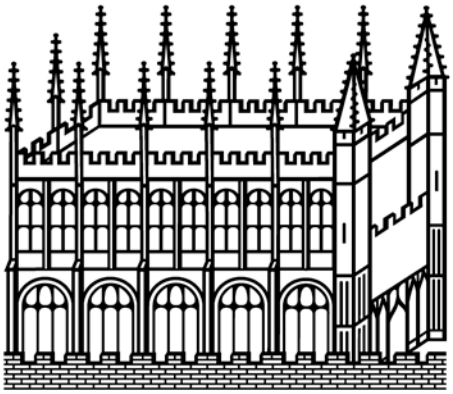

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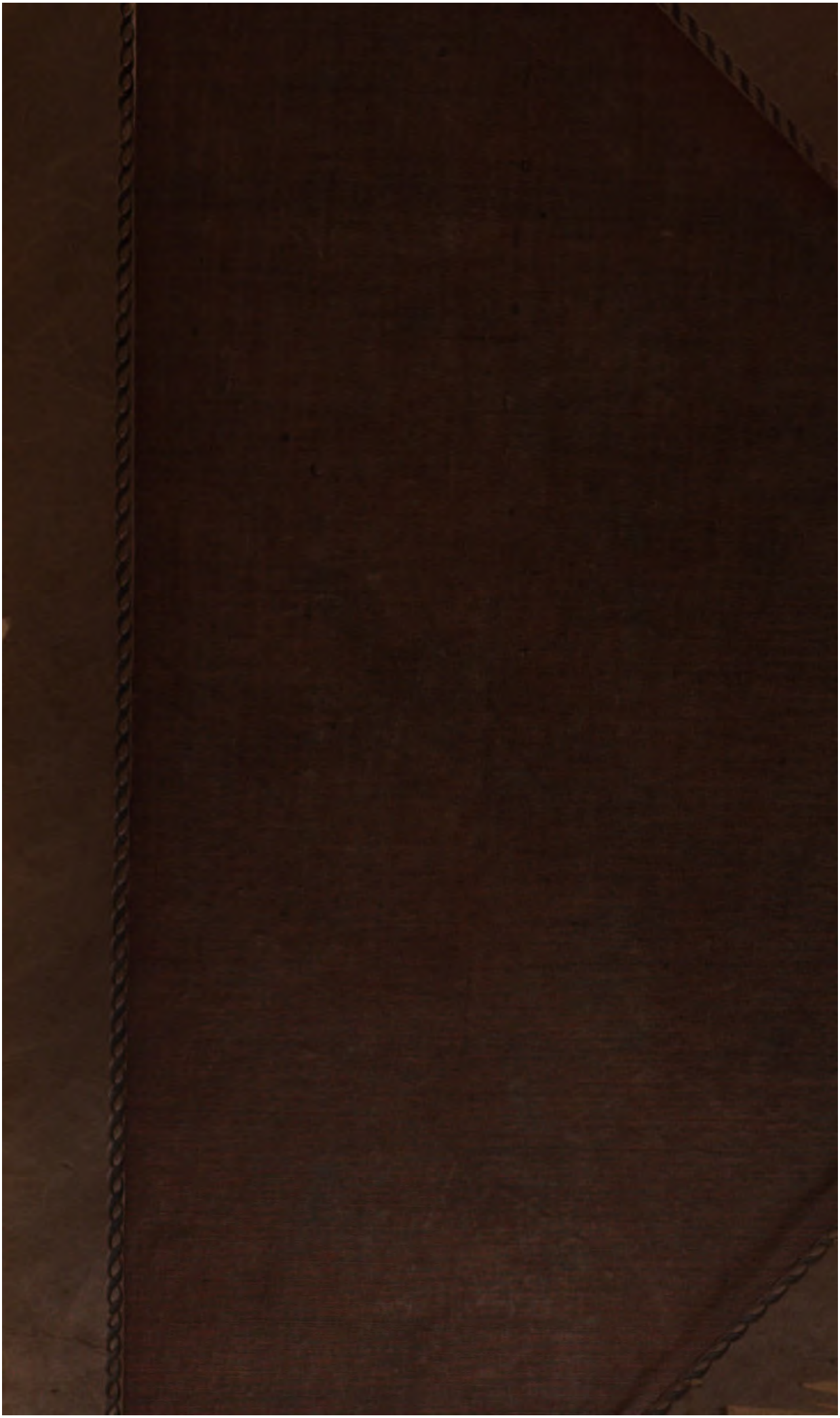

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GENERAL VIEW

OF THE

AGRICULTURE

OF THE

COUNTY OF ESSEX.

DRAWN UP FOR THE CONSIDERATION OF

THE BOARD OF AGRICULTURE,

AND INTERNAL IMPROVEMENT.

BY THE SECRETARY OF THE BOARD.

IN TWO VOLUMES.

VOL. II.

LONDON:

PRINTED FOR RICHARD PHILLIPS, BRIDGE-STREET, BLACKFRIARS;

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BY B. McMILLAN, BOW-STREET, COVENT-GARDEN.

1807.

[*Price One Guinea.*]

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AGRICULTURAL SURVEY

OF

ESSEX.

CHAP. VII.

[CONTINUED.]

ARABLE LAND.

SECT. XI.—CARROTS

ARE no where a common article of culture in Essex; nor does the right soil, a deep good sand, abound there, except partially in small districts. There are, however, large tracts of good sandy loam, that would do exceedingly well for them.

