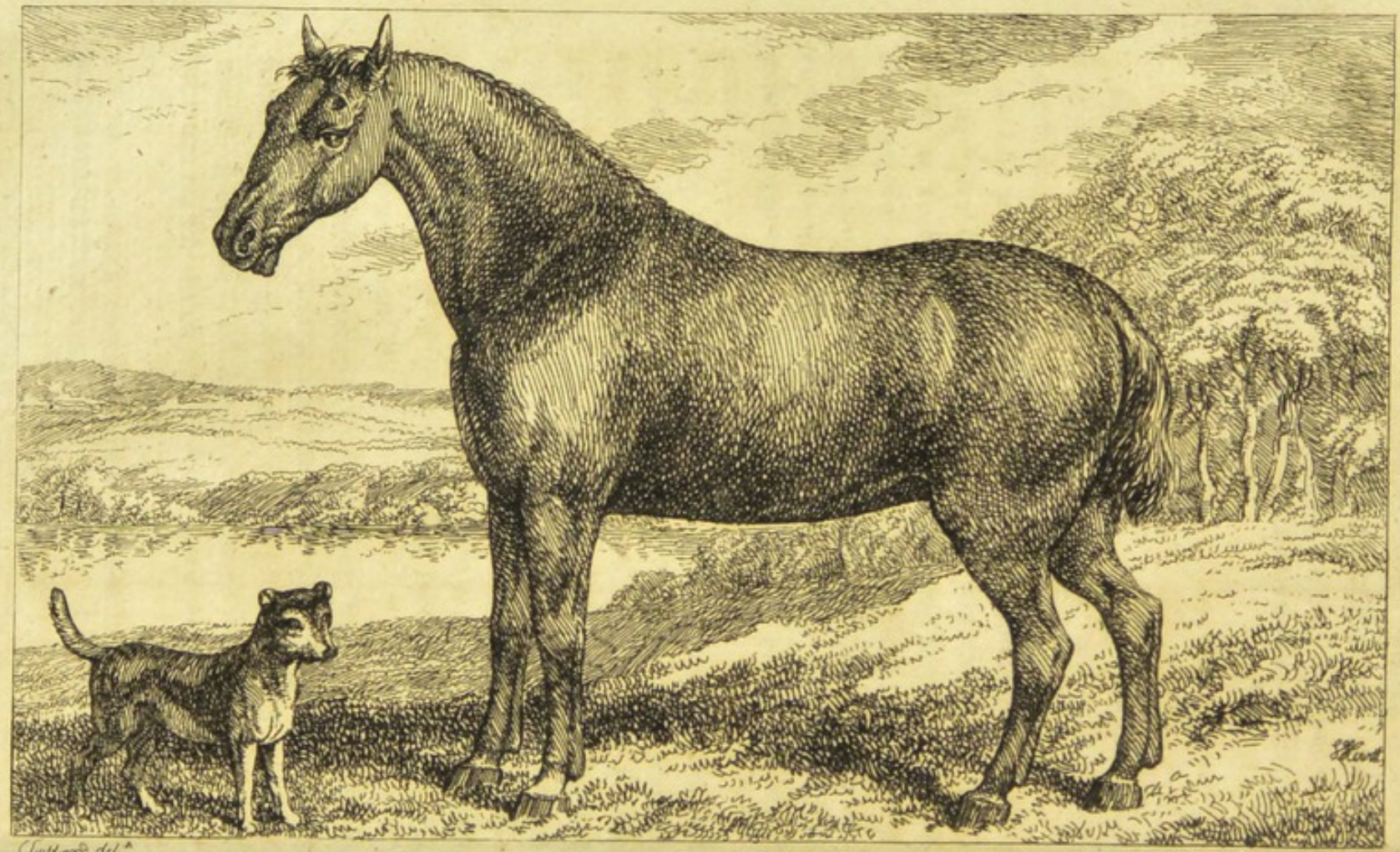
3. Sheep would anſwer extremely well in many parts of this county; but the Lancaſhire people are perfectly ignorant of there exiſting any other ſpecies than the black-faced Scotch and Welch ſheep: animals active enough to clear a ſix-foot wall, conſequently that cannot be reſtrained by ſuch infamous fences as are prevalent throughout the county. The application of ſheep to turnips, is conſidered as a caprice that may ſuit the pocket of a gentleman, but inconſiſtent with the finances of a farmer.

4. The lands in general, in the ſouthern parts, are extremely proper for ſheep, and produce moſt excellent crops of turnips; but they are not much ſown, owing greatly to the common clauſes in the leaſes, of not allowing clover ſtubbles to be ſown with wheat, for which the ſoil ſeems very proper.

* Mr. Eccleſton's plaſhed fences are ſpecimens of great neatneſs and attention to that buſineſs.

SECT.





SECT. 3. *Horſes.*

A GREAT number of horſes have of late years been bred, owing to the advanced price they have generally fetched at market; but proper attention in the choice of either the brood mares, or ſtallions, has not been paid. The ſtocks, both of cows, of ſheep, and horſes, are capable of great improvements, which merit the conſideration of every breeder.—The ſame paſture will rear the young ſtock, of either cow, ſheep, or horſe, of the beſt kind, at the ſame coſt as a ſtock of the very worſt quality; but a three-years-old heifer, of the firſt kind, will ſell for double the price of one of a ſimilar age of the latter deſcription; if a colt, the proportion is ſtill higher, according to the ſuperiority of its breed. If the above ſtatement be true, is it not to be wondered at, that greater attention has not been paid by the breeder; ſince both the climate and lands are capable of producing good breeds, and there are purchaſers enough to excite encouragement? Strong horſes are moſt in uſe, except among gentlemen, who breed for themſelves.

Horſe-ſurgery of late, under Mr. Moorcroft, and by the eſtabliſhment of the Veterinary College, ſeems making rapid progreſs towards a degree of perfection unknown in other countries.

Unfortunately no attention has been paid to the diſeaſes of neat cattle, ſheep, ſwine, &c. Were the noſtrums of individuals for thoſe animals communicated to the Board, probably there would be found ſufficient remedies for the diſorders they are liable to.

Should another circular letter ever be emitted by the Board, might not that be a proper article for enquiry? Or would it not be adviſeable to ſend a circular letter to practitioners in the farriery line, and farmers, &c. &c. ſpecifying each diſorder; and by way of encouragement, to grant honorary rewards or medals to ſuch may make known the moſt ſatisfactory receipts for cure or prevention?

Mr. Eccleſton ſuggeſts the following hint. He imagines, that the number of horſes bred in this, ſurpaſſes that of any

other county in the kingdom *. He propoſes, " that a yearly tax be laid upon ſtallions of five times the ſum † they receive for ſerving each mare, for the ſeaſon; it would prevent the uſe of the inferior ſort of ſtallions, which only ſerve to procreate thoſe of ſmall value which are nearly uſeleſs, with which almoſt every part of the kingdom abounds. A very conſiderable ſum would annually accrue to government, were each ſtallion to pay five times the ſum for a licence, that he ſerves each mare at, viz. a horſe that covers at one guinea for the ſeaſon, ſhould pay five guineas for a licence; and others, that cover at 20*l.* ſhould pay one hundred ‡.

would

* The farms are exceedingly ſmall, and each farmer almoſt keeps a brood mare.

† Who would venture to breed at ſuch an expence?—A tax upon ſtallion horſes would undoubtedly be a very great ſtep towards improving the breed of horſes in general.

‡ The improvement upon horſes in the preſent mode of ſerving mares along the ſea coaſt, 20 miles north of Liverpool, has taken place for theſe 30 years paſt, ſo as now to be one-third more in ſize and bone, and better ſhaped; and if the preſent breed had been then exiſting, would have then ſold for double the price in any market, not ſaying any thing of the advanced price they have ſold for of late. A tax upon travelling ſtallions, if ever ſo ſmall, would much diſencourage the breed of horſes, and farmers would be keeping ſtallions for their own uſe, of any breed that may fall into their hands, and the ſtallions that now travel the country have moſtly ſome merits in them, either for ſize, bone, or good ſhape, or of ſome particular good breed; and the light breed of middling ſize and bone are the moſt uſeful horſes for the ſtage coaches, and mail coaches, poſt horſes, &c. and many other purpoſes that will not bear a high price: the riſk of misfortune is ſo great upon horſes that are employed in that buſineſs, and they will equally ſerve the purpoſe, as well as one of a higher price, and often much better; and I have been informed by a gentleman above ſeventy years of age, who lives 20 miles eaſt of Liverpool, that he has obſerved that the breed of horſes has much improved every ſeven years for half a century paſt; likewiſe by a gentleman that is a dealer in horſes, who now lives in Liverpool, but who was born in a field country, that he has had perfect knowledge of that country for thirty years paſt, and that the breed of horſes that are now in being there, are as good again as they were thirty years ſince. I cannot help lamenting that more attention is not paid to cows being ſerved with bulls of good breed, and ſuch as would beſt ſuit the diſtrict, as trials of different breeds might be made with little or no expence more than the preſent mode. If ſuch a ſpirit could be generally excited in the diſtrict that is 20 miles north of Liverpool, and in almoſt every other diſtrict in the county, ſave the Filde and about Preſton, Lancaſter, and Hornby Holme, for the breed of cattle is much the ſame as it was thirty years ſince, for little or no attention is paid to the breed, neither large nor ſmall, ſo the cow has a calf.—*Mr. Harper.*

Accidental

"Would the produce of ſuch a tax be leſs than 50,000 *l. per ann.* throughout Great Britain? By the above tax, the farmer's ſtock, in the horſe line, would in a few years become of infinitely more value. Fewer, being ſtronger, would be equal to his work, our cavalry better mounted, and a greater ſum would annually be returned by foreign nations to this country, for the ſuperior and fine horſes we ſhould then be able to export."—In this northern diſtrict, and mountainous country, the land is more particularly expoſed, and its produce more uncertain. Therefore experiments cannot be made with equal advantage as in the more ſouthern parts of the kingdom.

Many of the lands in this county, are ſuitable, and would pay well, to breeding *. An improved ſtock, as before hinted, would return the greateſt profit.

Accidental Experiment in the Year 1792. *By the ſame Farmer.*

I had a heifer calved in the field, and it was ſome time before ſhe was fetched home, which was not before the calf had ſuckled itſelf, by which means ſhe would never give her milk to be milked by hand, for which I put calves to her. After ſhe had fed two for the butcher, I then put two young calves on her for rearing, which were on her about ten weeks, and then weaned; at which time they were better calves than thoſe of four months old, reared in the cuſtomary way, that is by poor milk, with the addition of water, meal, &c. The calves did not run on her conſtantly they were only turned on her at milking time, morning and evening; and each of them ſuckled about one half of her milk, as near as could be judged; and the calf that went on her firſt in the morning, went laſt on in the evening; and they are now two years old, and both in calf, and better beaſts by 20 *s. per* head than thoſe reared in the cuſtomary way, and equally of as good a breed; ſo, for the time coming, I ſhall conclude one quart of milk, ſuckled by the calf itſelf from the beaſt, to be as good as two of the ſame quality given any other way; for it is more natural, nouriſhing, and ſtrengthening to the calf, while young, and ſupports it to be of ſtronger body, and ſtraighter limbed. If ſuch a ſpirit for rearing calves could be brought forwards with the help of ſuch bulls as would beſt ſuit the diſtrict, the breed of cattle would ſoon be much improved, and with a benefit of upwards of 20 *per cent.* more than the preſent mode.

My opinion is, that if a medal, or a ſmall premium, was to be given to the breeder or farmer that could ſhew the beſt ſtock of horſes and cattle of his own rearing, it would greatly encourage the breed of both more than a tax.

* "I think not; if the land of the county was managed as it ought to be, it would ſoon become too valuable for breeding.

"The lands in this county, in the ſouthern parts eſpecially, are rented too high for breeding."—*J. W.*

There has certainly been a degree of attention paid to the breed of horſes at leaſt, for this half century paſt, in this county. An attentive obſerver on this head remarked, that within the ſpace of thirty years, horſes have doubled their value in real goodneſs of quality; whilſt the horned cattle, inſtead of a progreſſive improvement, have been upon the decline. Mr. Bakewell has made the Lancaſhire breed the baſis of his improvements.

Oxen have been made uſe of formerly, but always upon a contracted ſcale. Horſes at preſent are univerſally preferred for huſbandry buſineſs. The paved roads of this diſtrict do not agree with the feet of oxen.

An attentive farmer will make his horſes pay more profit for their keep, than it is poſſible for the ox, though this is urged as a ſtrong argument in favour of preferring the ox. For if circumſtances permit the farmer to breed ſtock, he works them from two years of age, to five or ſix, and then ſells them off. If the farmer do not breed, the proceſs ſhould be the ſame, to purchaſe young cattle, which the eaſy and ſlow operations of agriculture admit to grow and improve. When matured, they become fit for the carriage, road or field, and will then ſell, if properly ſelected, at an advanced price, and ſo as to afford a profit for their maintenance, beſides the work gained; beyond what is in the limited power of an ox, to gain in weight of carcaſe.

On this important ſubject, the following obſervations by Mr. Henry Harper merit to be attended to. They aroſe from a conſideration of the comparative eſtimate between horſes and oxen, in the Suſſex Report, p. 82.——Mr. Harper's ſentiments are as follow:

"I am no advocate for horſes in preference to oxen; but prefer that mode in which buſineſs can be done with moſt eaſe and leaſt expence.

"I have on my farm ſome ſtrong heavy land as any in the kingdom, and ſome as light.—Three horſes, with the allowance of two buſhels of oats per week each horſe, are able to plough an acre a day in the heavieſt and ſtrongeſt land (if ever broke up before) and plough it to any depth from four to eight inches

at

at a proper ſeaſon of the year.—When a ſecond ploughing is neceſſary, two horſes will be ſufficient to plough one acre and a half per day in the ſpring or ſummer months, and by which there is a ſpare horſe, for harrowing in the ſeed, or any other extra work.—I plough ſingle, or the horſes abreaſt, as ſuits the nature of my work the beſt.

"The average work done upon the heavy and light ſoils on my farm, with a three-horſe team is ſeven ſtatute acres per week the year through, which, at 7 ſhillings per acre, is 49 ſhillings per week *, and have a ſpare horſe eight weeks in the year out of this team.

"My ploughs are the common ſwing ploughs with caſt-iron mold-boards, of different degrees of ſtrength, according to the nature of their work and land under tillage. Single or double wheels may be uſed with theſe ploughs, as occaſion requires, and drawn by a chain fixed to the axis of the plough.

"The following is the calculation of the firſt purchaſe, and keep of three horſes for one year:

	£.	s.	d.
Three horſes, at £. 25 each	75	0	0
Harneſs for ditto, at £. 4. 4s. each	12	12	0
Oats, at 6 buſhels per week, for 6 months	19	10	0
Oats, at 3 buſhels per week, for 6 months	9	15	0
Hay for ſix months, at 1l. 1s.	27	6	0
Graſs and green crops for ſix months, at 15s. per week	19	10	0
Wear and tear of two ploughs, per annum	3	3	0
Wear and tear of horſe-gear, per annum	1	5	0
Horſe-ſhoeing, at 10s. 6d. each horſe	1	11	6
Farrier	0	15	0
	170	7	6
Prime-coſt, &c. of ox-team, as ſtated in the Suſſex report	147	0	0
In favour of the ox-team, balance	£. 23	7	6

* *N. B.* Mr. Harper obſerves above, that in ſecond ploughings they are able to plough 1½ acre per day; therefore he averages ſeven acres the year through, and allows nothing for loſs of time by bad weather, imagining the two acres per week ſufficient for that purpoſe.

My

	£.	s.	d.
* My horſe-team will earn 49s. per week per annum - - - -	127	8	0
Profit on two young horſes each per annum, beſides eight weeks reſt for one horſe, or any extra work	2	0	0
	129	8	0

	£.	s.	d.			
The ox-team will earn 30s. per week for nine months † - - -	54	0	0			
Profit on the oxen - - -	8	0	0			
				62	0	0
				67	8	0
Balance in favour of the ox, firſt purchaſe - -				23	7	6
Neat balance in favour of the horſe per ann. - £.				44	0	6

" The above ſtatement is what a horſe-team will do on my farm, and I think may be done upon any farm in England, where they have proper implements and properly applied."

Thus Doctors diſagree in Opinions!

But ſince Mr. Harper's management of a horſe-team is ſo good, might not an ox-team under his management be alſo more productive?

SECT. 4.—*Hogs.*

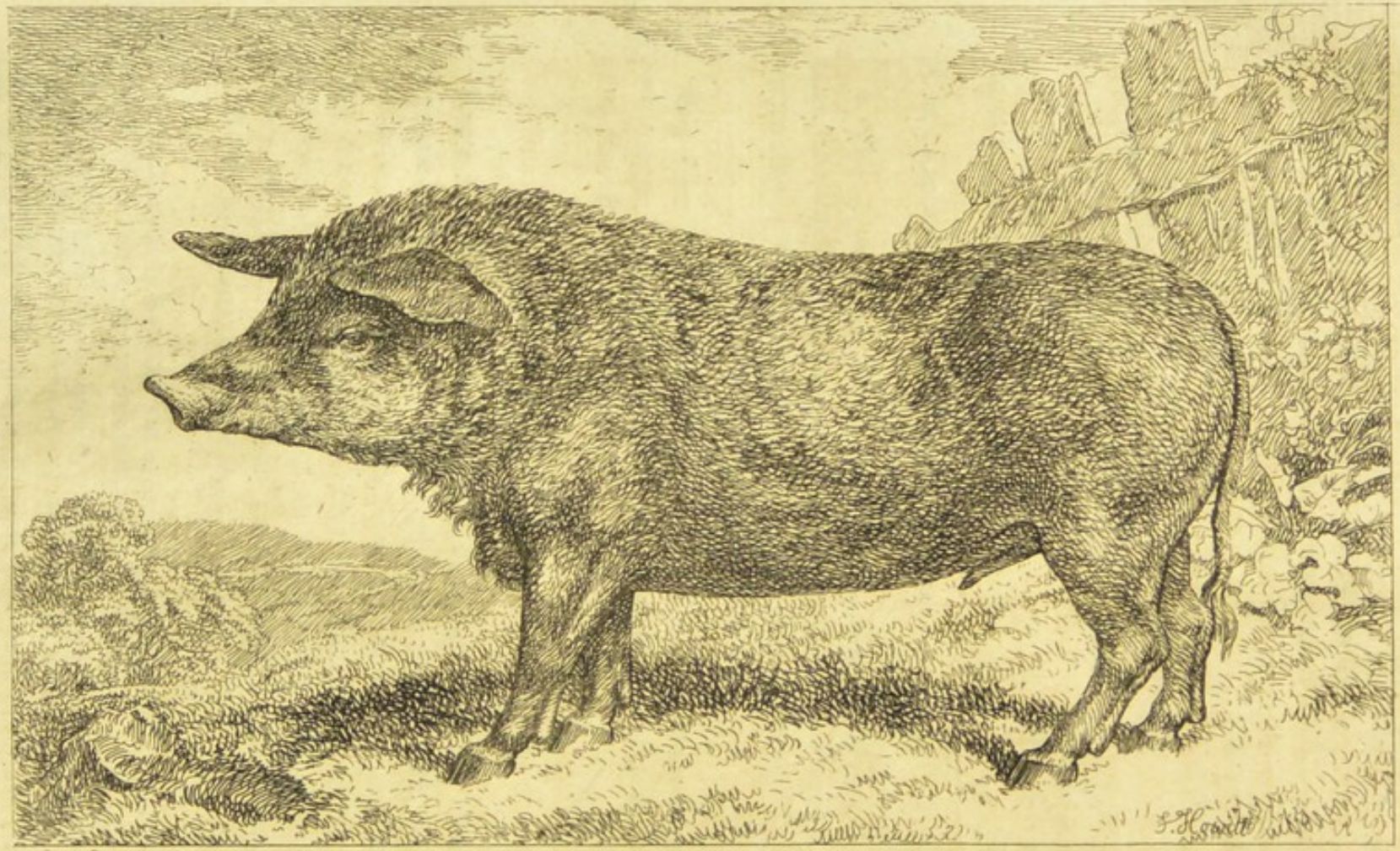
PORK is not an article of great conſumption with any claſs of people in this county. The application of the beſt and moſt farinaceous kinds of potatoe being chiefly for the food of man, the refuſe alone, and the coarſer kinds, ſuch as ox-noble, champion, and Surinam ‡, are given to the cows, horſes, and poultry, and to the hogs which may be kept on the farm, which ſeldom amount to above four.

* An allowance is made of two acres every week to make up deficiencies for the whole year, as before ſtated.

† The earnings of the ox-team, as well as the earnings per acre of the horſe-team, is according to the calculation made in the Suſſex Report.

‡ It is ſuppoſed moſt of theſe coarſe kinds have been raiſed from the ſeeds of the Surinam, and of which they are only varieties, indeed they bear ſtrong reſemblance to the Surinam, in leaf.

The



Stubbard del

LANCASHIRE HOG

The idea of hogs being numerous in a potatoe country is very natural; but the fact is not ſo: few are bred here, and thoſe few that are kept are bought from itinerant drovers from Shropſhire, Yorkſhire, Cheſhire, &c. Pork does not ſeem to be a favourite food with any claſs of people in this county, though more is uſed than formerly. In ſhort, the potatoes generally grown by the lower people are of the beſt farinaceous kinds, which they are particularly nice in, and conſume in their families, or ſell to advantage in the market. Some gentlemen and farmers, who grow the ox-noble and other coarſer potatoes, uſe them in general for cows, horſes, and poultry, ſcarcely any one keeping more than three or four hogs, which, however, are kept in good condition, and in ſome degree fatted with the help of potatoes, but are fatted off at laſt with damaged ſhip's wheat, India corn, &c. which can often be procured upon reaſonable terms from the *corn warehouſes*. Boat loads of ox-noble potatoes are brought to Liverpool from Cheſhire, which are bought up for the uſe of cattle, &c.

The ſtock of ſwine are in general purchaſed from herdsmen who travel about the country, and who bring them from Cheſhire, Shropſhire, Wales, and Ireland. Mr. Eccleſton, however, has a breed between the wild boar and the Chineſe, which have very light and ſmall bellies. Upon the ſame food, Mr. Eccleſton thinks, they will yield one fourth more fleſh than either the large Iriſh or Shropſhire. Their ſize is but ſmall, weight from 10 to 15 ſcore, generally about 12 ſcore. Mr. Wakefield has the ſame breed: an engraving of one of which accompanies this report.

Pigs ſhould, during the ſtage of their growth, be regularly turned out to graze, where there is a conveniency. This, beſides the advantage of graſs, which is nutritious and helps digeſtion, by the freſh air and exerciſe, cauſes a diſpoſition to take their reſt, and ſleep after a meal, contributes to their cleanlineſs, and renders their fleſh of ſuperior flavour.

SECT. 5.—*Rabbits.*

THERE are ſome lands along the coaſt, employed as rabbit-warrens; but theſe animals make excurſions into the adjoining lands, and commit depredations upon the corn: they are all capable

capable of cultivation; moſt of them poſſeſs marle, either below their ſurface, or within reach, and are not at all inferior to Bootle Marſh.

It is a fact, however, that neither cows nor ſheep will produce ſo great a profit as rabbits will afford, on that land which is ſuitable for them. Their ſkins, when in ſeaſon, are nearly as valuable as their carcaſe, and they are prolific to a proverb. A gentleman converted a tract of land into a warren, which anſwers well.

SECT. 6.—*Poultry.*

THE Filde is the principal diſtrict in this county which keeps a ſurplus ſtock of poultry. Poulterers alſo collect the chief part of what is brought to the Ormſkirk market on Thurſday, from the cottagers and farmers, and retail them out again at the Liverpool market on Saturday.

On Martin Mere, are turned a number of flocks of geeſe, on a certain day, brought from different parts of the county. Theſe flocks are ſo marked, as again to be known. Upon this Mere they continue till about Michaelmas, and on this water they can find ſufficient of food for their ſuſtenance from the different graſſes, aquatics, fiſhes, and inſects. The proprietor of the water claims half of the ſtock that remains alive for their ſummer's keep.

SECT. 7.—*Pigeons.*

A GREAT difference of opinion is entertained in regard to the utility or the diſadvantage of keeping pigeons. In general, however, it is acknowledged that their dung, in ſo far as it can be procured, is of the greateſt importance to the farmer.

SECT. 8.—*Bees.*

THESE laborious and uſeful inſects, have not been hitherto treated with that degree of attention they merit. The produce of their labour is not only pleaſant, but nutritious; and before the introduction of ſugar, by the diſcovery of America, honey muſt have been in high eſteem, by enriching the flavour

of

of many articles, which have only yielded to the introduction and ſuperabundance of ſugar *. The wax too is an uſeful article, and valuable in many of the arts, in which it makes a conſiderable part of the compoſition. It is almoſt incredible indeed, how much can be afforded in the conſumption to which it is frequently applied, that of wax lights.

Bees ſeem to require as little attention to their well-being, as can well be conceived. A ſtraw-built cell, with very ſmall accommodation, is what is commonly ſufficient, and for which thoſe induſtrious creatures, in a ſhort ſpace of time, generally repay 10 *per cent.* upon the capital advanced. The paſtures from which they gather their rich ſtores, ſeem not the leaſt injured; or, in other words they collect and depoſit in their cells, and which comes out afterwards either wax or honey (whether by any proceſs of their own, will not, on this occaſion, be inveſtigated); a ſubſtance, which, if not collected by theſe induſtrious creatures, would be a loſs never to be regained.

Theſe conſiderations have induced many to contrive methods to preſerve their lives, at the expence of their ſtores, by collateral and other devices in the application of different boxes. Theſe ſchemes, ſeemingly humane, have proved in the iſſue certainly cruel, as a lingering, inſtead of a ſpeedy death, muſt be termed ſo. Too often a bare ſubſiſtence for the winter is collected, and if part of that is plundered, the remainder, after a ſhort ſubſiſtence, leaves the legal poſſeſſor to famine. There-

* It is in the memory of a perſon (*a*), now living, that a family on the borders of the ſouth eaſt part of the county made a complaint, that their bees had not afforded ſufficient honey for common uſe, and that they had been under the neceſſity of purchaſing half a pound of ſugar to ſupply the deficiency in one year.

The ſurveyor, when a boy, recollects that at the return of the wake (an annual feſtival, always highly celebrated, by procuring a few ſuperfluities to cheer their friends, who might call upon them), a conſultation was held, in a certain family, whether a pound of ſugar was to be added to the articles intended to be purchaſed, which was decided in the negative, and another pound of beef was added to the bill of fare, inſtead of the pound of ſugar.

N. B.—Tea not then introduced.

(*a*) Mr. Titus Hibbert, Mancheſter.

fore, if plunder be legal, immediate deſtruction, by fire or ſulphur, is the greateſt humanity *.

An accident happening to a hive of bees, belonging to Thomas Dugdale, of Walton, 1794, the honey was taken, and after being cleared from the combs was weighed, which amounted to the aſtoniſhing quantity of 18lb. in the ſpace of twenty-one days after ſwarming.

* Mr. Lowas, a clergyman in this county, is at preſent employed in deviſing ſome means to ſave the lives of theſe hitherto devoted and induſtrious inſects; together with ſome uſeful experiments and improvements, which, when ſufficiently aſcertained, will be preſented to the public.

CHAPTER XIV.

RURAL ECONOMY.

SECT. I.—*Labour.*

THE price paid for different kinds of labour, varies more in this county, than probably in any other in the kingdom. An ingenious correſpondent obſerves, "that the rate of wages is in proportion to the diſtance of townſhips from the ſeats of manufacturers; *e. g.* at Chorley the wages of a common labourer 3*s.* with ale; at Euxton 2*s.* or 2*s.* 6*d.*; at Eccleſton 1*s.* 6*d.* or 2*s.*; at Mawdſley and Biſpham, I am told you may get them in harveſt time, for 1*s.* 2*d.* and 1*s.* 4*d.* in Wrightington the price of labour was lower two years ago, than the laſt mentioned ſum, and does not now exceed it."

Under this head it may not be improper to give the following ſtatement of different prices of labour, &c. at two periods; taken by the ſurveyor after a reſidence of thirty years in a village where no manufactory has yet been introduced—namely, *Walton*, near *Liverpool*.

A comparative Price of Labour, and other Articles, in the courſe of thirty years, taken April 1791 *.

	In the year 1761. £. s. d.		In the year 1791. £. s. d.
Head-man ſervant wages per ann. - -	6 10 0	—	9 9 0
Maid ſervant - -	3 0 0	—	4 10 0
Maſons and carpenters, per day - - -	0 1 2	—	0 2 2
Labourers wages † - -	0 0 10	1s. 6d. 1792,	0 1 8‡
Mowing per acre - -	0 3 0	—	0 5 0§
Thraſhing wheat per ſcore	0 5 0	—	0 7 6
Barley and beans - -	0 2 6	—	0 4 0
Oats - - -	0 1 8	—	0 2 6
Taylors wages per day and food - -	0 0 6	—	0 1 2
Thatcher per day - -	0 1 0	—	0 2 0
Butcher for killing and cutting up a pig - -	0 0 8	—	0 1 6
Ditto calf, and ſelling carcaſe	0 1 0	—	0 2 6

* At the ſame time was taken the number of inhabitants, under their various denominations and occupations; number of horſes, cows, &c. in each village; quantity of grain grown, &c. a copy of which was lodged in the pariſh cheſt (the ſurveyor being churchwarden that year) in hopes that more ingenious ſucceſſors in that office might improve upon the hint, and occaſionally regiſter peculiar circumſtances or events. This was done without knowing that the Preſident of the Board of Agriculture was then engaged in a ſimilar work over the whole kingdom of Scotland; which he underſtands will be completed in the courſe of the year 1794.

† The hours in ſummer ſhould be from ſix to ſix, allowing half an hour at breakfaſt, and one hour at dinner; but the labourer in general now comes, or rather leaves home to go to his work, about ſeven o'clock in the morning, nor continues his labour till the hour of ſix, as was the practice 30 years ago—but calculates the time to be taken in his walk home, that he may arrive at the hour of ſix. In the winter the hours of labour muſt of courſe be curtailed, as are yet, in ſome places, the wages—but this practice, of late, is become leſs general.

‡ And an attempt to raiſe them in the ſpring of 1793 to 2 *s. per* day; but the calamities, which came on at that period, produced a great change, and every effort was made to procure employment for the induſtrious.

§ Eight yards to the rod.

In

	In 1761.				In 1791.		
	£.	s.	d.		£.	s.	d.
Butcher for killing a cow, and ſelling carcaſe * -	0	2	0	—	0	5	0
Price of good cart horſes -	10	0	0	—	25	0	0
Pair of men's ſhoes - -	0	3	6	the ſame perſon 7 *s.* and advanced the end of that year to 7 *s.* 6 *d.*			
Sett of horſe-ſhoes - -	0	1	0	—	0	1	8

Carpenters work—price of ſeveral particulars uſed in Agriculture.

	In the year 1761.				In the year 1791.		
	£.	s.	d.		£.	s.	d.
Large cart 7 feet 3 inches, wheels 5 feet 2 inches high, with ſlakes, complete, twice painted (to the carpenter) - -	5	0	0	—	9	4	0
Ringing a pair of wheels -	0	18	0	—	1	15	0
New axle-tree, and work -	0	4	0	—	0	6	6
Wheel-barrow, and trundle	0	5	0	—	0	12	0
Plough - - -	0	7	0	—	0	11	0
Harrow, 3 feet 6 inches -	0	3	6	—	0	5	6
Pair of homes - -	0	0	6	—	0	0	9
Spade ſhaft - -	0	0	4	—	0	0	6
Common five barred gate	0	5	0	—	0	10	0
Ladders, 15 ſtaves, per ſtave	0	0	4	—	0	0	4
Ditto, from 15 to 30 ſtaves	0	0	0	—	0	0	6
Swipels, ſtens, and ſets for carts - - -	0	0	2	—	0	0	6
Wheat per buſhel —		—		—	0	7	6
Barley — —		—		—	0	3	6
Oats — —		—		—	0	2	6
Beans — —		—		—	0	4	6

* The journeymen butchers in Liverpool, about thirty-three years ago, ſlaughtered at the following prices: a bull 2 *s.*; a cow 1 *s.*; a ſow 6 *d*; a ſheep 1½*d.*; a calf 3 *d*; of the laſt, about twelve were one day's work; alſo one ſcore, or two dozen of ſheep, were a day's work. The prices are now doubled.

Wheat-

	In 1761. £. s. d.		In 1791. £. s. d.
Wheat-ſtraw per load	0 5 0	per ſtone of 20lb.	0 0 3½
Barley-ſtraw per thrave	0 0 2½	—	0 0 6
Oat-ſtraw per thrave	0 0 5	—	0 0 9
Butter per lb. from 5 *d.* to 8 *d.*			from 8 *d.* to 1 *s.*
* Sweet milk per quart	0 0 1	—	0 0 1
Eggs, two and three for 1 *d.*			from 1 *d.* to 2 *d.* per egg.
In the winter of 1794			3 *d.* per egg.
N. B.—Expended upon the poor from Eaſter 1760 to Eaſter 1761			22 3 2¼
From Eaſter 1790 to Eaſter 1791			115 14 1

There have been twenty additional houſes built in the ſpace of time betwixt 1761 and 1791.

The above ſtatement ſeems to confirm the opinion of ſome, "that the poor-rates increaſe as the price of labour advances;" which in ſome places, (as appears from the anſwers given to the agricultural queries) have been as high as nine, eleven, and thirteen ſhillings in the pound.

Piece Work, or by the Great.

Making new fence, ditch, hedge, bank, ſeven ſods in height, backing, and covering with theſe ſods, planting quickſetts, bearding, from 1 *s.* 6 *d.* to 2 *s.* per rod.

Cutting hedges, opening and ſcouring the ditches, putting freſh earth to the quicks, from 8 *d.* to 14 *d.* per rod.

Delving or trenching with dung, one ſpit or ſpade deep, 10 *d.* to 1 *s.* 3 *d.* two ſpits 1 *s.* 6 *d.* to 1 *s.* 8 *d.* per rod; digging for peas and beans 6 *d.* and 8 *d.* per rod; double gutters 1½ foot deep, 4½ *d.* to 6 *d.* per rod (of 8 yards); common ſpade gutters 1½ *d.* to 2 *d.* per rod; feighing two yards deep, or if under, 2½ *d.* to 3 *d.* the ſolid yard.

Mowing from 3 *s.* to 4 *s.* per ſtatute acre; reaping from 3 *s.* 6 *d.* to 5 *s.* per acre.

* To what cauſe is the unvaried price of this valuable article to be attributed? It is flattering to the modern improvement of meadow lands, by the growth of various graſſes, formerly hardly known, and by the cultivation of this land in general, if this induſtry and attention may have effected ſo eſſential a benefit.

Thraſhing is done ſometimes by the thrave, and ſometimes by the buſhel—the price generally paid by the piece is about one twentieth of the value of the grain, or one buſhel of the grain thraſhed at every ſcore.

Effects of Piece Work.

In many caſes Piece-work is deſirable, as it encourages a ſpirit of diſpatch, and, in conſequence, proves a ſource of benefit to an induſtrious labourer; at the ſame time it is a temptation to labourers to over-work themſelves, which ought to be avoided. Gentlemen who employ a number of workmen together, ſhould be extremely guarded, not only in their choice of men, but alſo a proper inſpector; ſince wherever one is diſpoſed to loiter, either by telling his ſtory to divert his companions, or by any means cauſe an intermiſſion of labour, all the company muſt of courſe become liſteners, and the ſpace of five minutes, in the company of twelve, is equal to the loſs of a whole hour's labour of one individual. Nor is this the whole of the evil. Bad examples are contagious. Thoſe who might be formerly induſtrious, become by ſlow ſteps more indolent. The contagion ſpreads wider, and the evil increaſes.

SECT. 2.—*Proviſions.*

BUTCHERS meat, like other articles in this county, varies in price. It is generally deareſt towards the ſouth and ſouth eaſt, many cattle being driven from the northern part to ſupply thoſe diſtricts; but ſtill, it is there generally more than a penny per pound under the London market-price. Corn, at Liverpool, is always above the London price, nearly one ſhilling per buſhel, as appears by the returns publiſhed. In thoſe parts of the county where oat-meal is chiefly uſed for bread, &c. when enquiry was made after the price of proviſions, the firſt anſwer was univerſally the price of oat-meal, the ſtaff of their life.

At Mancheſter market, October 9, wheat ſold that day from 33 to 34*s.* per load, as it is termed, or ſack, of 16 ſcore. Oats 33 to 34*s.* per load of 9 Wincheſter buſhels. Beans 30*s.* per load of 5 Wincheſter buſhels. Potatoes 4*s.* 6*d.* to 5*s.* per load of 12 ſcore, 12lb. waſhed; unwaſhed, thirteen ſcore.

Fine

Fine flour 36*s.*; ſeconds 34*s.*; thirds 26 and 28*s.* per 12 ſcore; oat-meal 36 and 37*s.* per load, of 12 ſcore.

No barley at this market.

Cheeſe from thirty to fifty ſhillings per cwt.

The price of proviſions, unleſs the ſeaſons are very unfavourable, is more likely to fall than to advance, if trade continues to ſtagnate.

In eſtimating the prices of meat, due regard ſhould be paid to the qualities of the meat, different values of the different joints of meat of the ſame quality, and the different ſeaſons of the year—veal being generally cheapeſt when beef and mutton are the deareſt.