About Maplestead carrots are planted for seed, three feet apart; they get 5 or 6 cwt. per acre; average value (1793) two guineas per hundred weight; had a little before sold as high as 16*l.* 16*s.* per hundred weight.

Mr. SEWELL, of Maplestead-hall, has cultivated carrots with much intelligence; his object is the seed, and tried the common method of drawing the roots in autumn, and transplanting them in the spring; but so many rotted and failed, that he changed the system for one which has

succeeded well. This is, to draw the crop in autumn in stripes, clearing the ground to the breadth of three or four feet, and then leaving a stripe of carrots about eighteen or twenty inches broad, to stand through the winter for seed. I viewed one of his crops thus, and found them quite clean, the intervals well cultivated by horse and hand hoeing, and the seed heads covering the land sufficiently, and leaving no more space than just enough for women to walk between for selecting the heads as fast as ripe, which they repeat perhaps five or six times. The crop of seed is an uncertain crop, varying in general from 4cwt. to 10, 12cwt. and even more. He has known the price also vary from 18*s*. to 16*l*. 16*s*. per hundred weight; average about 56*s*. He sows them after wheat, ploughing three or four times, and getting the land fine. He sows 10lbs. of seed (steeped) per acre, broad-cast, and hand-hoes thrice, at 25*s*. per acre. The quantity of roots drawn from the intervals vary according to soil; the true light carrot land does not suit so well for the seed as a heavier loam: but reckons in general that he takes about 200 bushels an acre. Of these he sells what the demand of the neighbourhood requires: generally at from 9*d*. to 1*s*. per bushel, and only once so low as 6*d*.; the rest to a large amount (for he has had to the extent of twenty acres in a year), he consumes himself, giving them to his horses, pigs, cows, and fat bullocks; but in none of these methods of consumption (perhaps horses excepted) has he found them to pay more than 4*d*. per bushel. A bullock of thirty to forty stone (14lb.) will eat three bushels a day, besides six or seven pounds of hay; but they thrive exceedingly on them. He had sixteen bullocks put to joist in the marshes of the Hundreds, and owing to drought, flies, &c. they came home very poor; but on putting to carrots, throve admirably, and were quickly fat.

Mr.

Mr. SAVILLE, of Bocking, bought carrots at 8*d.* or 9*d.* per bushel, which, with carriage, &c. became 1*s.*; he gave them to four large beasts that ate, each of them, three bushels a day, or 1*l.* 1*s.* a week: he lost by the experiment.

Mr. WAKEFIELD, at Burnham, has this year five acres of carrots for the first time; they are a very fine crop, and he has done justice to them by complete and very expensive hoeing.

"At Wethersfield, raising carrot-seed has been many years commonly practised, arising, perhaps, from possessing the two soils which are found to be the best adapted to the culture, rich sand to raise the carrots the first year, and strong loam for the year of feeding. The preparation of the soil consists in making it very fine by repeated ploughings and harrowings; usually three or four earths are given, and the seed, twenty pounds an acre (apparently an enormous and unnecessary quantity), sown in April. They hand-hoe twice at the expense of 3*d.* a rod for the two hoeings, setting the plants out about seven inches asunder. At Michaelmas they dig up, cut off the tops to the length of an inch, and pack up the roots in barns with straw, taking care that they are dry enough when laid up: securing them is a work of some difficulty, for air must have access to them, yet frost must be excluded. The crops are large; three bushels per rod are a good produce, but four have been known: the price from 6*d.* to 1*s.* 6*d.* per bushel; average 9*d.* For replanting in the spring for seed, they chuse a piece of fresh land, if there is any to be had on the farm; if not, such as is in good heart; but they never manure it. The preparation is to throw two three-feet ridges together; in a dry season, in February or March, they cut the tap end of the carrots off, to the amount of one-third of the root, and plant a double

row upon each ridge, at three feet from carrot to carrot and two feet row to row, in a quincunx position, so that the plants of one row may be against the spaces of the other. They are twice hoed, and twice earthed up; the second time very high, at the expense of 1*l.* 6*d.* an acre.

"They are subject to accidents, but less so on strong land than on light: we found in walking among some crops, that many carrots were rotted, from too much moisture; also worm-eaten, and drew up with little resistance. The heads are cut off when quite dry, as they ripen, by women, at about 10*s.* an acre; and being laid in pack-cloths, are thrashed and dressed by men; one man half an hundred weight a day. Both crop and price are exceedingly various: 10 cwt. may grow on an acre, and ten guineas a hundred weight has been known; the price rises from 1*l.* 1*s.* to 10*l.* 10*s.* the average from 3*l.* to 5*l.*; accounts of the produce vary in this case as in all others, but 6 cwt. at 4*l.* may be expected, and perhaps it would hardly answer if it was much under this."—*Nat. in* 1784.

At Wethersfield I found that the price has fallen so much of late years, that it is pretty generally given up; not however entirely: at present the main object is the root itself, for consuming by stock, and for sale when there is a demand. One person, Mr. LEGERBOW, has this year six acres; but the whole amount may not exceed thirty or forty acres. The red sandy soil here is very well adapted to the culture, and indeed for any crop whatever. The common sale price 8*d.* a bushel at home. They are reckoned excellent food for horses; sparing much hay and some oats: for colts they are peculiarly excellent. They give only a common ploughing for them, but as deep as they can. Some persons dung for the crop; and they are reckoned to *draw* the land. Seed eight pounds per acre; steeping not practised. Mr. LEADER once drilled

drilled his crop, but it did not answer, and he tried it no more. Two hoeings are always given, at 2*d.* a rod each, with beer; this is 53*s.* 4*d.* besides beer, which appears to be extravagant for an established culture.