In the year 1793, the prices of beef might be from 3*d.* to 5*d.* per lb.; mutton from 3*d.* to 6*d.*; and veal from 3*d.* to 6*d.* per lb.

The writer of this paid the whole of that year 4½*d.* per lb. for his meat, all (except lamb) weighed together. The average conſumption in his family 100 lbs. weight per week.—The meat was of the very beſt quality, and of which the top part of the buttock, provincially called a *round*, a ſhoulder of veal, and hind quarter of mutton, almoſt univerſally made three ſtanding joints every week in the year—in the other joints ſometimes the butcher and ſometimes the purchaſer was accommodated.

Whence the Markets are ſupplied.

The principal fatting diſtricts in this county are from Claughton to Hornby, a rich paſture there called the Holmes, and from thence through that fertile vale as far as Kirkby Lonſdale*; alſo ſome gentlemen's parks, and private incloſures, but the whole of theſe amount to a mere trifle, compared to the conſumption requiſite. The deficiency is made up from the counties of Weſtmoreland, Durham, Yorkſhire, Lincolnſhire, Derbyſhire, and Shropſhire; the principality of

* A calculation has been made by two perſons, who ſeem competent for ſuch work, by knowing every farm, its ſize, and nearly the number of ſtock kept on each; and their account is 2,000 head of horned cattle, and 5,000 of ſheep.

Wales,

Wales, the kingdoms of Ireland and Scotland, are alſo applied to, to ſupply the county of Lancaſter with beef and mutton. The county itſelf furniſhes a very ſmall proportion of the bread and meat actually conſumed there. Nay, the poultry and the pigeons are ſupplied from diſtant parts. Beſides what comes from the Filde (the only diſtrict in the county which, with a few trifling exceptions, has any ſurplus of ſtock) the Liverpool market has ſupplies from Cheſhire, Wales, Iſle of Man, Scotland, and Ireland. Mancheſter alſo receives great ſupplies from Cheſhire, Derbyſhire, Lincolnſhire, and even Nottinghamſhire. Eggs of courſe muſt be purchaſed, and come from the ſame quarters, and ſome at a greater diſtance, packed up in caſks. Some come even from Kendal, and Penrith *.

SECT. 3.—*Fuel.*

COALS in general abound, and are cheap, inſomuch that a ſmall family may ſupply itſelf with fuel for about 30 ſhillings per annum. No wood conſumed, but the refuſe of ſhip-carpenters, and other workers in wood. Peat from the different moſſes, is an article of fuel in the vicinity of thoſe places, but ſeldom without the addition of ſome coals. Faggots, which were formerly an article of conſumption among the bakers of ſea-buiſcuit, and other bread in Liverpool, has for ſome years been diſcontinued; coal is preferred, and by experience find it more advantageous. This circumſtance is well worthy the attention of other towns, as the faggots require large room, and may be attended with danger.

* Some of the eggs ſold at Mancheſter are packed up with layers of ſtraw between every row of eggs, about ten thouſand in one cart. The man brings two carts, and comes every fortnight during the ſeaſon that a ſufficient number can be collected; which is chiefly done by women who travel the country with mugs and other articles, which they exchange for eggs in Cumberland, &c. There are two or more higglers (*qu.* egglers?) who follow this practice, beſides the old man who gave the information above, and who was counting them out to the huckſters. Few eggs are broken by the carriage. The man is four days upon the road. It ſeems the collectors of the eggs are paid 6 *d.* per hundred for collection.

CHAPTER XV.

POLITICAL ECONOMY.

SECT. I.—*Roads.*

MR. YATES obſerves, that there is a greater length of roads in this county, in proportion to its extent, than in any other county in the kingdom, and of ſo little public utility, that many might be ſpared; and he alſo remarks, that if early exertions had been made upon this head, land ſufficient in value, might by that means have been obtained, to have kept the whole remaining roads in proper repair.

This opinion may have been too ſanguine, and the beſt opportunity for accompliſhing ſo deſirable a work, may have now paſſed. But, no doubt, much advantage to the county might yet be obtained by proper exertions, if roads, that at preſent are of little public utility, were ſtopped, the lands ſold, and the caſh ariſing appropriated to ſupport the remainder.

In proof, however, of this aſſertion, of the vaſt length of roads in this county: the pariſh of Gooſnargh contains 3703 acres, and the length of the roads in that pariſh is nearly forty miles, beſides three miles of bridle road, and three miles of road repaired by certain individuals.

The townſhip of Walton, near Liverpool, which only contains 1988 ſtatute acres, has a public road two miles and a half in length; parochial roads, eleven miles two furlongs, beſides occupation roads.

In the northern and north-eaſtern parts of the county, materials for making roads are found upon the ſpot, the limeſtone, which, when broken, binds together, and makes an excellent road; but in the midland and ſouthern parts, the materials, except what the rivers afford, are brought from the Welſh and Scotch coaſts, and at conſiderable expence.

Theſe are Boulder ſtones, and they are not broken, but

paved. The whole expence of which is from 1 *s.* 2 *d.* to 2 *s.* *per* ſquare yard, according to the diſtance of the materials to be carried. Two quarries of pebbles have lately been diſcovered. Copper ſcoria or ſlag, from two works, Ravenhead and Liverpool, have been ſucceſsfully tried. This article makes an excellent ſide road to the pavements, and is preferred to pavement both by the horſeman and drivers of carriages.

Great exertions have been made of late years, at very conſiderable expence *, to improve the roads; the effects of which are very apparent, both upon thoſe which are public and parochial.

Pavements are the moſt expenſive, and moſt diſagreeable of all roads, but we have no other material that will ſtand heavy cartage.

Near Warrington, Mr. Kerfoot, who undertook the management of the Preſcot and Mancheſter turnpikes, has made admirable roads with the copper ſlag.

Mr. Holt, who is ſurveyor for one pariſh, made an attempt with copper ſlag, but it is difficult to get the ſlag ſufficiently broken.

The town of Liverpool is a great enemy to turnpikes. There are only three toll-gates within eight miles of it, none within four.

Commercial and manufacturing towns have *a ſyſtem* of throwing every poſſible burden upon the land.

The toll-bars here, as well as in other parts, from private views and intereſt, are improperly placed—ſhould they not in each act, be placed in the moſt advantageous ſituations for the benefit of the road by ſtrangers, commiſſioners appointed for that purpoſe, and private intereſt totally be laid aſide? Moſt of the great towns have had ſufficient intereſt to place the toll-bars at ſome miles diſtance from them. The toll-bar on the road to the ſouth from Liverpool is placed at 5 miles diſtance from the town. Would it not be a fair clauſe in the general

* So great, that at the time when Mr. Yates took his ſurvey, about ten years ſince, the average paid through the county, was not leſs than eighteenpence in the pound.

act of parliament, when the inhabitants of a town object to a bar being placed near to the town, that they ſhould engage to keep in repair the road from the town to the bar (which is in general the moſt expenſive part of the whole) without receiving the leaſt benefit from the money collected? The diſtance the bars are placed from the great towns in this county, is almoſt the ſole cauſe of the wretched condition of the turnpike roads.

An ingenious road-maker in the neighbourhood of Warrington, has of late exploded the common *convex* form, and adopted that of *one inclined-plane*; the inclination juſt ſufficient to throw off occaſional water. By this alteration he finds that a road becomes more durable; for when it is convex, all heavy carriages uſe the center of it, and keep in the ſame track; therefore the center is ſoon deſtroyed, and the ſides ſeldom uſed: but when a road has only one ſmall inclination, the whole ſurface is uſed, for, in this caſe, you will ſeldom ſee two carriages take the ſame line.

With reſpect to improvements, an ingenious gentleman obſerved, that the tolls in general ought either to be raiſed, or the number of bars increaſed, in order that the public at large might contribute a proper quota, for their eaſe in travelling, by the improved ſtate of the road, and the farmer, &c. of courſe eaſed; and candour muſt allow, that the facility, expedition, and ſecurity of travelling over the roads, in their preſent ſtate, is worth more than double the money paid for this convenience. Some method ſhould be deviſed to eaſe the labourer, and lay the burthen upon the traveller. The tenant has frequently been charged with an unexpected tax, amounting to 4 or 5 *s.* in the pound, upon a ſhort leaſe, when a fine has been levied; and though, in the iſſue, this claſs receives as great benefit as any other, ſtill ſome method ſhould be deviſed to eaſe thoſe contingent poſſeſſors, by more heavily taxing the travelling ſtranger.

Under this head, the indulgence ſhewn to the mail coaches in their exemption from tolls, merits reprehenſion.

In

In the firſt place, the object is too trifling and mean, for the interference of government. It is alſo an encroachment upon private property, and upon a capital, the intereſt of which was expected to be paid upon the credit of certain tolls, with an accumulating ſurplus, to repair the damage done to the roads by the paſſing of theſe carriages—and with the remaining portion, to liquidate the principal advanced to accommodate the public in the execution of theſe undertakings *. But here is a check upon theſe ſpirited endeavours by encroachment. If the price at preſent paid for the carriage of the mail be not ſufficient, it ſhould be increaſed by an addition taken from the common ſtock.

But the profit ariſing to the proprietors of mail coaches is at preſent great. The ſurveyor was informed lately of the following ſtatements as proofs of the aſſertion: The receipts of the mail coach from London to Liverpool, and backward, amounted, in the courſe of one month, in the ſpring of the preſent year, to twelve hundred pounds †. The other ſtatement is—that the profits ariſing from the length of one ſtage (10 or 12 miles) were lately ſold, and transferred, for the neat ſum of three hundred pounds.

As this buſineſs is, at preſent, conducted in a ſpirited manner, and probably the moſt expeditious, ſafe, and neat conveyance in the world, the proprietors and conductors of ſuch public accommodations, ought to have, not only certain, but handſome profits. What is here objected to, is the infringement upon private property. And if theſe tolls were not allowed, they would be charged at laſt upon the paſſenger, upon whom they ought certainly to fall.

But again, the tolls allowed to be taken for this ſpecies of carriages, if they were even extended to the mail coaches, are

* Mail coaches prevent much travelling poſt—conſequently injure the toll-bars more ways than one.

† Theſe ſtatements are here given as related to the ſurveyor, and are not to be depended upon as authenticated facts. When a ſubject becomes a topic of converſation, there are generally ſome grounds for the aſſertions, which ſhould however be received, till fully authenticated, with diffidence.

carriages,

not ſufficient for the damage done by them, in proportion to the rates paid, and the damage done by other carriages to the roads.

The weight of a mail coach, loaded with paſſengers and parcels, may be near two tons, the heavy coach nearly three tons.

The effects of four horſes, ſcampering and pulling with all their might, are very injurious to the roads; for, after the ſtones have been nearly diſplaced by this exertion of the horſe-feet (very different to the effect of a road-horſe), followed by a heavy carriage, ſupported and dragged upon four narrow wheels, every obſtruction is diſplaced by the violence of the motion. The ſlow pace of a waggon, moving upon a nine-inch ſurface, or a heavy-loaded cart, under two or three tons burden, upon ſix-inch wheels, makes a compariſon ſtrongly in favour of theſe carriages.

Again, the tolls ariſing from many turnpikes are very inſufficient to maintain the roads. The townſhip of Walton, at the preſent juncture, is meeting the truſtees of the public road, which runs through that diſtrict, with not a leſs ſum than four hundred and thirty pounds, beſides ſtatute labour, upon a length of two miles and a half; whilſt the ſame townſhip is burdened with other roads of the length of eleven miles two furlongs and a half, as before obſerved.

All the townſhips through which this turnpike paſſes are, at preſent, contributing their aid, and that to a degree in ſome places not a little burdenſome to both tenant and freeholders; of which the townſhip of Aintree is a ſtrong example *.

The propereſt roads for this part of the county, particular the neighbourhood of Mancheſter and Liverpool, and all the coal diſtrict, would be roads ſimilar to thoſe of France and Flanders: a pavement in the center, made of large fragments of granite (which might be imported from Scotland, at no

* "The remarks which the ſurveyor makes on turupike roads, are worthy the obſervation of the honourable Board, for they are ſtubborn facts."

great

great expence) on each ſide of this pavement ſhould be a gravel road, of the beſt material the country could afford, and made of ſufficient breadth, and kept in ſuch good repair as to induce all light carriages to prefer it to the pavement in the center: I prevailed upon the ſurveyor of this townſhip to make an experiment of backing up a high pavement with copper ſlag (ſcoriæ) ſome years ago, and to cover it with the looſe ſandy rock of the country. It is now the beſt part of the turnpike.

* In addition to the above, it may be neceſſary to ſtate that from the vaſt increaſe of carriage in this county, and the general uſe of waggons, carts, &c. with *exceſſive weights*, it is become almoſt impoſſible, by any means, and at any expence, to ſupport the public roads. The climate is wet, the ſoil ſoft, the ſtone and gravel found in the county are not hard or laſting, and the only materials that have ſtrength and durability are the paving ſtones imported from the coaſts of Wales, at the heavy price of ſix ſhillings per ton. Some of the turnpike roads in the neighbourhood of Mancheſter, paved with theſe ſtones, coſt from £. 1500 to £. 2000 per mile. Fortunately theſe ſtones were exempted, in the act of laſt ſeſſions, from the tax on ſtone exported, or Lancaſhire muſt have been at once reduced to a miſerable ſituation. Yet the obliging the ſloops employed in collecting and carrying theſe paving ſtones, to take out *coaſt diſpatches and certificates* (as in the caſe of coal and ſalt exported coaſtwiſe in Scotland) by the delays and expences hereby incurred, adds a very conſiderable impoſt on theſe articles, without any benefit to the revenue; and this hardſhip is too apparent not to be immediately remedied. The legiſlature has at all times been wiſely provident, not only to authorize and require the making of good roads, (which are unqueſtionably the firſt improvements in any country) but alſo to enact rules for their *preſervation.*

The encouragement of broad wheels, or rolling wheels, or carriages ſo conſtructed, "*as to enable them to carry great*

* By T. B. Bayley, Eſq.

weights,"

weights," was always a doubtful meaſure. Experience now puts it out of queſtion, that theſe *heavy weights* ſoon deſtroy the beſt conſtructed roads, and exhauſt all the common materials for their reparation. The turnpike truſts are thus more deeply involved in debts inextricable, or diſproportionate tolls are levied to ſupport an injurious ſyſtem, oppreſſive to the country, and ruinous even to the carriers and waggoners, who purſue this *miſtaken* ſcheme of buſineſs.

The reſtraints of weighing machines are found to be expenſive, partial, and quite ineffectual; and the only remedy for this great and increaſing evil, is that pointed out near thirty years ſince *by the Rev. Henry Homer*, of Warwickſhire, in his "Enquiry into the Means of *preſerving* the public "Roads," printed at Oxford 1767, viz. "*ſuch a conſtruction* "*of carriages as will* oblige *them to carry LIGHT loads.**"

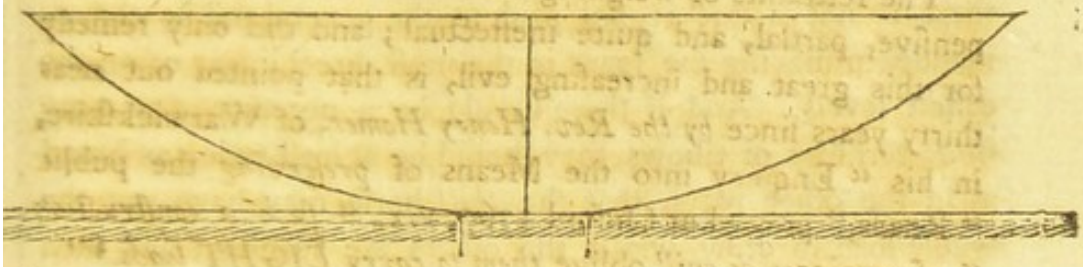
In ſupport of this ſcheme of *preſerving* our roads, and of *ſaving* an immenſe ſum of money now annually ſquandered away, there is a vaſt body of evidence in the excellent volumes of the Statiſtical Account of Scotland, and the Surveys of Counties, reported to the Hon. Board of Agriculture. Theſe all prove what is ſtated in the Survey of *Cumberland*, page 48, that "two horſes, yoked in *ſingle* horſe carts, will draw as much "as three horſes yoked in one cart."

The general uſe of *ſingle horſe* carts would be a vaſt ſaving in the number of horſes kept for labour, and of hay and corn expended in their maintenance, would be gainful to the carriers, &c. and would preſerve the roads, and take off the increaſing and oppreſſive burden of taxes now raiſed (but ineffectually) for their ſupport. The exemptions from toll, or being weighed, given to carriages employed in *huſbandry*, are in moſt places (eſpecially in the neighbourhood of great towns) very injurious to the roads, and not warranted by any fair analogy of taxation, which ought equally to affect all who are benefited by it, and by what mode ſoever. The regulation reſpecting the flat conſtruction of wheels, ſo as to preſent an

* See alſo Mr. Jacob's Treatiſe on Broad Wheels, &c. (Dilly, 1774) and Annals of Agriculture, vol. xviii. p. 178.

even

even ſurface to the road, alſo of the flat tire and counterſunk nails, are ill defined in our general turnpike act, and worſe in practice. By the 16th Geo. III. c. 39. ſect. 2. it is enacted, "that ſix inch wheels ſhall be deemed *flat*, as ſhall not de-"viate more than one inch from a flat ſurface." This figure will ſhew on how few points of a good road this *flat* wheel will bear, and how more injurious it muſt be than a common narrow wheel.



The truth is, this *important* ſubject is little underſtood, or attended to, and requires a careful reviſion. This may ſpeedily be hoped for from the exertions of the Board of Agriculture. The act of the laſt ſeſſions (34th Geo. III. c. 74.) ſeems to be formed on the old miſtaken principle of *fixing* what from ſituations and times muſt ever be various and fluctuating, viz. *the price of labour*. Parliament cannot fix its maximum or its minimum. The higheſt price for compoſition for a team per day is fixed now at 6*s*. whereas eight or ten ſhillings per day is paid in many parts of this county for the labour of ſuch team. The better way would be to leave the prices to be annually ſettled, and publiſhed by the magiſtrates of the ſeveral diviſions when they appoint ſurveyors of the highways.

The ſtatute duty, or compoſition, taken from labourers renting under *five* pounds a year, had better be *wholly abrogated*. It is an odious burden, is rarely collected, and with difficulty and expence (in counties like this) not to be conceived.

The relief propoſed to theſe poor people in the fifth ſection

would be attended with ſo much loſs of time and money to them, and ſo much inconvenience to the ſurveyors of the highways, that it is plain it *never can* have any operation.

We have generally, during the two laſt years of diſtreſs, omitted to call for the ſtatute duty or compoſition from this deſcription of inhabitants; and by law to free them from the obligation would, at this ſeaſon eſpecially, be a juſt and a *popular* meaſure, which I earneſtly recommend.