Mr. WILTSHIRE has had 670 bushels an acre: Mr. WEDD has had 1500 on three acres: he fattened bullocks on them, and they did exceedingly well; doubling his money by the beasts between August and Lady-day: bought in at 18*l.* and sold at 36*l.*

On a fine turnip loam at Little Oakley, the Rev. Mr. SCOTT has tried two acres and an half of carrots, a root not at all cultivated in that vicinity, but which contains a great extent of land exceedingly well adapted to the husbandry.

Mr. DYER, of Ongar, has tried carrots both for horses and sheep, and likes them much better for the latter than for the former: he finds they make horses sweat too much. I have found many years ago, that washed carrots given before they are quite dry, are very inferior for horses; and note Mr. WOOD of Ingatestone, on watering horses—Should they have water with them?

"T. NOTTIDGE, Esq. of Bocking, on a sound, old arable field, good barley land, after a crop of oats, at one ploughing, no manure, sowed full three acres and an half with carrots, at ten pounds of seed per acre; they were three times nicely hand-hoed, were taken up in October, heaped directly in small upright cocks of twelve bushels each, in the field, and the tops and tails cut off, laid over them; after standing a month, were carted perfectly dry into an open shed; and the produce two thousand two hundred bushels, have been used, in feeding bullocks intended for the ensuing grass, and his coach and saddle horses, at a bushel a day each; and without any corn to the horses, though one follows a pack of harriers twice a

week. Mr. GAINSBOROUGH, at his farm at Notley, near Braintree, on similar, but fresher soil, with the same ploughing, and seed without manure, the preceding crop, on a grass lay, having too been an extraordinary crop of carrots, with one nice hoeing, at eleven shillings per acre, and three rough weedings, that in all for the whole field, amounted to thirty shillings, took up, from a full four acres of ploughed land, two thousand nine hundred bushels, many of which, after being cocked in the field, and carted dry, were injured probably from the state of the mild winter, in being too closely packed into a dry barn. Twelve stalled bullocks bought in October, computed to rise to thirty score each, are fattened with them, at the allowance of twenty-six bushels of carrots, and half an hundred of hay, to the whole lot per week. In this instance of comparison with turnips, the carrots stand as three to one; for four acres of good turnips would not fatten more than four such beasts; but this is fresh land, and the produce great." —*Note some years past.*

" The following particulars I received chiefly from a farmer in the parish of Shalford, of great skill and experience, who has long cultivated carrots with much attention, and upon a pretty extensive scale.

" Such as the farmer chuses to dispose of, or has a demand for, he sells in the field from sixpence or eightpence, to a shilling a bushel, according as the produce happens to be scanty or plentiful. Those which he reserves for his own use, or lays up for sale the ensuing spring, he deposits in a dry secure room, laying a considerable quantity of clean wheat straw round the edges or bottom extremity of the heap; but not spread over the carrots, lest it cause them to heat too much, and of course endanger their moulding and rotting. But when the perspiration

spiration or sweating of the carrots, as it is called, is thoroughly evaporated and gone off, and they are become pretty dry, the straw may with safety be thrown lightly over them; and, indeed, in case of sharp frosty weather, it is even necessary to cover them over pretty thick, to secure them from freezing, which would be their entire destruction. The average produce is about 500 bushels per acre.

"Ploughing and harrowing, 30*s.*; seed, 10*s.*; weeding, hoeing, and beer (at an allowance of twopence in the shilling), 5*l.*; harvesting, &c. 20*s.*; total about 8*l.* Average price in the field, 8*d.* or 9*d.* a bushel.

"They are used partly for domestic consumption, and partly for the winter food for horses, cows, hogs and sheep, all which are in general exceedingly fond of them, and are found to be very wholesome and nourishing. Horses usually eat them sliced into thin slips, to prevent their being choaked by the greedy attempt to swallow too large pieces, and they are not unfrequently mixed with at least an equal proportion of good chaff. While thus fed, it is no inconsiderable presumption of their wholesome congenial quality, that the horses are generally plump and sleek, and their colours bright and vivid. They consume about twice the quantity they would do of oats, eating at the same time hay or straw. They are quite fit for moderate exercise and easy work; but not so capable of hard labour and vigorous exertion either for the cart or saddle.

"They cause cows to yield a greater abundance of milk than when fed upon hay, and of a much more rich and pleasant flavour than when they eat turnips; the butter, too, made of the cream, is of a more delicious taste, and vastly finer colour. They are excellent food for young colts, especially if kept with their dams through the winter; and they give them a glossy burnished coat.

" Hogs and sheep devour them with great eagerness; and they contribute not a little to keep them in good plight, and even to fatten them.

" The tops or branches are usually brought into the cow-yard, where they are readily consumed by the cows and hogs; and if any part of them are becoming too dry and sear for this purpose, it is soon rotten and converted to manure.

" As to the profit or loss from this culture, the debtor and creditor accounts, according to the above statements, with the requisite additions, are nearly as follows:

EXPENSE.

	£.	s.	d.	£.	s.	d.
Culture, ...	8	0	0			
Rent, ...	0	15	0			
Tithes, ...	0	5	0			
Poor's-rates, and other parish charges,	0	6	0			
				9	6	0

PRODUCE.

Five hundred bushels, at 9*d.* per bushel, ...				18	15	0
Balance of profit, ...			£	9	9	0

" Here is a profit of nine guineas an acre, which is exceedingly great; perhaps the price is set too high; and if we reduce it from 9*d.* a bushel to 6*d.* the balance is still six guineas an acre, vastly superior to most other species of cultivation, hops not excepted.

CARROT-SEED.

" The land need not be ploughed before the time of planting the carrot. Then it is generally manured before ploughing,

ploughing, with twenty, thirty, or even forty loads of dung and earth, large tumbrils, or carts, containing near forty bushels each.

" The quantity of carrots planted per acre, of a moderate size, which are esteemed the best, is about eighty bushels. They are planted in straight lines, six to the rod, a yard distance from each other cross-wise; four or five plants together within the compass of a square foot.

" The time of planting is in the course of February or March, according as the season may happen to suit. The manner of planting is this: the carrots are thrust into holes of a proper size and depth, made by a wooden dibble, cased with iron at the tip: the same individual man makes the hole with one hand, and puts in the plants with the other; a boy going before him lays down the proper number, at the proper spaces for each intended hill or cluster.

" They are hoed four or even five times in the course of the summer, beginning as soon as the plants appear above the ground. The clusters, of four or five plants each as above stated, are moulded and rounded up into hills, nearly as large as those of hops, after the third hoeing, and the hill is regularly enlarged and heightened by a fourth, and sometimes a fifth, hoeing.

" The harvesting, or gathering the seed, is performed thus: a person goes between every row, and with a knife cuts off the heads at every hill in which the seed appears to be ripe; and as the ripening is very uneven and irregular in point of time, they are frequently gone over three or four times, before they are all ripened and fit to be cut off. The gatherer, as he cuts off the heads, puts them into a bag or basket as may be most commodious, and after a proper quantity is thus collected, they are carried into the barn, and there thrashed, either immediately, if the price

tempts

tempts the farmer to send the seed to an early market, or else they are laid up till the gathering is entirely finished. The heads are carried into the barn in packs, sowed up something like packs of wool, made of cloth resembling that of the Kentish hop pockets.

"The thrashing is performed nearly in the same manner as that of clover, that is, three or four times over before the seed is completely separated from the husk; and in the interval between each thrashing respectively, it is sifted through sieves, every one finer and finer in succession to the last and final thrashing; after all, there is a kind of offal or refuse, which is not perfectly clean. The cleaner parts the farmer usually sends to market, and that which is least so, he most commonly reserves for his own sowing.

"The soil most proper for the culture of carrot-seed is deep, strong, stiff, heavy soil, and such of this description as is lately broken up.

"Produce, about 6cwt. per acre.

"The average price about 4*l.* per cwt.

"Eighty bushels of carrots, at 9*d.* per bushel, 3*l.*; ploughing, 6*s.* an acre; harrowing twice, 3*s.*; planting and hoeing, 40*s.*; gathering, 2*s.* per cwt. 12*s.*; thrashing, 2*s.* per cwt. 12*s.*

"The balance of profit and loss nearly as follows:

	£. s. d.	£. s. d.
As stated above, the culture, gathering in, and thrashing, ...	7 16 0	
Rent, per acre, ...	0 15 0	
Tithes, ...	0 5 0	
Rates, and other parish charges, ...	0 6 0	
		9 2 0
Produce, at 6cwt. an acre, and 4*l.* the hundred,		24 0 0
Balance in favour of the cultivator,		£.14 18 0

"Here

"Here again is a profit vastly superior to that of hops. It is, however, probable, that the average price is set too high, and perhaps also the produce.

"Mr. VANCOUVER has blended his account of the culture of carrots and carrot-seed together; and it corresponds, as far as it goes, so very nearly with what I have above stated, that they afford a kind of mutual confirmation of each other*."

"The preparation for carrots (says he), is very similar to that of potatoes, and is generally reckoned to amount to fifteen shillings per acre. The seed is sown broad-cast, using five pounds per acre; successive hoeings will cost about four pounds per acre: and gathering, lopping, tailing, and stowing away, will be about four pounds per acre more. The average produce per acre, is stated at 650 bushels, which readily commands sixpence per bushel in the field. The best and most healthy roots are selected for seed; which are always set out upon the heaviest and strongest land; and afford a considerable supply of seed for the London market. This culture for seed, and for horse food, prevails very generally through this neighbourhood, but more particularly at Wethersfield; where the soil in many places (in addition to the former description) is a white wet loam (or what is called moor) upon a gravelly loam; red, and white sand; and a heavier soil, upon a white chalky clay."

SECT. XII.—PARSNIPS.

AN experiment was this year made by the Rev. Mr. SCOTT, at Little Oakley, which promises to be one of

* Howlett.

the

the most useful that have been made on the rich loams of Essex: on the fine deep rich soil of that parish, and yet not so rich as some other fields, he tried one acre and an half of parsnips; meaning, if they succeeded, to extend the culture considerably. They carried an appearance in the herbage so luxuriant the last week in August, and the roots were then of such a size, that I have little doubt of the trial inducing him to persevere with a plant to which his soil is so well adapted.

Mr. WAKEFIELD, of Burnham, has also made an experiment on this root for the first time, by sowing five acres, which from the appearance of vigour in the leaf, as well as the size of the root, may answer well*.