With reſpect to *turnpike roads*, in this, as in other counties, there is not a due regard paid to the general public convenience, in making the roads in the moſt direct lines, or on the eaſieſt levels. And if there ſhould be a neceſſity of making ſhort turnings or elbows, they ſhould be at leaſt twice as broad as in the other parts, that the *thill* horſe may have not the whole load to draw, whilſt the others are turning; and ſuch place ſhould be made level as poſſible:—but hills of even one furlong in length, are ſometimes ſo ſteep as to require an additional horſe for that ſhort ſpace; and if the road is often to be paſſed, the additional expence of keeping one horſe, one might imagine, need only be pointed out to obtain their removal. There is indeed ſcarce any part of the kingdom that might not have been laid out, ſo as to ſuperſede the neceſſity of uſing that badge of barbarity a chain to a waggon-wheel.—"When "our deſcendants ſhall become more ſenſible than we ſeem to "be of the advantage of level roads; no expence will perhaps "be conſidered too great, to remove an evil, which nothing but "habit could render ſufferable *."

The obligation on *pariſhes* to repair roads by preſcription (ſee Hawkins's Pleas of the Crown, part 1ſt, page 202) wants to be limited by *ſtatute*.

This plan has, under the late great change of circumſtances, brought an intolerable burden on the *pariſh* of Mancheſter, which includes a great extent of country, and an immenſe

* Herefordſhire Report.

population

population, to repair ways, hitherto little known or uſed, but now *become public ſtreets in the town itſelf.*

I would propoſe a clauſe to limit to 30 years back the proof of uſe and repair by the pariſh, and to allow pariſhioners to be competent witneſſes on either ſide.

Amongſt the various objects of enquiry, and to which anſwers have been returned to the Board of Agriculture, there is none of more general importance than the ſtate of the *public roads.* As a meaſure of *national police*, this has *not* hitherto been ſufficiently attended to by the legiſlature: the 13th Geo. III. chapter 84, commonly called the *General Turnpike Act*, is very inadequate and greatly miſtaken in many of its proviſions. The introduction of *turnpikes* into England is of a very late date; they were at firſt eſtabliſhed for the confined limits of local convenience; and have gradually been ſo multiplied and extended, as to form almoſt an univerſal plan of communication through the kingdom, ſupported by a *public tax* of vaſt amount.

In this *national* view of the ſubject, connecting the public convenience and proſperity, and the large ſums raiſed throughout the kingdom to render the general communication eaſy and certain, it cannot be denied, that the reviſion of the general law, the adoption of a better ſyſtem for making roads, is now become neceſſary; a ſyſtem founded, *not* on ſpeculations of mere local or private convenience, and as affecting particular towns, diſtricts, or even counties, but on the more extended conſiderations of general intercourſe and common benefit. In fact, we may obſerve in every part of England the *jobbing trade*, as it reſpects turnpike roads, very induſtriouſly purſued. The old courſe is generally followed, however circuitous or difficult.

Heavy carriages are ſtill to be dragged over the ſummits of ſteep hills, formerly ſcarcely acceſſible to the pack-horſes of the country, whilſt the eaſy and obvious levels of the adjoining vallies are overlooked. Happy would it be for the country, if all plans, for *turnpike roads* were ſettled in the manner deſcribed by Dr. Anderſon in his "View of the Agriculture of *Aberdeenſhire*," p. 135.

As turnpike bills have been uſually too much conſidered as *private* bills (though none are of more *public* concern) the committees of the Houſe of Commons have uſually done little more than confirm the agreements of the meetings previouſly held in the country, in which perſonal and local intereſts frequently ſuperſede a due conſideration of general benefit. The experience which theſe committees have had on various occaſions of this ſelfiſh ſpirit, has produced ſome very ſalutary "orders relating to bills for making turnpike roads."

To enable theſe committees more accurately to judge of the propriety of future application for making new or *amending old* turnpike acts, I would ſuggeſt another ſtanding rule and order; viz.

"That, together with the eſtimate of expence, and the account of the money ſubſcribed (as ordered by the 3d rule) there be delivered to the committee an exact plan of the propoſed road, on a ſcale of to a mile, ſhewing its connection with the neighbouring towns; together with an accurate *ſection* of the whole line of road."

SECT. 2.—*Canals.*

IN granting new bills for cutting navigable canals, care ſhould be taken by the legiſlature, that lime or manure be carried upon low terms. The introduction of wealth, in conſequence of ſuperior cultivation, by the means of manures, &c. will introduce the carriage of more bulky articles, and ſoon repay the proprietors the trifling indulgence. A gentleman obſerved, that, as a certain portion of land was loſt to the community, either for tillage or paſture, by cutting canals, care ought to be taken in the banks to preſerve as much graſs as poſſible, by burying the rubbiſh under ground, and applying the beſt ſoil to cover the ſurface of the banks; trifling as ſuch an object may be, as canals are daily increaſing, the amount, in the iſſue, would be ſomething, and would repay to the public a ſum ſufficient for the general attention requiſite.

The many canals already begun, and intended, have had conſiderable

conſiderable effects both upon the agriculture, manufactures, and general ſtate of the country *.

The Sankey canal was the firſt inland navigation in the kingdom, and was opened in the year 1756; after which the Duke of Bridgewater's canal; and then the Leeds canal, as far as Wigan, were completed. The canal from Kendal, through Lancaſter, to Weſthoughton, is a great undertaking, ten miles of which are already completed. The Bolton canal, already begun, the Rochdale canal intended, with the navigable rivers Merſey, Douglaſs, Ribble, Wyre, and Loyne, render the carriage of heavy articles, through the internal parts of the county, more eaſy and leſs expenſive, than where ſuch channels of conveyance are not found. They have no ſmall effects upon the agriculture of the county, in conveying dung, lime, and other articles, into parts whither, without their aſſiſtance, they could hardly have been tranſmitted; as alſo upon the manufactures, by the conveyance of coal and raw materials, the groſs weight of which would have been too expenſive upon carriage by land.

SECT. 3.—*Fairs.*

IN the year 1780, Auguſt 2, a fortnight fair was eſtabliſhed at Harrington, near Liverpool, oppoſite St. James's church, by the north-country graziers, to ſhew fat cattle and ſheep, which was encouraged by the butchers in Liverpool and the neighbourhood. Accommodations for the cattle and ſheep were effected by Mr. Samuel Sandys, who then held upwards of forty Cheſhire acres of land, which was appropriated to the purpoſe, and was continued every fortnight until the 12th of February, 1783; when it was removed to Kirkdale, for convenience to the butchers in Liverpool; during which period there were expoſed for ſale 39,160 ſheep, and 8,309 head cattle, and upwards: in the year 1781, at one ſhow, in September, were 1,489 ſheep and 279 head cattle; and in October, 1782, at another fair were 1,691 ſheep and 343 head cattle, which was thought very con-

* Particulars of what buſineſs is done in each, and their connections with the trade of Liverpool, will be given in the intended hiſtory of that town.

ſiderable

ſiderable. After the diſſolution of this market, Mr. Sandys had applications from cow-keepers for the land, which was much improved by the paſturage of drovers, ſheep, and cattle; alſo by the quantity of manure which was collected from his ſtall-feeding thirty head in ſhades built on the premiſes, which was declined on removal of the fair; therefore Mr. Sandys propoſed finding milk cows, and keeping them at graſs or hay for 5*d.* per head per week at his own riſk, or keep *their* cows at 4*d.* per week at their riſk; and when any cow declined ſo much as not to pay the farmer, he had a freſh cow found, or an abatement in proportion to her decreaſe: this mode kept the land in high condition from the quantity of dung collected on the eſtate, &c.

The old eſtabliſhed fairs are not here noticed, ſince they are publiſhed in the uſual kalendars of theſe things.

SECT. 4.—*Weekly Markets.*

THERE are ſaid to be twenty-ſix market-towns in the county, which are ſuppoſed ſufficient for the inhabitants, becauſe in every little village or hamlet of houſes, there are retailers of the different articles, which are of daily conſumption, in great abundance. The two large towns, Mancheſter and Liverpool, have each two market days every week; but of late years, butchers meat, garden-ſtuff, and a number of the neceſſary articles of life, are expoſed to ſale, and may be purchaſed any day in the week, Sundays excepted.

SECT. 5. *Commerce.*

THE foreign commerce carried on by the county of Lancaſter, is extremely conſiderable, but its nature and extent does not come within the object of this Report. It is material, however, to collect information reſpecting that great branch of the trade of the county, which interferes with its agricultural intereſts, namely, the importation of corn; ſome idea of the extent of which, may be formed from the following ſtatements of the quantity of corn imported to and exported from Liverpool alone, in the years 1791, 1792, &c.

WHEAT,

WHEAT, FLOUR, &c. imported into Liverpool during the years 1790, 1791, and 1792, from Foreign Parts.

Year.	WHEAT.	BARLEY.	OATS.	BEANS.	RYE.	PEASE.	Wheat Flour*.	Oatmeal.
	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Qrs. Bu.	Cwt. Qu. lb.	Qrs. Bu. lb.
1790	68,260 4	14,404 5	204,154 1	17,492 4	1,288 0	69 6	22,000 2 11	6,874 7 33
								Bolls.
1792	164,311 1	8,213 1	171,591 7	4,467 1	5,520 2	17 1	51,654 0 25½	41,203 5 0
								Cwt. Qr. lb.
1793	8,369 0	19,489 4	228,737 3	27,821 1	2,576 3	1,287 3	6,489 2 9	9,125 1 8

WHEAT, and other GRAIN, imported into Liverpool, coaſtwiſe, in the years 1791 and 1792.

Year.	Wheat.	Barley.	Meal.	Rye.	Oats.
1791	31,273	63,305	46,927	2,290	9,667
1792	71,236	6,597	35,375	3,456	38,797

GRAIN exported coaſtwiſe.

Year.	Wheat.	Barley.	Meal.	Rye.	Oats
1791	30,912	6,597	2,942	3,975	12292
1792	5,148	3,052	4,197	3,440	16,078

* Notwithſtanding the quantity of fine flour, both imported, and at preſent conſumed in this county, Robert Winſtanley, a miller, now reſident in Liverpool, aged about ſeventy, ſays, that he remembers the firſt dreſſing-mill fitted up in this county, which was at Walton, near Preſton; and which, at the time of a ſcarcity, was threatened to be demoliſhed by the mob, for dreſſing fine flour to feed the rich (*a*); and on which occaſion the mill was converted to another uſe, to which it is applied to this day. That afterwards he, with an elder brother, who had learned the art of dreſſing fine flour, fixed up a dreſſing machine at Bootle-mills, near Liverpool; which was the ſecond mill in the county, where fine flour was ground upon blue ſtones (*b*), and afterwards dreſſed through a cloth. Before this, the flour was dreſſed, and ſifted at home in ſieves, after being ground at the mills, and the fine (or London flour as it was then termed) was purchaſed, on extraordinary occaſions, at the grocers ſhops, made up into pounds, ſimilar to the preſent mode of making up ſugars in blue papers. Theſe facts are confirmed by a letter from Sir H. Hoghton, Bart. to the ſurveyor, dated Dec. 1, 1793; and that mill was then the property of his uncle, Sir H. Hoghton.

(*a*) There was more waſte then, than there is now; too great a portion of flour being left in the bran: the improvements in this art have ſince cauſed it to be more effectually extracted, and that to a degree, as to grind almoſt the whole of the bran with the flour.

(*b*) The ſtone firſt made uſe of for grinding fine flour in preference to the grey-quarry ſtone, was the blue boulders, ſawn and cemented together; but this ſtone acquiring a poliſh after ſome uſage, was inſufficient; afterwards the French ſtone, a porous, keen, hard ſtone, was introduced, and has been ſince uſed.

This extract from the Cuſtom-Houſe books, with both the imports and exports, will ſhew the great conſumption of grain in this county, and how inadequate the land, in its preſent ſtate, is to the ſupply of its inhabitants.

The exportation of corn is trifling; and, except upon the weſtern borders of Yorkſhire, upon the eaſtern boundaries of Cheſhire, and ſome parts of Derbyſhire, the corn imported into Liverpool is chiefly for the conſumption of Lancaſhire.

The average of the Liverpool import of grain for the laſt three years is - -	78,980
The average of the Norfolk export for laſt three years is - - - - -	63,046
Liverpool import at £. 1. 4 s. - is	173,211
Norfolk export at - £. 1. 4 s. - is	138,701
	34,510 more value

imported into Liverpool, than exported from Norfolk.

There are about 1,500 tons of ſea-biſcuit manufactured for the different veſſels that ſail from the port of Liverpool, which is eſtimated to take about 60,000 buſhels of wheat, and to require the labour of about fifty men with boys. This is about the average in the year 1792.

Obſervations by Major Atherton.

Mr. Kent, in his Report to the Board of Agriculture, having ſtated that the four Norfolk ports export as much corn as all the reſt of the kingdom put together, and having entered into an accurate detail from the Cuſtom-Houſe books, it occurred to me that a compariſon between the exported produce of the county of Norfolk and the corn imports of the town of Liverpool might eventually be of ſome uſe to the Board, I have therefore taken ſome pains to obtain intelligence upon this ſubject; and here lay the reſult of my inquiries before them. The Liverpool prices were taken from the average prices of one of the firſt houſes in the corn-trade belonging to the port. More difficulties have however ariſen than I was at firſt aware of, and I am confident that it is ſtill extremely defective; ſuch

ſuch as it is, however, it may be the cauſe of further enquiries from thoſe who are better calculated than myſelf to examine a matter which is certainly of high importance. The difference of weights and meaſures produce endleſs and almoſt inſuperable difficulties in enquiries of this nature.

TABLE of Comparison between the IMPORTS of the Town of *Liverpool* and the EXPORTS of the County of *Norfolk*, on the Average of the Years

1790, 91, and 92.

Exportation from NORFOLK, according to Mr. KENT's Report.

				£.	s.	d.
Wheat - -	63,046	Quarters,	at 44 s. per Quarter -	138,701	4	0
Wheat Flour	37,135	Do	at 56 s. per Do - -	103,978	0	0
Barley - -	360,380	Do	at 24 s. per Do - -	432,456	0	0
Malt - -	90,271	Do	at 42 s. per Do - -	180,542	0	0
Rye - -	14,056	Do	at 25 s. per Do - -	17,570	0	0
Peafe - -	13,361	Do	at 28 s. per Do - -	18,705	8	0
Beans - -	15,148	Do	at 24 s. per Do - -	18,177	12	0
Vetches -	73	Do	at 30 s. per Do - -	109	10	0
Rape Seed -	2,423	Do	at 36 s. per Do - -	4,361	8	0
				914,601	2	0
Deduct 15,389 Qrs. Oats imported more than *exported*, at 17 s. per Quarter - - - -				13,079	13	0
Total neat Exports - -				901,521	9	0
Deduct not brought into Liverpool Account,						
	£.	s.	d.			
Malt - -	180,542	0	0			
Vetches -	109	10	0			
Rape Seed	4,361	8	0			
	185,012	18	0	185,012	18	0
£.	185,012	18	0	716,508	11	0
Liverpool Import - -				643,312	8	9
Balance in favour of Norfolk Exportation - £.				73,196	2	3

1790, 1791, and 1792.

Importation of LIVERPOOL, according to Mr. HOLT's Report, calculated at Norfolk Prices, from Foreign Parts only.

				£.	s.	d.
Wheat - -	80,313	Qrs.	at 44 s. per Quarter -	176,688	12	0
Wheat Flour	26,714	Cwt. 1 qr. 24 lb. which equal 8,311 qrs. 43 lb. reckoning 45 lb. to a Winchefter bufhel - - -	at 56 s. per Quarter -	23,271	3	0
Barley - -	14,035	Qrs.	at 24 s. per Quarter -	16,842	0	0
Oats - -	201,494	Qrs.	at 17 s. per Quarter -	171,269	2	0
Rye - -	3,128	Do	at 25 s. per Quarter -	3,910	0	0
Beans - -	16,593	Do	at 24 s. per Quarter -	19,911	0	0
Peafe - -	458	Do	at 28 s. per Quarter -	641	0	0
Oatmeal -	7,111 $\frac{107}{240}$	Loads,	at 23 s. 3 d. per Load -	8,267	10	9
Total Foreign Importation - £.				420,800	7	9
Balance of Grain *imported* Coaftwife, after deducting the whole Exports of the Port.						
Wheat - -	33,224 $\frac{1}{2}$	Qrs.	- - at 44 s. per Qr. -	73,093	18	0
Barley - -	30,125	Qrs.	- - at 24 s. per Do -	36,150	0	0
Oats - -	10,047	Qrs.	- - at 17 s. per Do -	8,539	19	0
Wheat Flour	57,581	Qrs. 4 Bufhls	- at 56 s. per Do -	104,728	4	0
£.				222,512	1	0
Foreign Importation, as above - -				420,800	7	9
£.				643,312	8	9

SECOND TABLE of Compariſon between the IMPORTS of the Town of *Liverpool* and the EXPORTS of the County of *Norfolk*.

Exportation of the County of NORFOLK, according to Mr. KENT's Report, On the Average of the Years 1790, 91, and 92.

		£.	s.	d.
Wheat - -	63,046 Quarters, at 44 s. per Quarter -	138,701	4	0
Wheat Flour -	37,135 Quarters, at 56 s. per Dº - -	103,978	0	0
Barley - -	360,380 Quarters, at 24 s. per Dº - -	432,456	0	0
Malt - - -	90,271 Quarters, at 42 s. per Dº - -	180,542	0	0
Rye - - -	14,056 Quarters, at 25 s. per Dº - -	17,570	0	0
Peas - - -	13,361 Quarters, at 28 s. per Dº - -	18,705	8	0
Beans - -	15,148 Quarters, at 24 s. per Dº - -	18,177	12	0
Vetches - -	73 Quarters, at 30 s. per Dº - -	109	10	0
Rape Seed -	2,423 Quarters, at 36 s. per Dº - -	4,361	8	0
		914,601	2	0
Deduct 15,389 Quarters of Oats *imported* more than *exported*, at 17 s. per Quarter - - - -		13,079	13	0
	£.	901,521	9	0

Deduct	£.	s.	d.		
Malt - -	180,542	0	0	Not brought in Liverpool account - -	185,012 18 0
Vetches -	109	10	0		
Rape Seed -	4,361	8	0		
£.	185,012	18	0		
				£.	716,508 11 0

Importation of LIVERPOOL, according to Mr. HOLT's Report, valued at Liverpool Prices, On Average of the Years 1790, 91, and 92, from Foreign Parts only.