SECT. XIII.—CLOVER.

THIS plant has been so long introduced in Essex, that in every part of the county it is very liable to fail: many of the farmers assured me that the land was sick of it; others did not ascribe the loss to any satiety of that sort, but found the necessity of varying their courses, in order that clover might not return so often. This point, with the general prejudice against mowing as a preparation for wheat, form the two prominent features in conversation upon clover.

About the Belchamps and Borely, &c. all the country sick of clover if it recurs often. Mr. LONG ventures it but once in seven years; so it succeeds well.

* I have since been informed that they did not answer.

White

White clover for seed, Mr. MAJENDIE has cultivated with singular success; he had ten acres last year, that yielded him fifteen guineas an acre, clear of expenses, the sample of the seed being remarkably fine, and exceeding any foreign in the market. This year he has sixteen acres, which promise well, provided this rainy season does not continue. Mr. MAJENDIE sows it with spring corn, from 12lbs. to 14lbs. per acre; pays 4*s*. 6*d*. to 5*s*. a bushel for cobbing and dressing; the stover is good, if got in dry, but the rain damages both that and the sample of the seed. Wheat he has found to be as good after it as after red clover; and walked with me to view a field of wheat sown on a white clover lay by his neighbour, Mr. FRENCH, which has also the appearance of being four quarters and an half per acre.

Mr. HARDY, at Bradfield, gets as good wheat after white as after red clover, if fed, but not if mown.

Mr. SEWELL has cultivated it largely, and with great success. He has had as good wheat after it as after red clover; and the stover, if well got, is excellent: every one knows that of red clover is only for dung. Mr. SEWELL has varied his courses by means of this plant, which has answered; but has not been so beneficial a change in this respect as tares.

Mr. RUGGLES has a field of twenty acres of dry sandy loam with a small mixture of stones, on a clay marl bottom, but the soil so deep as to want no draining, which he sowed with white clover in 1802, with barley on a fallow. In 1803 he seeded it, the produce 12*l*. per acre, besides the stover. The year following he seeded it again. In 1805 I found it feeding with sheep, and it had carried forty Wiltshire wethers, eighty ewes and seventy lambs, from the first week in May to the middle of August, two weeks only

only excepted: but the clover was greatly run a-head, and would have supported much more stock. Examining the *cob* of the plants now in seed, I found them very full of fine seed. The field promises to make (were it left) a very fine pasture. Rent, tithe and rates 1*l.* 12*s.* per acre. Twenty weeks' food of 200 head, at only 3*d.* per week, is 50*s.* an acre, leaving 18*s.* an acre, *profit.*

	A.	R.
Three fields, No. 1.	8	3
2.	18	0
3.	17	0
	43	3

Produce 1803:

Hay stover, 49 loads, at 2*l.*	£.98	0
Seed, 220½ bushels	532	10
	630	10
Expenses	135	7
	£.494	13

Through all Tendring hundred, the accounts I received on this point had some variations in them: some farmers are of opinion that on the strong and rich lands, very little symptom of this decline appears; but that it is felt on the lighter lands. Some are clear that it takes place on all soils; and all have had it so much in their experience or contemplation, as to vary their courses with a view to it.

Mr. WAKEFIELD, at Burnham, when clover misses partially,

partially, sows winter tares at Michaelmas, and rolls in; if in the spring, sows pease or tares for feeding.

Mr. MILES, bailiff to Lord PETRE at Thorndon, is clear that the lands in that vicinity are sick of clover.

About Audley-end clover often fails; but Mr. NOCKOLD thinks it more owing to the farmers not generally sowing enough seed, than to the land being tired of it; and that if 17lbs. per acre were sown, there would be little complaint of missing plants. The evil, however, is not much felt here. He feeds till the beginning of June, and then keeps for seed.

About Hallingbury and that vicinity, if clover is repeated oftener than once in seven or nine years, Mr. CHAMBERLAIN, of Rise, informed me it is very apt to fail, though the husbandry of the country is in general a crop and a summer-fallow.

The principal evil that has attended his clover crops, Mr. COOPER at Langenhoe has found to be its getting *gander leg'd;* a wet spring washes the soil from it, and frosts lift it almost from the ground; it is then apt to die; but this has nothing to do with the soil being tired of the plant: this he has not observed, sowing it once in five or six years.

1784. Brackstead both mown and fed; usually mow the first for hay, and feed the second: hay one and a half to two loads an acre, at from one to two guineas per load; at other times feed the first, and mow the second for seed. They esteem mowing much inferior to feeding. If clover fails, they leave some of the last for another year; in which case they take wheat or not, according to the soil; if the land be stiff, they omit it; if lightish, they sow it.

Of Mowing and Feeding as a Preparation for Wheat.

Mr. R. TABER, at Beerchurch, by Colchester, fed part of his clovers and mowed part, but not twice; if they failed, sowed tares, and the land sown with wheat after them, to continue the rotation in its principles, but in this case, the dependence for a crop of wheat impaired, as clover was found more certain for that grain: yet the plant through the winter would look better, and appear to flourish more than the crops on clover; but in the spring the latter rallied better, so that when one rather declined, the other was advancing. It was formerly the practice to stir about tare land, and work it well for wheat; but Mr. TABER found it better to leave the land untouched till it was time to plough for sowing, only attending to feed down or clear away any weeds that might arise: this is a material observation for light and loose soils. However, in the case of a partially failing crop of clover, he found it better to harrow in tares among the clover, rather than to plough up the whole, and thus had better wheat.

At Bradfield an uncommon superiority in feeding once and mowing once, over mowing twice. The same at Ramsey. The same at Beaumont. The same at Great Holland.

At Bradfield, Mr. HARDY, and at Holt, Mr. COTES, have found that the more of the second growth is turned in for wheat, the better the crop of that grain.

The system of mowing but once is universal through Tendring hundred.

To mow twice, reckoned very bad at Layer de la Haye. Mr. BUXTON thinks that if half a field is fed once and mown once, and half mown twice, the wheat after the former

former would be a quarter per acre superior. Sheep-feeding through the summer best of all.

On the strong tenacious clays of Great Wigborough, where mowing clover twice would be a real improvement, they are precluded from it by the covenants of their leases; this was general; but now it attaches only to the last years of the lease.—Expunge it for ever! Beans, though twice hoed, were a crop also.

Wherever Mr. LEE, of Maldon, has seen wheat sown on white clover lays, he has found and remarked a great inferiority of the crops, to those which on the same soil followed red clover.

Mr. DINES, of Snorum-hall, feeding better than mowing for wheat; the soil very strong.

At Latchingdon, Mr. RUSH, &c. mow their clovers once: if twice, it is a crop by their covenants; and this on stiff clay.

In preparing for wheat by clover, Mr. HARDY, of Bradfield, finds from long experience, that feeding the second growth, is better than feeding the first and mowing the second; because it gives the opportunity of trampling down much of it (not turning stock in till it is in blossom), and ploughing it in for the wheat.

Mr. COTES, of Holland, made the same remark: observing, that if part of a field was fed bare and moderately mucked, and the other part trampled in feeding and ploughed in, the latter would be equal to the mucking.

But Mr. SAVILLE, of Bocking, has mown his clover twice for hay, and without perceiving that the wheat has been the least injured by so doing. And if this is the case on his land, there can be still less doubt on stronger soils.

Mr. KETCHER, of Burnham, is clearly in favour of

feeding: he mows once, and feeds one growth, which produces much better wheat than two mowings.

Mr. SPURGEON and Mr. AMBROSE, at Bradwell, have no doubt of fed clover giving better wheat than that which is mown: to mow twice a very bad practice.

Mr. WRIGHT, at Rochford-hall, mows about half his clover once, feeding the other growth; and feeding the rest through the year. He once mowed a field twice for hay; and had very fine wheat after it; but he thought that the following beans suffered. How very difficult it is in agriculture to gain clear and precise information, without experiments formed expressly for the purpose: upon such a soil as that of Rochford-hall there is but one *argument* against mowing, that I can admit, which is its leaving the soil in a more loose and friable state, which has been found favourable to the wire-worm; but that objection has relation only to the wheat, which is here stated to have been very fine; and beans are every where too uncertain a crop to permit much reliance on a remark founded on a circumstance that occurred so long before, unless that circumstance had been very striking; as the omission of an ample dunging, and then the wheat ought to have felt it as well as the beans. The fact on the whole is in favour of two mowings.

Major CARR, of Eastwood, has repeatedly mown his clover twice for hay, and did not find the wheat in the smallest degree the worse for it. The same remark he has made after mowing for soiling.

Mr. PRENTICE, at Prittlewell, has always found that feeding clover gives better wheat than mowing.

Mr. HARWICH, at Rayleigh, has mown twice, and it did hurt the wheat.

Sir THOMAS LEONARD, at Avely, has found twice mowing very prejudicial.

Mr.

Mr. MILES, the clear-headed bailiff of Lord PETRE, at Thorndon, has doubts on this question; for he thinks that land must be in heart, and in good order, to bear mowing twice: yet he has a great opinion of mowing once; and has found it better than feeding through the year; the wheat more even and regular. Spots of coarse grass and weeds will get up in feeding, and these encouraged the wire-worm.

Mr. BRIDGE, at Buttsbury, has not the smallest doubt of fed clover being the best preparation; he will not admit the preceding observation, and contends that the scythe leaves more rubbish than feeding: he seems, however, to forget that two mowings in full blossom, much more one after feeding, leaves time for very close feeding before sowing wheat. His soil very strong and heavy. He remarked also, that the treading in feeding is more against the wire-worm.

Mr. BRAMSTONE, at Skreens, mows once and feeds once; sometimes folds on it; he thinks two mowings would be bad.

The leases which are given around Ongar, forbid two mowings; if they are taken wheat cannot be sown. Such leases are precious monuments of folly; nor can beans, for they are not admitted to be a fallow. *Stet Sol*, should be the first words in such leases; not *vires acquirit eundo.*

Mr. WILLIAMS, of Ongar, whose opinion merits no common attention, thinks, that once mowing clover will give better wheat than not mowing at all; mowing twice he has not tried, but speaking from opinion, does not apprehend any evil from it. He has had six quarters of wheat per acre, after once mowing.

Mr. MANSFIELD, at High Ongar park, near Epping, a very successful, able, and intelligent farmer, in riding over his farm informed me of the preceding management.

This clover, Mr. MANSFIELD, *has been mown?*—It has been mown twice for hay, Sir.—*But do you hold it to be good husbandry to sow wheat after two mowings?*—Why not? Look at it; clean, without grass, and in good heart. Assuredly, I shall have as good wheat as if it had been fed once, or even twice.—In two or three other fields the same; and Mr. MANSFIELD has no doubt of the fact; that in such cases (the land in other respects well farmed) to mow twice, is as well for wheat, as to feed; perhaps better.