	£.	s.	d.
Wheat - - 80,313 Quarters equal 523,181 Buſhels of 70 each, at 7 s. 2 d. reckoning 57 lb. to a Wincheſter Buſhel - - - -	187,473	9	8
Wheat Flour - 26,714 Cwt. 1 qr. 24 lb. at 38 s. 6 d. per pack of 280 lb. or 16 s. 6 d. per Cwt. -	20,568	15	5¾
Barley - - 14,035 Quarters, at 32 s. per Quarter -	22,456	0	0
Oats - - 201,494 Quarters, at 18 s. per Quarter -	181,344	12	0
Beans - - 16,593 Quarters, at 33 s. per Quarter -	27,447	11	9
Rye - - - 3,128 Quarters, at 32 s. 4 d. per Qr. -	5,056	18	8
Peas - - 458 Quarters, at 42 s. per Quarter -	961	16	0
Oatmeal - - 7,111 $\frac{107}{240}$ - - at 25 s. 4 d. per Load of 5 Buſhels - - - - -	9,007	17	0
Balance *imported* Coaſtwiſe more than *exported*.	454,317	0	6¾
Wheat - - 33,224 Quarters equal 216,433 $\frac{62}{70}$, 70 lb. at 7 s. 2 d. - - - - -	77,555	9	7
Barley - - 30,125 Quarters, at 32 s. per Quarter -	48,200	0	0
Oats - - - 10,047 Quarters, at 18 s. per Quarter -	9,042	6	0
Wheat Flour - 37,581 Quarters, 4 Buſhls, at £. 3. 11. 7 d. per Quarter of 448 lb. - - - -	115,719	14	0½
Total neat Import - £.	704,834	10	2¼

I have many powerful reaſons to believe that the account of the corn, &c. imported into Liverpool, as ſtated in the firſt report, is erroneous, that the importations are much greater, and, at any rate, that it is extremely defective. The article malt is entirely omitted; now in the year 1794, from the 1ſt of January to the 28th of April, ſay four months, there were imported at Liverpool coaſtwiſe, 9,070 qrs. 7 buſhels, or 72,567 buſhels Wincheſter. In the ſame four months were imported 105,726 buſhels of barley, and 46,072 buſhels of big, coaſtwiſe; and 44,635 buſhels of barley, from 5th January to 5th April 1794.

In the week ending March 12th 1795, Liverpool imported from Ireland only 45,627 quarters of oats, beſides 1,699 quarters from Engliſh and Scotch ports, In all,			
47,326 Quarters - - - at 20 s. -	£. 47,326	0	0
at preſent price - - 24 s. -	£. 56,791	4	0
Imports of the town of Liverpool at Liverpool prices -	£. 704,834	10	2
D° - - - - - at Norfolk prices -	643,312	8	9
Superior value at market or profit to corn-dealers, after deducting freight, inſurance, intereſt, &c. &c. - - -	£. 61,522	1	5
Norfolk exports annually,			
Wheat - - 63,046 Quarters, at 44 s. - - -	£. 138,701	4	0
Wheat Flour - 37,135 Quarters, at 56 s. - - -	103,978	0	9
Beans - - - 15,148 Quarters, at 24 s. - -	18,187	12	0
In all - 115,329 Quarters - - - - -	£. 250,856	12	0
Liverpool imports annually,			
Wheat, Foreign 80,313 Quarters, - at 57 s. 4 d.	£. 187,473	9	8
Wheat Flour, D° - - 26,714 1 14 at 38 s. 6 d. per peck - - - - - -	20,568	15	5¾
Wheat - - Coaſtwiſe 33,224 Quarters, at 57 s. 4 d. -	77,555	9	7
Wheat Flour, D° - - 37,581 4, at £. 3. 1 s. 7 d. per Quarter - - - - - -	115,719	14	0½
Beans - - - 16,593 Quarters, at - -	27,447	11	9
	£. 428,765	0	6

It

It appears from hence that there is a market in beans and wheat alone to the annual value of £. 428,765. 0*s.* 6*d.* more than the entire diſtrict produces, and for nearly £. 177,908. 8 *s.* 6 *d.* more than the whole county of Norfolk exports.

Is this, or is it not, an argument for converting the unprofitable graſs land of this county (of which, I am ſorry to ſay, the quantity is immenſe) into good cultivation?—Is it a reaſon for marling?—Will it pay for manure and tillage?

Beans, managed in the Kentiſh manner (ſee Ann. Agr. vol. ii. p. 70, &c.) are amongſt the beſt of preparations for wheat. Few or none are grown in Lancaſhire and Cheſhire, and thoſe few univerſally broadcaſt.

At this moment, wheat is ſelling at Liverpool and at Warrington for 10*s.* and 10*s.* 6*d.* per buſhel, of 70 lb. The common preparation for wheat in this diſtrict is a ſummer fallow, even upon light ſands.

For clover the ſale is ready, and the conſumption profitable; and it ought to precede wheat upon all barley lands.

No county can produce better barley, or in larger quantities, when properly cultivated. It always fetches a fair price, being not only uſed for malting, but made into bread, either by itſelf, or mixed with wheat.—The great miſtake of this diſtrict is, ſowing it too late, and ſowing it after wheat.

There is no better or ſurer land for turnips in England than in this county; and there is every where a good market for them, where it is not convenient to eat them off the land with ſheep.

Marle and manure are every where to be had in great abundance.

The material obſtacles to improvement are tythes, poor rates, and the immoderate wages to be obtained at the manufactories.

A quarter of wheat-flour in Norfolk, weighing 448 lb. is worth - - - - - - £. 2 16 0

At

At Liverpool the ſame weight and quantity may average - - - - - - - £. 3 1 7
2 16 0

Superior value at Liverpool - 0 5 7
or per buſhel, nearly - - 0 0 8½

Say 7 *d.* per buſhel wheat, equals 8 ½ *d.* flour; and ſay 32 buſhels, of 70 lb. each, is an average crop upon a ſtatute acre; the ſuperiority of market is, per acre, then £. 0 18 8
Double it, per Cheſhire acre - 0 18 8

Advantage per Cheſhire acre - £. 1 17 4

At five quarters per acre, it is - £. 2 6 8

There are vaſt tracts of land in this county, rented at leſs than 40 ſhillings per Cheſhire acre, capable of producing the above quantity. This country then has three powerful incentives to improvement,

Marle, Manure, and Markets.

I have heard it confidently aſſerted that this diſtrict (the counties of Lancaſter and Cheſter) do not ſupply the conſumption for more than ſix weeks in the year, and that the county of Lancaſter in particular, does not grow more grain than would feed or be conſumed in it in two weeks.

I am ſenſible of the great imperfection of many of the above ſtatements; and poſſibly there may be many notorious errors in the calculations: I hope, however, the ſubject will be taken up by ſome perſon whoſe talents are equal to the taſk.

Such are Major Atherton's intelligent remarks on the table inſerted in the original report; but that the beſt authority might be gained, application has been made by the Board to the Inſpector General for an account of three years, which is alſo inſerted, and in addition to it the value, at the Liverpool prices.

No. 1. *to face Page* 206,

An ACCOUNT of the EXPORT and IMPORT of all Sorts of CORN and FLOUR, Foreign and Coastways, at the Port of *Liverpool*, in the following Years.

	1791.				1792.				1793.				1794.			
	FOREIGN PARTS.		COASTWAYS.		FOREIGN PARTS.		COASTWAYS.		FOREIGN PARTS.		COASTWAYS.		FOREIGN PARTS.		COASTWAYS.	
	Imported.	Exported.	Brought in.	Carried out.	Imported.	Exported.	Brought in.	Carried out.	Imported.	Exported.	Brought in.	Carried out.	Imported.	Exported.	Brought in.	Carried out.
heat - -	Qr. Bu. 150,311 0	—	31,273 0	9,192 0	8,137 4	3 0	71,236 0	5,148 0	96,149 7	—	16,462 0	13,013 0	122,212 2	—	51,499 0	11,020 0
Flour - -	Cwt. qr. lb. 45,834 3 5	Cwt. qr. lb. 2,147 0 0	—	—	Cwt. qr. lb. 6,489 2 9	Cwt. qr. lb. 4,283 0 14	—	—	Cwt. qr. lb. 33,468 3 5	4,693 3 11	—	—	Cwt. qr. lb. 511 2 26	Cwt. qr. lb. 1,819 2 0		
ley - -	9,947 6	15 0	18,300 0	9,597 0	19,250 0	27 3	23,308 0	3,052 0	10,385 4	—	37,315 0	3,424 0	15,439 2	—	34,124 0	6,275 0
ans - -	4,137 0	87 0	—	—	28,607 7	94 0	—	—	6,045 7	28 0	—	—	17,223 5	461 0		
ts - -	170,930 0	322 4	9,670 0	12,273 0	239,008 3	392 0	7,719 0	21,050 0	127,230 5	155 0	3,623 0	8,610 0	228,647 4	150 0	9,491 0	2,459 0
meal - -	771 7	302 0	—	—	Bolls. lb. 7,300 36	52 3	—	—	Bolls. lb. 6,001 13	36 2	—	—	Bolls. lb. 2,611 19	750 0		
fe - -	72 3	34 0	—	—	1,547 6	41 1	—	—	484 6	1 5	—	—	3,041 5	7 0		
e - -	6,975 2	—	—	3,975 0	2,576 3	—	16 0	3,416 0	9,946 2	—	—	7,236 0	2,273 2	—	17 0	3,361 0
Flour - -	Cwt. qr. lb. 338 3 21															
ian Corn -	329 0	—	—	—	5,095 0											
ign Wheat	—	2,477 6	—	—	—	2,668 3	—	—	—	2,315 0	—	—	—	22,584 7		
D° W. Flour	—	Cwt. qr. lb. 4,724 0 1	—	—	—	Cwt. 8,523 0 26	—	—	—	Cwt. 1,386 3 9						
D° Beans	—	204 4	—	—	—	459 2	—	—	—	44 4						
D° Oats	—	—	—	—	—	1,159 4										
D° Peafe	—	—	—	—	—	436 4	—	—	—	43 6	—	—	—	25 1		
D° Rye	—	—	—	—	—	2,076 6	—	—	—	955 1						
ish Malt -	—	—	43,937 0	2,942 0	—	—	45,975 0	1,197 0	—	—	26,632 0	130 0	—	—	21,538 0	130 0

Warehoufed.

Inſpector General's Office,
Cuſtom Houſe, London,
June 18th, 1795.

THOMAS IRVING,
Inſpector General.

TABLE of COMPARISON between the IMPORTS of the Town of *Liverpool*, and the EXPORTS of the County of *Norfolk*.

EXPORTATION of the County of NORFOLK, according to Mr. KENT's Report, on the Average of the Years 1790, 91, and 92.

			£.	s.	d.
Wheat	63,046 Qrs.	at 44 s. per Qr.	138,701	4	—
Wheat Flour	37,135 ditto.	at 56 s. per ditto.	103,978	—	—
Barley	360,380 ditto.	at 24 s. per ditto.	432,456	—	—
Malt	90,271 ditto.	at 42 s. per ditto.	189,569	2	—
Rye	14,056 ditto.	at 25 s. per ditto.	17,570	—	—
Peafe	13,361 ditto.	at 28 s. per ditto.	18,705	8	—
Beans	15,148 ditto.	at 24 s. per ditto.	18,177	12	—
Vetches	73 ditto.	at 30 s. per ditto.	100	10	—
Rape Seed	2,423 ditto.	at 36 s. per ditto.	4,361	8	—
			923,628	4	—

IMPORTATION into LIVERPOOL, according to the Account furnifhed from the Cuftom Houfe, for the Average of the Years 1791, 92, and 93; and valued at *Liverpool* Prices.

				£.	s.	d.	£.	s.	d.
Wheat	Imported	84,866 Qrs.	at 57 s. 4 d.	243,282	10	8			
	Brot Coaftways	39,657 ditto	ditto	113,683	8	—			
							356,965	18	8
Wheat Flour, Imported		28,597 Cwt.	at 16 s. 6 d.	—	—		23,592	10	6
Barley	Imported	13,194 Qrs.	at 32 s.	21,110	8	—			
	Brot Coaftways	26,308 ditto	ditto.	42,092	16	—			
							63,203	4	—
Britifh Malt, Brot Coaftways		38,848 Qrs.	at 42 s.	—	—		81,580	16	—
Rye	Imported	6,499 Qrs.	at 32 s. 4 d.	10,506	14	4			
	Brot Coaftways	5 ditto	ditto.	8	1	8			
							10,514	16	—
Rye Flour, Imported		113 Cwt.	at 32 s. 4 d.	—	—		182	13	8
Peafe Imported		701 Qrs.	at 42 s.	—	—		1,472	2	—
Beans Imported		12,930 Qrs.	at 33 s.	—	—		21,334	10	—
Oats	Imported	179,056 Qrs.	at 18 s.	161,150	8	—			
	Brot Coaftways	7,004 ditto	ditto	6,303	12	—			
							167,454	—	—
Oatmeal	Imported	2,474 Qrs.	at 40 s. 6 d.	—	—		5,009	17	—
Indian Corn, Imported		1,808 Qrs.							
						£.	731,310	7	10
Wheat	Exported	2,487 Qrs.	at 57 s. 4 d.	7,129	8	—			
	Card Coaftways	9,117 ditto	ditto.	26,135	8	—			
							33,264	16	—
Wheat Flour, Exported		8,586 Cwt.	at 16 s. 6 d.	—	—		7,083	9	—
Barley	Exported	14 Qrs.	at 32 s.	22	8	—			
	Card Coaftways	5,357 ditto.		8,571	4	—			
							8,593	12	—
Britifh Malt, Card Coaftways		1,423 Qrs.	at 42 s.	—	—		2,988	6	—
Rye	Exported	1,010 Qrs.	at 32 s. 4 d.	1,632	16	8			
	Card Coaftways	4,876 ditto	ditto.	7,882	17	4			
							9,515	14	—
Peafe Exported		186 Qrs.	at 42 s.	—	—		390	12	—
Beans Exported		305 Qrs.	at 33 s.	—	—		503	5	—
Oats	Exported	676 Qrs.	at 18 s.	608	8	—			
	Card Coaftways	13,977 ditto	ditto.	12,579	6	—			
							13,187	14	—
Oatmeal	Exported	130 Qrs.	at 40 s. 6 d.	—	—		263	5	—
						£.	75,790	13	—

Three acres of wheat ſtraw have been ſold for the enormous ſum of ſix guineas the acre of large meaſure by Mr. Harper.

The improved mode of cultivating potatoes has reduced their price of late years, notwithſtanding the conſumption by cattle has been ſo great. The laws admitting importation of grain prevent the farmer gaining an advance of price when there is a failure of crop; and the value of corn is, by this means, kept within ſome bounds. But the methods ſometimes taken, as is ſaid, on the opening and ſhutting the ports, ſtand in great need of regulation. The only advantage the farmer reaps, is, from additional quantity, never from advanced price; which is not the caſe in regard to hops, or ſugar, or other articles produced by the ſoil, either at home, or in our colonies.

SECT. 6.—*Of Manufactures.*

MANUFACTURES have been carried on to a very conſiderable extent in Lancaſhire.

The cotton *, ſilk, and wool †, through all their branches,

* The firſt piece of cotton, manufactured from Britiſh growth, was at Mancheſter, from cotton grown in the grounds of J. Blackburne, Eſq. M. P. of Orford, in Lancaſhire; ſeven yards and a half, of one yard and a half yard-wide muſlin, from four ounces of raw material, raiſed I ſuppoſe in a hot-houſe. It was a moſt beautiful piece of cloth, propoſed to have been made up into a dreſs, for Mrs. Blackburne, in which ſhe intended to have appeared at Court, June 4, 1793; but was prevented by a change of dreſs, occaſioned by the loſs of a relation.

To what a degree of perfection the muſlin manufactory is arrived, the following may ſerve to convey ſome idea. In the year 1791, a ſingle pound of cotton was ſpun to a fineneſs of ninety-ſeven poſt miles in length: the muſlin, after being ſpun, was ſent to Glaſgow, to be wrought, and after which was preſented to her Majeſty. The pound of cotton, which, in its raw ſtate coſt 7 *s.* 6 *d.* coſt the ſum of 22 *l.* in this ſtage, when it was wrought into yarn only. It was ſpun by one Lomax, at Mancheſter, upon the machinery called mules.

† Woollens have of late been manufactured without either ſpinning or weaving, and after the manner of hats.

from the raw material; and theſe leading articles include a number of ſubordinate branches or trades, *e. g.* ſpinners, bleachers, weavers, dyers, printers, and tool-makers for the different artiſts, which, if ſeparately enumerated, would in the aggregate extend to an amazing amount.

There are alſo manufactories of hats*, ſtockings, pins, needles, nails, ſmall wares, tobacco and tobacco-pipes, ſnuff, earthen-ware, Engliſh porcelain; clocks and watches, and tools for the artiſts in theſe two branches, not only for the neighbourhood but for all the world; long bows, ſteel bows, paper, &c.

There are large works for the ſmelting of iron and copper †, of caſting plate-glaſs, and the fabrication of blown glaſs; the proceſs of making white lead, lamp-black, vitriolic acid, and foſſil alkali, the refining of ſugar, &c.

The ſeveral modes of accelerating labour have been always ſtoutly reſiſted by the labouring claſs, when the different machinery was firſt introduced; but the iſſue has hitherto proved a ſource, from which not only employment, but the price of labour has increaſed, notwithſtanding that labour has been ſo much abridged.

* A patent has been obtained, and a work eſtabliſhed, to manufacture hats, by machinery; moved by water.

† The conſumption of coal at Ravenhead is, ſeven hundred tons per week; and however deſtructive the ſmoke may be to vegetable life, it ſeems more favourable to animal; ſince, in the ſpace of fourteen years, notwithſtanding between two and three hundred people are conſtantly employed in the copper-works there, belonging to the Paris Mine Company, not one perſon, employed in the works, has died. One reaſon, why perſons in large manufactories in Lancaſhire, do not as frequently die in great numbers as in other counties, is that they have (in general) been *inoculated* in their infancy.

Inoculation is the moſt effectual of all expedients for preſerving the ſhort-lived race of man—many gentlemen pay for the inoculation of the children of the poor in their own neighbourhood.

Saddleworth, which borders upon the county, and which formerly only wrought coarſe woollens, has gained lately, and now works, the fine weſtern woollen cloths.

A large manufactory for the fabrication of fancy goods, has lately been eſtabliſhed at Tildeſley, by Thomas Johnſon, Eſq; where a village has been built ſince the year 1780, which had then only two farm-houſes and nine cottages; has, in 1793, 162 houſes, and a new chapel erected. The village contains nine hundred and ſeventy-ſix inhabitants, which employ three hundred and twenty-five looms.

Mancheſter being the principal repoſitory for theſe manufactures, has become the great center, to which not only the country retailers, but merchants, from all quarters of the kingdom, and foreign parts, reſort; and this has induced ſeveral capital woollen houſes to ſettle at that town; and this mart is chiefly confined to one ſtreet, in which a ſingle room frequently lets very high.

The trades and different occupations upon which the maritime ſtate depends, have not, on this occaſion, been noticed; becauſe they are the ſame in all counties where navigation is carried on *.

The good or bad effects which manufactures may have had upon agriculture, is an important queſtion, which merits much attention; the anſwers to which, in ſome letters, have been conciſe, and diſcharged by one ſingle word, *e. g.* one anſwer has been "advantageous;" another anſwer "injurious;" but without either argument or proofs to ſupport theſe laconic aſſertions.