Mr. HUBLAND, at Hallingbury, does not approve of mowing clover twice, though he cultivates it with such success as to have had three tons per acre of hay at one mowing. On their strong soils they get better wheat after clover than after fallow, if the clover be good: of this his bailiff assured me.

Mr. CHAMBERLAIN, of Rise, is much esteemed in that neighbourhood for his farming knowledge; and in his leases (which however are only covenants under which they hold at will) if CLOVER BE MOWN ONCE IT IS A CROP, and beans the same, and a fallow consequently follows.

About Terling, clover is generally fed. Mr. STRUTT does not allow his tenants to mow twice. Such crops as are seeded, have the first growth fed.

Mr. COOPER, of Langenhoe, on his extensive farm usually mows the first growth and then feeds: he has, however, sometimes mown twice, and in such cases has sometimes found no difference in the wheat: at other times he has observed that the wheat has not been quite so good. On his light land farm, at Fingeringhoe, he sowed ray-grass and trefoil with the clover, and then always dibbled in the wheat: from two pecks to a bushel of ray; half a peck of clover, and a quarter of a peck of trefoil; but on the strong land of Langenhoe no ray.

Clover

Clover in Mersea Island is first mown and then fed; or first fed and then mown: some fed through the year, and this is reckoned best for wheat. This year Mr. BENNET HAWES mowed twice for hay, and he expects a sack per acre less wheat on this account.

Mr. SPERLING, at Maplestead, feeds the first growth, and seeds the second: never mows for hay: he does not think that clover-seed robs, and that the wheat is better for mowing, as there are no tussocks left; but the land is clean, and the closer it is fed the better.

Mr. EATON, at Yeldham, has mown clover twice on very stiff land without finding any loss in the wheat; he would not, however, do it on light land, as there he thinks it might be hurtful, but has not tried it.

At Toppesfield, they reckon the best wheat after feeding the clover through the year: once mowing not so good, and twice would be worse still.

Mr. COKER, at Borely, finds clover land wheat better than any, and worse after trefoil than either red or white. He feeds his clovers, because the stock demands it, but not with a view to the wheat being better.

Mr. WOODROFFE, of Ramsey, mucks for clover on the barley stubble that followed a fallow; and mows the first crop and feeds the second: or feeds the first and seeds the second.

Mr. COOPER, at Langenhoe, finds clover land the best, and his standard dependence for wheat.

" The cause of the loss in the plant of clover, upon the tops of the heavy land ridges, appears equally clear and conclusive. It is well known, that the roots of the clover act directly downwards, and to a considerable depth. The highly exposed situation of these ridges, occasions the frost to act with its fullest force, penetrating to their centre, and forming a bone (if the word may be used) of

ice, through the heart of every ridge; here, after the first frost, the tap root of the clover is rivetted, whilst the frequent and alternate freezing and thawing of the surface in the course of the winter, swells out, and bursts the top of the ridge; thus breaking the tap root, and destroying the plant of the clover—hence its destruction upon the tops of the ridges, and its safety in the furrows, where the plant is fortunately secured beyond the reach of such a fatal influence*."

To which an Essex Annotator replies:—"The reasoning here used, may perhaps, in some measure be admitted, as far as concerns the clover sown amongst the wheat, whose ridges are rather high, and its furrows deep, but seems by no means applicable to the clover sown upon barley, whose ridges, in a good season especially, are so nearly on a level with the furrows, as to occcasion no more inconvenience to the mower's scythe than the smoothest meadow. I am apprehensive the failure of the clover upon the middle of the ridge the ensuing spring, arises from a very different cause; namely, the greater looseness of the soil in the middle of the ridge, than in the furrows or on the sides of the ridges, after the barley is mown; consequently more liable to be pierced by the first frost which comes, than where the soil is left more firm and solid. If this be really the cause, it might probably be remedied by the land being well rolled soon after the barley is removed to the barn, and the land is smoothed by a roller, drawn at right angles *across* the ridges, and the whole looks neat and fine as the best of gardens; nor do any of the evils above suggested result to any great degree, except in seasons uncommonly dry."

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* Vancouver.

"Clover-

" Clover-seed undergoes two successive thrashings; the first merely beats the chaff, containing the seed, from the stalk or straw. This thrashing is here called *cobbing* the clover, and the chaff thus separated is styled the clover *cobb*. This cobb is laid upon a large wooden frame, made solely for this use, and consisting of oaken planks, two or more inches thick; it is smartly beaten with flails till the chaff is literally cut to powder before the seed is made to quit, so closely and firmly is it wrapt up. When the seed is thus forced from its husk, the next operation is with the fan, to separate the seed from the dust. In the course of the thrashing, it is also made to pass through sieves of different fineness; and, last of all, the seed is separated into two or more sorts and qualities; the primary, secondary, &c. The expense of thrashing is great; seldom less than 4*s*. or 5*s*. a bushel; sometimes a vast deal more. The crop of 1795 was so exceedingly unkindly, that the thrashing cost a guinea and an half, and even almost two guineas a bushel. The produce is infinitely various: the produce of 1795 was, I believe, not on a medium two bushels an acre: that of 1796 is not less than five. Some rather extensive crops have exceeded eight, and a few have reached so high as ten, twelve, or fourteen. I am inclined to think that the medium produce of seven years is nearly four. The white, or Dutch clover, as it is more generally called, is altogether as productive as the red upon soils perfectly suitable, which are only the light and tender; whereas the red succeeds occasionally upon almost all, though perhaps not equally prolific of seed. The white, on its congenial soils, seems to be more cleansing and meliorating than even the red*."