The more extenſive anſwers, however, ſhall be faithfully ſtated.

Manufactures have wrought a change in the agriculture of the county; the growth of grain is annually and gradually on the decreaſe. The importation from foreign countries is, of courſe, upon the advance; the diminiſhed ſtate of cultiva-

* A ſketch of ſome of which will be given in the intended Hiſtory of Liverpool.

tion is one cauſe of this, and the increaſing population is another; and by the joint operation of theſe two, the importation of grain and flour, uſed chiefly in this county, is almoſt incredible. To prove which, the ſurveyor has been favoured with extracts from the cuſtom-houſe books, faithfully, and with no ſmall trouble, collected for this occaſion, by Mr. Yates.

The advance of wages, and the preference given to the manufacturing employment, by labourers in general, where they may work by the piece, and under cover, have induced many to forſake the ſpade for the ſhuttle, and have embarraſſed the farmers, by the ſcarcity of workmen, and of courſe advanced the price of labour.

The poor rates fall, with equal burden, upon the farmer, as upon the maſter manufacturer; and the manufacturers encourage ſettlers, and conſequently increaſe the number of paupers.

The water is ſometimes ſo damaged by dye-houſes, and other works, erected upon rivers, as to be rendered not wholeſome to the cattle, and deſtructive to fiſh. The heat neceſſary for the buſineſs of printing debilitates the ſtrongeſt conſtitutions.—Damps from obſtructed water;—peſtilential air from crouded rooms;—effluvia from acids and different preparations;—down from cotton; all operate as peſtilences to the human conſtitution.

On the other hand, the advantages that have been held forth, have been an increaſe of population; as that which conſtitutes the riches and ſtrength of a country.

Increaſe of the value of lands, and alſo of proviſions. The farmer particularly has an advance on the price of his cheeſe, his butter, his fatted cattle, his milk; alſo ſtraw, which, in 1790, ſold at the advanced price of 8 *d. per* ſtone in the ſpring at Liverpool; dearer, probably, than ever was known, even in the London market. Hay is little dearer than thirty years ago, except on extraordinary occaſions;—hay is, at preſent, about 8½ *d per* ſtone, owing to a ſlight crop;—thirty years ago 6 *d. per* ſtone.

Capitals, labour, ingenuity, and attention are in this county diverted from agriculture §. It is much to be lamented that the Board of Agriculture have not employed ſome perſons of extraordinary talents and ſuperior induſtry, to examine, in the different manufacturing diſtricts, the actual effects of manufactures upon agriculture *. This county, as Mr. Young himſelf obſerves in his moſt valuable reflections upon this ſubject, ſubjoined to his Tour into France, carries on manufactures to a greater extent than any other county in the kingdom, and is at the ſame time nearly the worſt cultivated.

By way of illuſtrating this remark, which is equally true and important, let us examine the chief articles of cultivation, and the method of management adopted in this great manufacturing and commercial county, where the land is capable of producing every vegetable and every grain in great perfection and abundance :

Beans and Peas.—As preparation for wheat, ſeldom.—Always broadcaſt.—Hoed by horſe or hand, never.

* The following are the obſervations of a practical farmer upon this important ſubject.—" From various circumſtances it evidently appears, that trade is injurious to agriculture, and in the end to landed property, unleſs it could be reſtricted; for whenever a ſtagnation in trade happens, the poor rates riſe, and the land pays for it. Poor rates and other taxes in Weſt Houghton have amounted this year to 16*s.* in the pound. Corn is not ſo much grown, for though the farmer can get in his grain, he cannot raiſe hands but at an enormous price to reap it: if mowing corn were more practiſed, it would be better."

Another farmer ſays, "Never enquire about the cultivation of land, or its produce, within ten or twelve miles of Mancheſter; the people know nothing about it: ſpeak of ſpinning-jennies, and mules, and carding machines, they will talk for days with you.

"There are people about Aſhton that give £. 6 for a ſummer's graſs for horſes to work carding engines, and will give from £. 12 to £. 15 for hay and after-graſs, that they may not be troubled with cultivating land to hinder them, as they ſay. If land were attended to, and improved, for ten to fifteen miles round Mancheſter, as it is in Derbyſhire, the lower parts of Yorkſhire, Nottinghamſhire, &c. it would be as productive as any land in any part of England; for it all inclines to marle, and is naturally a ſtrong ſoil, not only fit to carry manure of any kind, but hold it for a ſufficient time.

Cabbages.—Plentiful and abundant, and luxurious in gardens; but as an arable crop in fields, unknown.

Turnips.—Never hoed.—Never fed off upon the land with ſheep.

Vetches.—Winter vetches unknown.—Summer ones ſown when the land will produce nothing elſe; not eat green, but made into hay.

Fallows.—Seldom ploughed before winter, but kept to ſtarve horſes and young cattle.—Green, with couch-graſs, in June.

Oats.—Sown perpetually upon the ſame land, conſequently deficient in quantity and quality.

Barley.—Sown in May and June.—Never weeded.

Wheat.—Univerſally fallowed for, even upon light ſands.—Upon clover lay, ſeldom if ever.—After beans, never.—The bean-ſtubble is too weedy.—Never weeded or hoed. Though the land is every where admirably adapted to the cultivation of wheat, not a hundredth part grown that ought to be, that the poorer claſs of people from Lancaſter to Preſton, Chorley, Blackburne, &c. &c. ſeldom taſte wheat, though they inhabit as good wheat lands as any in the kingdom.

In the vicinity of Mancheſter, Wigan, Warrington, Ormkirk, Preſcot, and Liverpool, there are many large tracts, to which the above aſſertions will not apply; and every where there are interſperſed both profeſſional men, and gentlemen whoſe management is correctly juſt:—I ſpeak of the generality of the county.

There are many juſt obſervations upon this ſubject in Mr. Campbell's Account of the Filde, "the Granary of Lanca-"ſhire," printed in Ann. Agr. vol. xx. p. 109; they merit general attention, and have more juſtice than ſuperficial obſervers would allow.—There needs little to prove the importance of manufactories in a national view; and their effect upon agriculture, theoretically ſpeaking, ſeem immenſe, in as much as they form the beſt and moſt certain markets:—But, practically ſpeaking, they are baneful to agriculture.

The

The immediate wages to be obtained in the manufactories rob agriculture of its moſt valuable ſupporters;—the yeoman and the labourer are both tempted from the plough;—all competition is precluded.—Who will work for 1 *s.* 6 *d.* or 2 *s.* a day at a ditch, when he can get 3 *s.* 6 *d.* or 5 *s.* a day in a cotton work, and be drunk four days out of ſeven?—But their moſt deſtructive effect are the increaſe of the poor rates. In winter many hands are turned out of employment, who muſt be ſupported by pariſh rates; the labourer at cotton muſt, when ſick or ill or aged, be ſupported by taxes levied upon agriculture.—Manufactories encourage ſettlers of all deſcriptions.—Above 5,000 Iriſh were ſettled at Mancheſter in the year 1787, and I am told that number was afterwards doubled.—The poor laws in this circumſtance are extremely defective.—The law decrees, "that if any perſon who ſhall "come to inhabit in any town or pariſh, ſhall be charged with "and pay his ſhare towards the public taxes or levies of the "ſaid town, he ſhall be adjudged to have a legal ſettlement "in the ſame, though no notice in writing ſhall be delivered "and publiſhed." (See *Burn's Juſtice.*)—By way of a commentary upon this law, there is a manufacturer at this time at Preſton, who has refuſed to pay his pariſh rates and taxes, unleſs they are lowered.

Another evil ariſing from manufactories is, the propagation of vice, inſubordination, and diſeaſes.—What elſe can ariſe from the multitude of people of all deſcriptions pent up in printing-houſes, from which it is neceſſary to exclude all exterior air, and to keep up an artificial heat, which muſt of courſe debilitate the ſtrongeſt conſtitutions?—Add to this, effluvia from acids, paints, minerals, and charcoal.

In the neighbourhood of Bolton, bleaching of the very beſt quality in the kingdom is performed; and of late has been introduced by M. Vallete (an ingenious Frenchman) a more expeditious method of bleaching, ſo much that a piece of calico which would have required by the cuſtomary proceſs three weeks in the moſt favourable ſeaſon, may now be rendered perfectly white in the ſpace of one hour, and that, as it is ſaid,

without

without the leaſt injury ſuſtained by the cloth. The new proceſs is ſomewhat more expenſive than the old. And there is as much ingenuity diſplayed amongſt the artificers in Bolton, and its neighbourhood, as in any part of the county. Bolton has been long celebrated.

" Bolton upon Moore market ſtondith moſt by cottons and cawrſe yorne. Divers villages in the moores abowte Bolton do make cottons. Nather the ſcite nor ground aboute Bolton is ſo good as at Byrk. They burne at Bolton ſum canale, but more ſe cole, of the wich the pittes be not far of. They burne turfe alſo." *Leland's Itinerary*, vii. *p.* 49.

Upon the ſubject of manufactures, a celebrated agriculturiſt obſerves "that you muſt not go for agriculture to Yorkſhire Lancaſhire, Warwickſhire, or Glouceſterſhire, which are full of fabrics, but to Kent, where there is not a trace of a fabric; to Berkſhire, Hertfordſhire, and Suffolk, where there is ſcarcely any. Norwich is an exception, being the only great manufacture in the kingdom, in a thoroughly well cultivated diſtrict, which muſt very much be attributed to the fabric being kept remarkably within the city, ſpreading (ſpinning excepted) not much into the country; a circumſtance that deſerves attention, as it confirms ſtrongly the preceding obſervations. But the two counties of Kent and Lancaſter, are expreſsly to the purpoſe, becauſe they form a double experiment. Lancaſter is the moſt manufacturing province in England, and amongſt the worſt cultivated; Kent has not the ſhadow of a manufacture, and is perhaps the beſt cultivated *."

SECT. 7.—*Poor*.

WHATEVER may be the ſtate of the poor, they are moſt liberally provided for, not only by legal aſſeſſments, but liberal contributions—when particular ſeaſons, or calamitous circumſtances, may call forth the humanity of thoſe who, on ſuch occaſions, give without ſparing. Yet, with all the aid

* Travels through France, by Arthur Young, Eſq. vol. ii. p. 508.

of

of large aſſeſſments, and liberal contributions, it is truly lamentable to witneſs ſuch appearance of poverty, exemplified in nakedneſs, dirtineſs, and the different garbs which indicate diſtreſs. There are mendicants of all ages and ſexes, but more particularly in the country villages; the exerted police of well-governed towns reſtrains theſe wanderers.

In brief, it may be aſſerted, that from appearances, the *ſtate of the poor* is not ſo comfortable as might be wiſhed; and yet from the ſums levied and contributed, if properly applied, their ſituation might be meliorated.

Friendly ſocieties ſeem the guides which point out radical cures for the exiſting evils. When a man once gets into the habit of *laying up* in ſtore, however ſmall the capital, he feels a ſatisfaction which ſtimulates exertions to increaſe his ſtock; and that pride of independence which enſues from an enjoyment of the acquiſition of his well-deſerved, however hard-earned ſubſtance, render his meals ſweet, his family regular, clean, and decent, and his ſpirits cheered by the fruits of his own labours. Friendly ſocieties have been the means of cauſing all this among many of their members; they are numerous in this county; they are increaſing, and ought to be encouraged.

SECT. 8.—*Population.*

LANCASHIRE was formerly ſuppoſed to contain 40,000 houſes and 240,000 inhabitants, but it muſt be now much more conſiderable; and Dr. Wilkinſon, an inhabitant of Eſſex, but who is a native of the county, and has ſeveral eſtates in it, particularly Morley Hall, near Leigh, the place where the celebrated Leland took ſome of his diſtances, and who was a relation to a former poſſeſſor, a well-informed man, ſeemed to think that Lancaſhire contained as many inhabitants as the county of Middleſex *, which he eſtimated at about a-million.

* "The idea of Lancaſhire containing as many inhabitants as Middleſex, and which is there eſtimated at a million, ought certainly to be qualified and corrected, as it can by no means be admitted by the Political Arithmetician, without the moſt authentic and unequivocal proof; for, ſuppoſing its

lion. In a circle of three miles around Tildeſley, Thomas Johnſon, Eſq. informed the ſurveyor there were 10,000 weavers.

Though this eſtimation may be overcharged, ſtill the population is great. The towns of Mancheſter and Liverpool, from the moſt authentic information, together contain 140,000 inhabitants. The roads from manufacturing towns are a continued ſtreet, houſe adjoining to houſe. From authenticated liſts it appears that 22,000 men have been enliſted in the towns of Mancheſter and Salford only ſince the commencement of hoſtilities with France, and from the whole county of Lancaſter not leſs than 27,000 have been enliſted in the ſpace of eighteen months.—The Lancaſhire Fencibles have been raiſed ſince this account was publiſhed.

The work juſt publiſhed by Mr. Stockdale, under the title of *A Deſcription of the Country from* 30 *to* 40 *Miles round Mancheſter*, affords various documents reſpecting the population of ſome of the moſt important diſtricts of Lancaſhire; but any concluſion drawn from them, as to the whole county, muſt be in great meaſure conjectural. Dr. Aiken however has been ſo good as to draw up the following obſervations, ſtating the grounds on which ſuch conjecture may be formed.

"Actual enumeration having but in few inſtances taken place within late years, the principal data for the purpoſe of calculation, are *bills of mortality*. The proportion which the articles in theſe bills bear to the number of people is a matter ſomewhat difficult to determine; but fortunately we have an unuſually accurate ſtandard in the bills of the pariſh of Eccles, in which, along with the annual returns of chriſtenings, burials, and marriages, there is an annual enumeration of the families and individuals. From an average drawn from the compariſon of theſe articles for ſeveral years, it appears, that

its two great towns, Liverpool and Mancheſter, to contain 75,000 each, its four other principal towns 50,000 amongſt them, 50,000 more in its manufacturing parts, and 50,000 more in its remaining pariſhes, this would give only 300,000; nor will any probable data give a number bearing any conſiderable proportion to a million."—*W. Pitt, of Pendeford, Staffordſhire.*

the

the chriſtenings have been to the whole number of people as 1 to 26; the burials as 1 to 28½, and the proportion of perſons to a family, as 5.6 to 1. The much higher proportion of this laſt, than what has uſually been found in other places, muſt probably be owing to the great influx of children from London and other parts to work in the cotton mills, who are apprenticed and boarded with the inhabitants, and thus augment the number in each family. For the ſame reaſon the deaths run higher than in country pariſhes in general. The article of chriſtenings ſeems moſt to be relied upon as a common ſtandard of population; and it will probably be a calculation near the truth to multiply the regiſtered chriſtenings in any town for a term of years by 25 or 26, in order to gain the exiſting number of people. In Eccles, the returned chriſtenings are only thoſe of the eſtabliſhment, but the return of families and people includes diſſenters.

" Before we proceed, it is to be remarked, that from the year 1792, a very conſiderable reduction appears in the bills for almoſt all the manufacturing towns; but as this is owing to cauſes, it is hoped, merely temporary, particularly the abſence of a great number of men in the army and navy, it would be unfair to take the laſt year or two as the exiſting ſtandard. I have therefore, in the following calculations, made an average of the chriſtenings during the laſt three years, in order to eſtimate from them the actual population.

" To begin at Mancheſter, the center of the moſt populous part of the county, and of the cotton manufactory. It's inhabitants, by the above rule, would amount to about 63,000. But by an actual enumeration in 1788, the *townſhips* of Mancheſter and Salford were found to have only 50,000, and the increaſe of births ſince that time, upon the average of the laſt three years, would only augment the number about 800. The return of births muſt therefore comprize a part of the *pariſh*, and yet only a part, ſince at the enumeration in the year 1773, the pariſh was found to contain 13,786 inhabitants, and it may be preſumed that the number is nearly doubled ſince that period. On the whole, it will probably not be too much to

ſet down the population of the whole pariſh of Mancheſter at — — — — 75,000

That of Eccles is about — —	14,000
Aſhton under Line — — —	13,000
Preſtwich — — —	6,600
Oldham — — —	17,000
Middleton — — —	6,000
Rochdale — — — —	15,500
Ratcliffe — — — —	2,000
Bolton — — — —	12,000
Bury — — — —	12,500
	173,600

" The above pariſhes are the whole, two inconſiderable ones excepted, in the hundred of Salford, which occupies all the ſouth-eaſtern part of Lancaſhire, undoubtedly the moſt populous of its diſtricts. If the number be raiſed to 180,000, it is ſuppoſed that all deficiencies in the calculation will be ſufficiently provided for.

" The next hundred in ſize and population is that of Weſt Derby, comprizing all the ſouth-weſtern part of the county, and containing the great port of Liverpool. This town, including all the new buildings within the limits of its townſhip, probably contains about — — 60,000

" Of other pariſhes within this hundred, we have the following eſtimates:

Wigan — — — —	15,400
Leigh — — —	9,900
Warrington — — —	12,000
	97,300

" Though theſe are the moſt populous places, yet as there are many large and well peopled pariſhes, of which we have no account; it will probably not exceed the truth to ſtate the population of Weſt Derby hundred at 140,000.

" Having thus made a rough eſtimate of all the ſouthern part of Lancaſhire, the chief ſeat of its trade and opulence, the re-

remainder

mainder can only be the ſubject of mere conjecture. Of the towns, we have documents to ſtate

Preſton, at about — — —	6,000
Chorley — — —	4,200
Blackburn — — —	12,100
Haſlingden — — —	5,400
There are no other towns of conſequence, but Kirkham, which may poſſibly contain —	5,000
and Lancaſter — — —	10,000
	42,700

" The remainder of the population of the county is divided over a large tract, generally thinly peopled, where trade and manufactures have not made their advances, as may be concluded from the ſmall number of pariſhes into which the county is divided. The tract called the Filde, between the Ribble and Wyer, is almoſt entirely agricultural, and has the ſcattered population uſual to ſuch diſtricts. The part bordering on Yorkſhire moſtly conſiſts of wild uncultivated moors, ſupporting a very thin population. The detached part acroſs the Lancaſter ſands is a rough and hilly region, little peopled, except in its lower grounds near the ſea, and the neighbourhood of its mines. On the whole, if the number of 362,700 ſtated in the preceding eſtimates be raiſed up to 425,000, by allowance for all the ſmall towns and villages in theſe remote parts, it is ſuppoſed that the full population of this county will be given.

" One circumſtance, however, ought to be mentioned, which may raiſe higher the idea of the population of Lancaſhire in the minds of ſome perſons. In the aſſeſſment of men for the navy, laid by a late act of parliament on the ſeveral counties of the kingdom, and ſaid to be calculated according to the number of *rated houſes* in each, Lancaſhire is placed higher than London and Middleſex together, the number for the firſt being 589, and for the latter 552. Now, if this gives the true proportion of the *rated* houſes in each, that of the *unrated* muſt probably be much larger in Lancaſhire than in London and Middleſex, the rent of houſes being on an average much greater in the

latter than the former. It is not in my power to aſcertain how the fact ſtands in this particular, or whether any different rule was followed in the aſſeſſment for London from that obſerved in the country. But it is to be remarked, that the Borough of Southwark, and the pariſhes within the bills of mortality on that ſide the water, are not included in the above aſſeſſment for London and Middleſex; and at any rate, it may be more juſt to lower our notions of the population of the metropolis, than without due grounds to raiſe thoſe of the population of Lancaſhire."

Thus far Dr. Aikin, whoſe ſentiments upon the ſubject are intitled to great weight. Mr. Yates, on the other hand, who had an opportunity, when drawing up his map, of minutely examining the ſtate of the county (who is a man of keen obſervation, and lets few circumſtances eſcape him) is of opinion that the population is conſiderably higher.

A gentleman calculates; that if Yates's map was divided into ſquares, and the houſes in a certain number of ſquares counted, and a medium taken, by allowing ſo many perſons to each houſe, a tolerable eſtimate might by this method be made. But Mr. Yates himſelf thinks ſuch a medium would be much below the true ſtate, ſince from the ſcale of the maps, many houſes and cottages were unavoidably omitted; beſides, the number of people in each houſe of manufacturers, contains a greater number of inhabitants than are generally imagined, ſome ſmall buildings contain, it may be, two or more families, and the families not the leaſt numerous.

If the clergy would afford their aſſiſtance in ſo important a buſineſs, (and there ſcarcely remains a doubt but they would contribute their aid, if requeſted, in circular letters directed to the rector or vicars of pariſhes by the Board of Agriculture,) an eſtimate might be obtained of the real ſtate of population at a trifling expence.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT;

Including General Obſervations on Agricultural Legiſlation and Police.

THE obſtacles to improvements are ſo many, that it is doubtful whether the whole can be here enumerated.

The grand obſtacle is the want of a general incloſure act.

The great expence in obtaining particular acts, for certain diſtricts; the odium, and ill-natured reflections, caſt upon individuals who take an active part in promoting theſe good works, with the vexatious delays of frivolous obſtructions, and many other cauſes, are obſtacles of ſuch magnitude, as to prevent even an attempt at an incloſure-bill, by the means of which many thouſand acres of land, which lie waſte and unprofitable, either to individuals or the public, might bear the richeſt grains, or fatten the choiceſt bullocks.

The corn laws have hitherto operated moſt eſſentially againſt improvements. If theſe matters were left to the ſimple operation of merchandiſe, and to find their own level by abundance, or deficiency, the farmer and the public would generally be benefited. Apprehenſions of famine, under the preſent enterpriſing ſyſtem of merchants, is entirely vaniſhed. There will always be people bold enough to ſpeculate in ſuch an article of univerſal conſumption, as to prevent a ſcarcity. The laws have hitherto afforded no aſſiſtance to the farmer. If there be a general failure of crops, the loſs falls totally upon himſelf; he cannot avail himſelf of advancing the price, as a recompence for the failure of quantity*. The ports are opened for farmers or merchants to ſend in their produce from foreign nations,

* The queſtion under conſideration at preſent, is not what may moſt be conducive to the general good of the community, but what may be moſt advantageous to the farmer and fair trader. It is, in general, ſome adventurous ſpeculator who reaps the moſt advantage, by artfully evading, or turning the law to his own favour.

whoſe

whoſe lands pay no taxes to ſupport our government, and ſome of which are exempt from tythe laws.

Thank God that theſe laws have not hitherto wanted active oppoſers, to whom the landed intereſt lie under unſpeakable obligations. The averages, to govern the exportation and importation of corn, are formed from the mere declarations of *intereſted* dealers, and cannot be juſt grounds to regulate ſo important a branch of commerce, which perhaps had beſt be free, reſerving to the king in council, a power to interfere in caſes of great and ſudden emergency. The expence of the corn returns throughout England, is very conſiderable. In *Lancaſhire*, a burden of near 600 *l. per annum* is ſuſtained for the ſalaries of corn-inſpectors; although from the *corn act* it was ſuppoſed, the duties on *foreign corn* imported, were appropriated to pay all *theſe* ſalaries.

Tythes * are univerſally acknowledged to operate as obſtacles to improvements; and they fall more heavily upon the ſpirited agriculturiſt, than upon the indolent farmer. The greateſt ſervice the Board of Agriculture can perform to their country, will be to deviſe and carry into execution ſome reaſonable plan for their commutation.

The prohibition from exporting wool, in its raw ſtate, is another obſtacle againſt encouraging the increaſe of ſtock, or paying that attention to the quality of ſheep, ſo as to produce the fineſt wool; and ſheep are reckoned the beſt ſtock for enriching either the arable or paſture farm. If liberty were given to export the raw material, under certain duties and reſtrictions, the farmer would be benefited, the manufacturer would not be injured, and the revenue increaſed.

The high duties upon ſalt operate as great obſtacles to the application of this article to the advantage of their cattle, in certain caſes. It is an article moſt cattle are fond of. It aſſiſts digeſtion; promotes a diſpoſition to fatten; prevents certain diſorders; and, in foreign parts, they uſe it in large quantities, not being loaded by high duties. And, it is aſſerted, entirely

* Should not the incumbent of the day have a power to grant a leaſe for 21 years certain, on ſuppoſition even of his dying the day after?

prevents that fatal diſeaſe among ſheep, the rot *.—The refuſe ſalt (an excellent manure) is thrown away, not being permitted to be uſed without paying the full duty!!!

Glebe, or church lands, or any other appropriated to the ſupport of the meeting-houſes, and thoſe lands which appertain to ſmall livings, purchaſed by the bounty of Queen Anne, are generally under a bad ſtate of cultivation; the uncertainty of leaſe, depending upon contingency of a ſingle life, operating as ſtrong obſtacles to any degree of even moderate improvements; and in conſequence they are, in general, under the very worſt ſtate of management.

Short leaſes, moſt certainly, are grand obſtacles. The farmers would merit harſher epithets, than they are at preſent loaded with, were they to venture upon ſpirited improvements for a ſhort term.

Another obſtacle to improvements is frequently occaſioned by the obſtinacy of an adjoining neighbour; *e. g.* one is diſpoſed to drain his lands, but cannot effect this without the concurrence of a ſecond, or probably a third and fourth, to aſſiſt in ſcouring ditches, opening water-courſes, and obſtructions to the drains intended; and the difficulty of enforcing this concurrence, is, I ſay, a great obſtacle to many improvements. Where water proves injurious to roads, an opening may be effected, by application to juſtices of the peace, and by indictment.—Why not admit of a ſimilar operation, ſo ſimple and eaſy to effect, in the practice of agriculture?

* It is to be lamented, that ſome better method has not hitherto been deviſed, to ſecure the duties upon this article of ſalt, different from the expenſive mode of collecting it, by numerous officers; and, at the ſame time, to take off the check given to the fiſheries, and agriculture, by the high duties.

The money raiſed upon the public, on the article of ſalt, in Great Britain, is £. 900,000, of which only one-third is received at the Exchequer.

The groſs revenue, in 1776, was - -		£. 895,489
Drawbacks, bounties, and diſcounts	£. 622,865	
Charge of management - -	26,410	
		649,275
Neat produce -		£. 246,214

Vide *Knox's Tour*, p. cxlviii.

Vermin.

Vermin.—This is an object that requires more general attention than has hitherto been paid to it.

Individuals may have exerted themſelves, and incurred great expence; but theſe exertions are of ſmall avail, whilſt ſurrounding neighbours are harbouring nurſeries, to make future depredations upon thoſe premiſes which they find untenanted. Several townſhips have, of late, aſſociated together, and engaged a mole-catcher, at the rate of four-pence per acre, for a term of ſeven years; in which period of time the mole-catcher imagines he can nearly have deſtroyed the race of thoſe animals in the diſtrict. This effort, towards a total extirpation, muſt be more efficacious than the greateſt exertions of individuals. It is a doubt, after all, whether moles may not be uſeful animals in the deſtruction of certain noxious earrh-worms.

Rats are a very deſtructive animal, not only amongſt grain, but other articles; they are frequently brought in abundance into the ſea-ports in corn, and other veſſels. The ſame mode has been very lately adopted, by particular townſhips, towards a general deſtruction of theſe very troubleſome and voracious animals*.

Sparrows

* SIR,

"THROUGH the vehicle of Mr. Young's uſeful Annals, I am informed of the eſtabliſhment of a moſt excellent and honourable Board of Agriculture, under whom, I find, you are appointed to the ſurvey of this county. To you therefore, I beg leave to addreſs this, though it is not a direct anſwer to any of the queries propoſed by the Board; yet, I truſt, it may be conſidered, as having ſome relation to the former part of the laſt. This country is, to a very great degree, infeſted with that moſt deſtructive vermin, rats: I ſhall not, now, attempt any ſtatement of the probable damages they may be ſuppoſed to do us; but the annual loſſes we ſuſtain by them in our buildings, corn, and other goods, is very conſiderable. I, and moſt of the principal farmers, and others, for a circuit of about 20 or 30 miles, have, for ſome time, employed Edmund Heathcote, of Ormſkirk, who has a very expeditious, effectual, and ſafe mode of deſtroying them; but this affords us only a temporary relief, for we are, (perhaps from our neighbours, who had not theirs deſtroyed) before long, again infeſted.

"In ſome townſhips they have employed him to clear the whole for a ſtipulated ſum, paid annually, out of ſome pound-rate-ley, which is ſo trifling, as not to be felt by any individual: and has, I hear, nearly the wiſhed-for effect (*a*). But even this is certainly a plan too circumſcribed to anſwer any great end. My reaſon, therefore, for troubling you with this,

(*a*) About one halfpenny in the aſſeſſed rates.

is,

Sparrows, and ſmall birds, deſtroy great quantities of corn; and ſums of money have been annually paid, in this neighbourhood, towards their deſtruction, for many years paſt; and although the amount of the ſum, from the number of years the cuſtom has obtained, is become pretty large, no deciſive effects have been produced; the premiums paid may have been too trifling to effect a total cure, and the meaſures, hitherto taken, too languid. In this work, there ought to be an aſſociation, to declare war againſt the common enemy; and vigorous exertions ſhould be enforced, by ſufficient premiums—for the deſtruction occaſioned by theſe ſmall creatures is of greater extent than many people could imagine. The amount of a hundred loads, ſacks of wheat, have been calculated to have been deſtroyed by theſe diminutive devourers, in the courſe of one ſeaſon, in a townſhip of no very large extent, beſides the oats and barley. Magpies, carrion-crows, kites, hawks, and jays, ſhould be included amongſt the common enemy.

Dogs are in general a nuiſance. The butcher frequently ſuſ-

is, in hopes, through you, to obtain, from the wiſdom of the Honourable Board, ſome ſuggeſtions for the moſt eligible plan of extending the employment of this perſon; or otherwiſe, for the extirpation of this moſt deſtructive peſt.

I am, SIR,

Your very humble Servant,

"OSKILL SUMNER."

WIGAN, *in the County of* LANCASTER, Dec. 15, 1793.

The ſurveyor hath employed Mr. Edmund Heathcote, the perſon mentioned in the letter, who always effected a preſent cure; but, after ſome ſpace of time, the vermin returned from other quarters. The man he believes to be very ſober and attentive to his buſineſs; poſſeſſed of much civility, and has already obtained a certificate of his ſucceſs, in places where the has been employed—a conſiderable number of the gentlemen in the neighbourhood. *J. H.*

It is greatly to be lamented that Mr. Heathcote's method of deſtroying rats and mice is not generally known and practiſed; if it was, there would be a total extirpation of thoſe obnoxious and deſtructive animals, for in one night he totally deſtroys them (where he is employed) be they ever ſo numerous, as can be well atteſted by hundreds in the neighbourhood of Ormſkirk, who have employed him.

The compoſition he makes uſe of he puts in their holes or burrows, and from the very ſmall quantity he uſes, it is aſtoniſhing it ſhould have ſuch an effect: it will keep good two years. A farmer recommends for the deſtruction of rats, one ounce of pounded quick-lime to four ounces of tallow cake, to be beaten together and made into balls, and placed in their runs, which has cleared many buildings. But it has been proved by experience, that an ounce of aerated barytes finely powdered, mixed with the tallow, in place of lime, is more effectual.

tains heavy loſſes, in the deſtruction or diſperſion of his ſheep, in the vicinity of great towns, by marauding dogs; and thoſe who breed ſheep frequently complain of their flocks being greatly annoyed by the yelping of curs, and who will ſometimes wantonly encroach upon their borders. The paſſenger is but too often attacked by their troubleſome and vociferous ſalutations. They are certainly a fit object of taxation, if thoſe of real uſe could be excepted.

Dogs are ſo great a nuiſance in many parts of this country, as totally to prevent all ideas of keeping ſheep.—I wiſh to Heaven we had a dog-tax.

Six perſons have *lately* died in the neighbourhood of Manchester, from the bite of a *mad-dog*, and with dreadful ſufferings; and twenty perſons, under the apprehenſion of being affected, were received into the Manchester infirmary in *one week*. *T. B. Bayley.*

Nothing can be more deſireable for this populous county, than an univerſal tax upon dogs. *Mr. Taylor.*

Weeds, eſpecially thoſe which bear winged ſeeds, as the thiſtle, dandelion, &c. ſhould be declared common enemies, and treated accordingly. It is to no purpoſe that a neat farmer cleanſes his ground from ſuch noxious enemies, if a leſs attentive neighbour permit them to flouriſh in the adjoining premiſſes; the winds will diſperſe the floating emigrants over the well, as the ill-cultivated field, where they will take poſſeſſion, without the permiſſion of the owner.

Another deſtructive ſpecies of vermin is a kind of ſnail or ſlug, which, during the day-time in April and May lies under ground, devouring the roots of corn; in the evening comes out, and attacks the blade. Three or four may be found ſometimes upon the ſame plant, and this is the time that ſhould be ſeized for their extirpation; by drawing a heavy roller over theſe lands whilſt the enemy is at work, particularly in a moon-light night, they may be effectually deſtroyed. By this ſtep, a crop of corn may ſometimes be preſerved.

When the air is warm, and the atmoſphere moiſt, the greateſt ſlaughter may be made, the whole family being then abroad. They ſkulk under ground on any approach of cold.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—*Agricultural Societies.*

MANCHESTER SOCIETY.

THERE has been a ſociety of agriculture eſtabliſhed at Mancheſter, for a number of years, which is conducted with ſpirit; and the ſeveral premiums offered annually, have been frequently claimed, and adjudged. A report is annually publiſhed, with the premiums, which are offered for the enſuing year, and a liſt of the perſons to whom they have been already adjudged, is made public; but they have not yet publiſhed any volume of papers which they may have received on different ſubjects; and of which they are in poſſeſſion. The ſurveyor, when at Mancheſter, waited upon the ſecretary, and examined theſe papers, with a view of collecting ſomething that might be of ſervice to him in this Report. The papers are many of them upon important ſubjects.

The Rev. Mr. J. Stainbank, of Halton-hall, writes, "That the principal great towns, through the different counties, at leaſt where they chooſe to form themſelves into ſocieties, ſhould be connected with the Board of Agriculture, as emanations from that great body, and be ſupplied thence with books of inſtructions, and other aſſiſtance during their infant ſtate; and that each ſociety ſhould adapt ſuch a ſyſtem of premiums, as would be moſt conducive for exciting a ſpirit of agriculture in, and promoting the greateſt poſſible improvement of, its reſpective diſtrict."

Similar hints have been dropped by other correſpondents, but not ſo fully explained.

Mr. Eccleſton conceives, " that a ſpirit for improvement might be excited amongſt the farmers, by occaſional tours, every three or five years, undertaken by a perſon appointed by the Board, whoſe report ſhould be printed, the names of the improvers and improvements to be inſerted, with proper eulogiums for their induſtry and ingenuity, in order to excite, by emulation, others to ſimilar exertions."

The ſame gentleman obſerves. " The moſt certain way to bring the cultivation of this iſle ſpeedily to the utmoſt degree of perfection would be to eſtabliſh a ſchool or college where the elements of Agriculture, with its neceſſary attendants, chymiſtry, botany, &c. ſhould be taught, and the moſt approved principles of draining, floating, fencing, plowing, ſowing in drill and broad-caſt, the difference of manures aſcertained, and their excellencies pointed out. Each operation to be ſhewn the pupils in practice, on a farm eſtabliſhed for the purpoſe, under the Board of Agriculture.

" Were ſuch an eſtabliſhment in being, and properly attended to, moſt men of fortune would wiſh their ſons to go through a courſe of the juſt principles of a ſcience the moſt beneficial to mankind, which would give a turn of mind to the firſt claſs of men in the kingdom, to encreaſe its reſources, by ameliorating their private fortunes, and greatly add to the comforts of the labouring claſs of people. The agents or ſtewards of large eſtates, who at preſent, from want of early inſtruction, are unequal to their ſituation, from the confined ideas of their education, would be able, along with the opulent farmers, to ſend their ſons with advantage, to receive all neceſſary and ſolid inſtruction, requiſite for their line in life, beſides *Arithmetic, Planning, and Surveying*, which at preſent is all that has been taught, even to the moſt enlightened of that claſs, I may almoſt ſay of opponents (from want of better education) to modern improvements.

" The moſt eſſential objects for the improvement of this county, are, the improved method of draining: the plaſhing or making good fences: the introduction of green fallow crops, and the ſtocking with ſheep, for the ſecurity of which ſtock, in theſe populous parts, a dog tax would be highly advantageous.

advantageous. All other improvements would of courſe follow."

OLDHAM SOCIETY.

There is a ſociety of botaniſts in Oldham, eſtabliſhed about twenty years ago, begun originally by Dr. Haulkyard, George Hyde, and John Newton.—The ſociety meets nine months in the year, and each member contributes ſix pence a month, (the preſent members are all artificers) two pence of which is reſerved for the purchaſe of books, and the remaining four pence ſpent in liquor.—They have purchaſed by this means about twenty volumes, and are poſſeſſed of 1,500 ſpecimens of plants, properly claſſed.

The time by many dedicated to paſtime, or ſometimes to worſe purpoſes, is by the members of this ſociety uſually employed in the purſuit of their favourite amuſement of either ſelecting or arranging their ſpecimens.

In collecting plants different members have gone as far as Liverpool, Lancaſter, Cheſter, Nottingham, Hull, &c. and one of the members has undertaken a voyage, and to proceed as far as the weſtern parts of America, to botanize, under the patronage of John Lee Philips, eſquire, of Mancheſter.—On the 21ſt of June, in the preſent year, one of the members being upon the mountains near Oldham, diſcovered for the firſt time the *uva urſa*.

This ſociety is not unknown to Sir Joſeph Banks, Dr. Withering, and others, from whom they have been favoured by correſpondence of letters.—They are a wonderful and reſpectable ſociety for their perſeverance, ſobriety, and the great knowledge acquired in the purſuit of this ſtudy.

Their great ambition is to viſit the botanical gardens at London; for which purpoſe the ſum of five guineas, they think, would ſuffice: but alas! that ſum is not to be found *!

* As a proof of the zeal of theſe induſtrious people, it may be mentioned, that upon Mr. Philips noticing to one of the members, that he had obſerved a certain rare plant whilſt riding on the northern coaſt of Liverpool, he immediately ſat out in ſearch of it, and brought it to Mr. Philips; and the plant is now growing in his gardens at Mount-pleaſant.

Names

Names of the GRASSES moſt common in the neighbourhood of Oldham, given by two members of the Botanical Society there:

1. Anthoxanthum, very common	Hay graſs.
2. Alopecurus, - - D°	
3. Dactylus, - - - D°	
4. Poa, - - - - - D°	
5. Feſtuca, - - - D°	
6. Bromus, - - - D°	
7. Avena, - - - D°	
8. Holcus, - - - D°	
Weight of crops is in general Alopecurus, Poa, and Bromus.	

1. Aira, - very common	Paſture land.
2. Agroſtis, - D°	
3. Secule, - not very common	
4. Arundo, - D°	
5. Lolium, - very common	

SECT. 2.—*Weights and Meaſures.*

THE difference of weights and meaſures in this county are ſo many, that if they cannot with propriety be called obſtacles, they may with truth be termed incumbrances to the general intercourſe of buſineſs, and clear comprehenſion of what time an under ſimilar terms, but with different ideas annexed to them, according to the object.

The rod in Lancaſhire is of no leſs than ſix different lengths in different parts of the county; namely, the ſtatute or 5½ yards, 6, 6½, 7, 7½, and eight yards, to the rod, pole, or perch *.

The

* To hazard a conjecture upon the etymology of the word, and the various lengths of the meaſure, the rod or pole got out of an adjoining foreſt, was moſt probably the primitive meaſure, but without any certain ſtandard. A ſtraight rod or pole, of 5½ yards long, preſented itſelf; and this ſerved to meaſure a certain diſtrict. Another rod, or pole of a different length, preſented itſelf to a different meaſurer, and that became his ſtandard

The meaſures are equally variable. At Lancaſter a load of wheat, beans, and peaſe, is four and a half buſhels (Wincheſter); barley, ſix Wincheſter buſhels; oats, ſeven and a half Wincheſter buſhels *.

N. B.—Wheat has been ſold lately by the weight of 280 lb.

At Ulverſtone, a load of wheat is 4½ Wincheſter buſhels; oats, ſix Wincheſter buſhels.

At Manchester, a load of wheat is ſixteen ſcore; a load of oats nine Wincheſter buſhels; a load of beans five Wincheſter buſhels; a load of potatoes twelve ſcore and twelve pounds, waſhed; unwaſhed, thirteen ſcore.

At Liverpool, the town's buſhel is 34½ quarts for oats, barley, and beans, making exactly 36 quarts Wincheſter, or one-eighth more than a Wincheſter buſhel; and by the cuſtom of trade, one given in at every ſcore, or twenty-one buſhels; of late wheat, barley, and oats have been ſold by weight, but never yet beans: wheat 70 lb. to the buſhel, barley 60 lb. and oats 45 lb.; and probably this mode by weight is the faireſt for both buyer and ſeller; for, beſides the difficulty of getting a true ſtandard buſhel or meaſure, the dexterity of corn-meters is ſuch, that it is aſſerted † they can gain either to the buyer or ſeller from 10 to 20 per cent. in different modes of meaſurement; that 5 per cent. can be obtained by this practice by even bunglers in the buſineſs: this is an enormous profit, and the unfairneſs of ſuch practices merits the ſevereſt reprehenſion ‡.

ard for another diſtrict. Theſe rods, or poles, being ſet apart for that purpoſe, and uſed again when occaſion called; and in time became the eſtabliſhed ſtandard of the diſtrict. Hence, *fall*, from the fall of the pole, which covered a certain length.

* A load, ſo denominated, it ſhould ſeem, from the horſe load, in a ſack, the weight a horſe could conveniently carry on his back. Every kind of grain, &c. was conveyed this way till very lately. The load is the lighteſt in the mountainous parts.

† By a conſiderable corn-merchant.

‡ It is enacted by 31 Geo. III. that a Wincheſter buſhel of corn ſhould weigh as follows:

	lb.			lb.	
Wheat	57	avoirdupoiſe. —	Wheat meal	56	Flour, 45 lbs. of which ſhould be equal to a Wincheſter buſhel, unground.
Barley	49	- - - -	Flour	48	
Bigg -	42	- - - -	ditto	41	
Oats -	38	- - - -	—	32	
Rye -	55	- - - -	—	53	

§ At

At Lancaſter they have a meaſure called a *windle*, which is three Wincheſter buſhels.

At Preſton the windle of wheat, beans, and barley is three and a half Wincheſter buſhels; but of late 220 lb. has been reckoned a windle of wheat; they have alſo a meaſure at Preſton called a peck, which is twenty-eight quarts, four of which are called a windle.

Weights.—There are three different weights expreſſed under the general term, *hundred weight*; namely, 100 lb. 112 lb. and 120 lb. The ſtone varies. In Liverpool 20 lb. is the weight allowed for the ſeveral articles under that denomination, as beef, hay, ſtraw, &c. and probably all the articles produced from land.

Butter is required to weigh 18 ounces, avoirdupoiſe, or may be ſeized by the magiſtrates.

CONCLUSION;

Means of promoting the Improvement of the County of Lancaſter; and Hints thence to be derived for the Improvement of other Counties.

A REPORT formed on ſo great a ſcale, as thoſe which are drawn up for the conſideration of the Board of Agriculture, ought to conclude with a general view of thoſe meaſures, which are beſt calculated for the improvement of the diſtrict to which the ſurvey relates; and alſo with a ſtate of thoſe improvements which have taken place there, and by adopting which, other diſtricts might be benefitted.

I. *Conſiderations reſpecting the farther Improvement of the County of Lancaſter.*

IN the preceding obſervations, a number of hints have been given, pointing out the improvements of which this country is capable; and it is only neceſſary to recapitulate ſome of the moſt important.

1. *WASTE LANDS.*—The cultivation of the waſte lands in this county, is undoubtedly the firſt object that ought to be attended to. A county like that of Lancaſter, diſtinguiſhed for the opulence and ſpirit of its inhabitants, ſhould never reſt, whilſt a ſingle acre remains, that does not yield ſome valuable production. There is ſcarcely a rood in it, that might not yield ſome ſpecies of grain, or ſome ſort of uſeful paſture, or ſome kind of valuable timber. Were thoſe waſte lands made

as productive as they ought to be, there would probably be no occaſion for the importation of grain from other countries; and thus the manufacturing induſtry of Lancaſhire, inſtead of being a market to encourage the agricultural exertions of other countries, would be the means of promoting thoſe domeſtic improvements, which, in every point of view, are ſo much entitled to be preferred.

2. *DRAINING.*—In a wet climate this muſt be the baſis of all improvement. Much in this reſpect has been already done in Lancaſhire, but much ſtill remains to be effected, particularly where the ſoil is of a clayey nature. The perfection however to which this art will probably be brought, in conſequence of the attention which has been lately paid to it, and the diſcoveries which have been made by Mr. Elkington, will ſoon enable the people of this county, to clear their lands of ſuperfluous water, whether it ariſes from what falls upon the ſurface, or is occaſioned by ſubterraneous ſources.

3. *GRAINS.*—Oats ſeem to be the natural grain to be extenſively cultivated in this part of the iſland: and as in all countries an early ſpecies is deſirable, it may not be unworthy of the Lancaſhire farmer, to try a ſpecies of oat that has lately been much cultivated in the neighbourhood of Edinburgh, known under the name of *the Red Oat.* It is remarkably early, being ripe before almoſt any other ſort, and produces more meal than any oat of the ſame ſize; its ſtraw alſo is good for cattle, and it is not liable to ſhake. It is probable, on the whole, that it is one of the greateſt means of improvement that could be introduced into Lancaſhire.

4. *TURNIPS.*—An increaſed culture of this valuable root, is an object well entitled to the particular attention of thoſe, who wiſh to promote the improvement of this county. A great part of the ſoil of Lancaſhire is ſuppoſed to be particularly well calculated for the culture of turnips. The advantages which other counties have reaped from this culture, ought to induce the Lancaſhire farmers, to pay particular at-

tention to this ſource of improvement, the nature and principles of which are too well known to require any elucidation in this place. There are two modes of cultivating turnips; the one is by the broad-caſt, the other by the drill ſyſtem of huſbandry. Which is the moſt productive, has not yet been decidedly aſcertained; but the drill ſyſtem is the moſt eaſily introduced, on the account of the greater facility of hoeing.—For the broadcaſt ſyſtem of turnip huſbandry, the ſurvey of the county of Norfolk may be conſulted;—for the drill ſyſtem, that of Northumberland.

5. *CATTLE.*—It is acknowledged that the Lancaſhire breed of cattle, do not equal what they were ſome years ago, and are certainly much inferior to the improved ſtock of the ſame breed (namely, the long-horned) in other parts of the kingdom. As Lancaſhire muſt always be as much of a grazing, than of an arable country, it is particularly deſirable, for the advantage of its inhabitants, that the herbage it produces, ſhould feed as profitable a ſpecies of ſtock as poſſible; and hence particular attention to its breed of cattle cannot be too ſtrongly recommended.

6. *SHEEP.*—It is impoſſible to ſee without regret, that ſo valuable an animal, ſhould hitherto have had ſo moderate a ſhare of the attention of the Lancaſhire farmers, as there is none by means of which ſuch great improvements might be effected. Notwithſtanding the humidity of the climate, where the ſoil is dry, or capable of being drained, no apprehenſion need be entertained of this animal's ſucceeding to a wiſh. At preſent, the greater part of the county ſeems to be principally devoted to the moſt unprofitable of all that ſpecies of ſtock, namely, the black-faced Scotch, whoſe fleece is of little or no value, whoſe reſtleſſneſs renders it difficult for them to be confined in any common incloſure, and the wildneſs of whoſe diſpoſition makes it extremely difficult to fatten them. Inſtead of theſe, there are two ſorts of ſheep, the Cheviot for the hilly parts of the country, and the Bakewell or Culley breed, for the lower diſtrict, which cannot be too ſtrongly recommended to the people of Lancaſhire.

The Cheviot are to be found on the borders of England

and Scotland, and are the moſt valuable breed, for a mountainous diſtrict, perhaps any where to be met with; but for a manufacturing country, where the paſture is ſufficiently rich, the Bakewell breed is undoubtedly preferable to every other; producing, from the ſame extent of herbage, a greater quantity of meat, and of a ſort peculiarly well calculated for general conſumption. In a manufacturing diſtrict alſo, it is extremely deſirable, to have a raw material of ſuch value as wool, on which the induſtry of the people may be exerciſed, ſhould other branches fall off.

Theſe General Obſervations might be extended to a much greater length, and might include a number of other particulars: but if the *waſte lands* of the county are properly cultivated—if *draining* is properly attended to—if the beſt ſpecies of *oats* and other grains are propagated—if the culture of *turnips* is carried to that extent of which it is capable—if the *cattle* of the country are improved, and regain their ancient eſtimation—and, above all, if the beſt ſorts of *ſheep* are ſpread over the county, Lancaſhire will have no reaſon to regret the attention that has been paid to its improvement by the Board of Agriculture.

II. *Hints for the Improvement of other Counties.*

The attention of the people of Lancaſhire, has hitherto been principally devoted to the extenſion of manufactories; at the ſame time, an active and intelligent race of people, muſt always diſcover a number of particulars, by which its own agriculture, and that of its neighbours, may be improved. A variety of hints to that effect, will be found in the preceding pages of this Report; but there is one point which requires to be particularly adverted to, namely, the management of marle, in which this county ſeems to excel every other, and by imitating whoſe practice, there is no part of the kingdom, where

marle

marle might be found, that might not be brought into a high ſtate of cultivation. The quantity laid upon an acre ſeems very great, but is amply repaid by the laſting benefit that reſults from it. It is probable indeed, that a ſmall quantity may do little good, whilſt a great load may produce the moſt important benefits. The marling alſo a ſecond time with great advantage, is a circumſtance entitled to very particular attention; and the burning of marle, and uſing it when burnt as top dreſſing for corn, is a mode of improvement which cannot be too ſtrongly recommended to the attention of the induſtrious farmer, who has an opportunity of putting it in practice.

On the whole, it is believed, that no man can read over the preceding pages, without being ſatisfied, that great pains muſt have been beſtowed in collecting and arranging ſuch a maſs of valuable information; and if a ſimilar account is drawn up and printed of every other diſtrict in the kingdom, there can be no doubt of its proving in the higheſt degree ſerviceable to the country.

APPENDIX,

APPENDIX.

N° 1.

THE following deſcription of the Lancaſhire cattle, &c. will ſerve to explain the engravings which accompany this Report.

LANCASHIRE BULL,

Was bred at St. Michael's in the Filde, and is now the property of Edward Aſhcroft, Spellow-houſe farm, in Walton.

DIMENSIONS.

	Feet.	Inches.
Length of the head - -	1	8
Depth from ſhoulder to breaſt-bone	2	7
Breadth from hip to hip - -	2	6
Height from ſhoulder to fore-foot -	4	7
Length from root of horn to rump -	8	1

LANCASHIRE COW,

Purchaſed, when in the poſſeſſion of James Balmer, Toxteth Park, for exportation to America, as one of the beſt ſpecimens of the Lancaſhire breed.

DIMENSIONS.

	Feet.	Inches.
Length of the head - -	1	4
Depth from ſhoulder to breaſt-bone	2	3
Breadth from hip-bone to hip-bone	1	11
Heighth from ſhoulder to fore-foot -	4	2
Length from root of the horn to rump	7	4

LANCASHIRE MARE,

Bred at Weſt Derby; is of the uſual breed of cart-horſes in that vicinity, ſtrong and bony; the colour black, not ſo heavy but that it might occaſionally be uſed upon the road, or to draw in a chaiſe.

The

The Mare from which the original drawing was taken, is in her 22d year, notwithſtanding which the teeth are yet good, eyes clear, and perfectly ſound. It has been one of the beſt of ſervants, to its preſent maſter, for the ſpace of nineteen years.

MIXT BREED OF HOGS.

The Hog, an engraving of which is inſerted in this work, is a boar belonging to Thomas Wakefield, Eſq. Brooke Farm, near Liverpool. There is a mixture of the Chineſe and of the wild boar in this breed. Its chief properties are a large carcaſe, ſhort legs, ſmall entrails, and great weight of meat, in proportion to its ſize.

DIMENSIONS.

	Feet.	Inches.
Length of head - - -	1	0
Depth from ſhoulder to breaſt -	1	4
Breadth from hip to hip - -	1	0
Heighth from ſhoulder to fore-foot	2	6
Length from ear to rump -	4	0
Girth round his body - -	5	2

N° 2.

Mode of preſerving CREAM, for ſeveral weeks or months; particularly calculated for ſea voyages.

TAKE 12 ounces of white ſugar, and diſſolve it in ſome ounces of water, over a moderate fire. After the ſugar is diſſolved, boil it for about two minutes in an earthen veſſel; after which add immediately 12 ounces of freſh cream, and mix the whole uniformly over the fire: then ſuffer it to cool, pour it into a quart bottle, and cork it carefully. Keep it in a cool place, and it will continue fit for uſe for ſeveral weeks, or even months.

N° 3.

N° 3.

SINCE the above Report was drawn up, the following paper was tranſmitted, by an active and intelligent magiſtrate for the county of Lancaſter.

Obſervations on the Corn Act, 31ſt Geo. III. chap. xxx. reſpecting the Salaries of the Corn Inſpectors.

It is inſiſted, that the clear meaning of the legiſlature was, to defray the expences of its execution, and amongſt theſe the ſalaries of the corn-inſpectors, from the duties to be paid on the importation of foreign corn.

In proof of this—

1.

Be it obſerved, that by the 15th, 16th, 17th, and 18th clauſes, various duties are impoſed on foreign corn imported; and are put under the management of the commiſſioners of the cuſtoms.

2. That by the 74th clauſe, and the two following ones, expreſs proviſion is made for the *re-payment* of the monies paid by the county treaſurers, viz. (5ſ. for each return) charging *alſo* the deficiency (if any) to the general cuſtom-houſe account to make good.

3. That the regulations for the port of *London*, in clauſes 43, 44, 45, and 46, provide for the ſalary of the corn-inſpector *there*, from the duty of one penny on *Britiſh* corn, and two pence for foreign corn imported.

This is plainly done from the juſt view of the ſubject—as of *national*, and not of *local* concern; and therefore no partial burden is thrown on the city of *London* to pay their corn-inſpector; and there can be no doubt, that on the ſame principle of equity, all other parts of the kingdom were intended to be equally exempted from *local* impoſitions.

4. That

4. That the reaſon of the allowance made to the Scotch counties (by the 33 Geo. III. c. 65. ſect. 20.) is declared to be, that the former allowance of twenty ſhillings for each return (by 31 Geo. III. c. 30. ſect. 74.) was not ſufficient to defray the expences, &c. This fully explains the meaning of the legiſlature in the corn act, *not* to burden the particular "counties" by the payment of extra ſalaries, &c. The act of 33 Geo. III. c. 65. puts it out of all queſtion, with reſpect to the counties in *North Britain*; and as both parts of the united kingdom are under the regulation of this corn act, the ſame meaſure of equity *muſt* apply to both.

5. It was calculated when the act paſſed, that the duties on foreign corn imported would be more than ſufficient to defray the expences of the act; for the "ſurplus" is ordered to be paid to the receiver-general of the cuſtoms. And the ſums *actually* remitted *on this account* from Liverpool, will prove that there is no neceſſity (if that were to be admitted as a plea) to burden the county rates of "Lancaſhire" with the payment of £. 500 per annum for the ſalaries of the corn-inſpectors within *that county*.

6. If it was judged proper to order the *ſmall payments* "of *five* ſhillings" for each return to be *repaid* to the counties, it muſt follow that the legiſlature never meant *locally* to burden, and to ſo great an extent, any diſtricts within the united kingdom, to ſupport a ſyſtem of *general regulation*; and for which adequate proviſion was intended to be made in the corn act, by the ſmall duties laid on foreign corn imported; and which in fact, are ſufficient for this purpoſe.

Hope, near Mancheſter,
April 1795.

T. B. BAYLEY.

THE END

Directions to the Binder.

Map of Lancaſhire - - - *to front the title.*
Lactometer - - - - - *to face p.* 160
Lancaſhire Bull - - - - - - *p.* 143
D° - - Cow - - - - - - *p.* 151
D° - - Mare - - - - - - *p.* 169
Mixt breed of Hogs - - - - *p.* 174