* Howlett.

"In the neighbourhood of Rayne, White and Black Notley, and Falkbourn, &c. clover has been so generally sown, that the land has in a great degree become tired of it; and tares now sown as its substitute, seem to encourage a well grounded expectation that the soil in a few years will again admit the culture of that valuable grass. The principal observation respecting the clover sick lands is, that although at the time of harvest, and during winter, there appears to be a very sufficient plant, yet in the spring it is always found to fail, particularly on the tops of the ridges."

"A second drilling (that is, after oats have been drilled in) to put in the clover seed, which is generally deposited in the intervals between the rows of corn, ten pounds to the acre; is usually dunged when young, and is always observed to be a stronger, more uniform, and better plant than where one-third more seed is sown broad-cast to the acre. The clover stands one summer, and is then ploughed under, and the land in like manner is drilled for wheat*.

"Clover, instead of being fed off in the early part of the summer, as already described, is sometimes mown for hay, and then left for seed; at others, it is mown twice for hay; and after two crops have been thus taken, it is, notwithstanding, succeeded by wheat, beans, &c. and with good success.

"White clover for seed, is by no means so commonly cultivated as the red, to which the foregoing remarks are entirely confined. The white clover, I believe, suits principally†, if not entirely, the light and tender soils, on which, perhaps, it is even more beneficial than the

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* Vancouver.

† "I have lately heard of instances of its succeeding equally well upon strong heavy soils."—*Ib. ibid.*

red

red; it more thoroughly and completely cleansing the land from grass, and other pernicious weeds. Its produce, too, is commonly equal, sometimes greater, and the price higher. The culture and management the same as that of the red, except when meant to stand for seed, sheep or cattle are shut out from it much earlier*."

SECT. XIV.—RAY-GRASS.

At Bulmer, about fifteen years ago, a farmer, on a field of very fine sandy loam on a chalk bottom, sowed ray-grass, and kept it two years; and I was assured by Mr. Raymond, and Mr. Long, that it did more harm to the land than several years recovered; it hurt it for ten years, perhaps to the amount of 10*s*. rent per acre. Inquiring if this was general, they replied "Yes, on these good lands:" and Mr. Long added, "if a man was, through mischief, to sow ray-grass in the night in one of my fields, which I had clover sown, shooting would not be too bad for him." They have an aversion to ray-grass. This field is at Little Smallbridge; it has this year the best crop of wheat in the country on it, which I viewed, but now all beaten down: it was summer-fallowed.

About Copdock they have found that if ray-grass be sown with clover, it is not so good for wheat; but peas do well on it.

Mr R. Taber, at Beerchurch, in the Colchester district, who sowed his clovers both with and without ray-grass, has often remarked, that if a plant of clover was

* Howlett.

had

had without any of that mixture, it was *all the better for the wheat.*

Mr. ROGERS, also, at Ardleigh, made the same remark of the different clovers preparing worse for wheat if ray be among them, but not so for pease.

Mr. HARDY, of Bradfield, had the same observation; pease do well after it, wheat never: *the wire-worm after ray is sure to destroy the wheat.* This gentleman sowed part of a field with clover alone; to the rest of it was added about a peck of ray-grass; it laid but one year, and then being sown to wheat, the clover alone produced two sacks an acre of wheat more than the part where the ray was sown.

Mr. PORTER, of Little Leighs, has found that ray-grass *works* his land, and is very hazardous for wheat. At Broomfield he has a field thus cropped: 1. fallow; 2. barley; 3. oats; 4. red clover and ray mown twice for hay, and gave two great crops; 5. fallow (1805), which he intends sowing with half American red wheat, and half of POLLET's strong strawed white, mixed. This fallow after a layer has been because ray was sown.

Mr. WAKEFIELD, of Burnham, weans many calves, and therefore must have ray-grass, as it agrees extremely well with them; better than tares, which are apt to *run through them*; otherwise he is no friend to it.

Mr. SPURGEON, of Bradwell, has found ray-grass to be very bad for strong or wet land.

Mr. KEYS, at Assingdon, does not approve of it for such strong land.

Mr. FOWKE, of Dunmow, assured me that ray-grass was very mischievous on the poor wet loams around that place.

SECT. XV.—RIB-GRASS.

THIS plant Mr. SEWELL, of Maplestead-hall, has cultivated for seed; he sowed 10lb. an acre with oats that succeeded a fallow. He got 6cwt. per acre: the price last year 4*l.* per cwt. but varies in general from 2*l.* to 4*l.* It is ripe in July; and thrashes it on a cloth in the field: he supposes that wheat would succeed after it, but shall not plough it, as he means to seed it again. The thrashing does not cost above 6*d.* per bushel.

SECT. XVI.—COLESEED.

"COLESEED is usually prepared for, by as full and complete a fallow as turnips, and no less quantity of manure. This, however, chiefly respects arable land long cultivated; but newly broken up ground, especially, is found generally the most congenial to this seed, and vastly the most productive. I myself saw a striking instance of this last year. A fine field, as to quality of soil, was sown broadcast with coleseed. The greater part of it has been arable time immemorial; the remainder recently broken up. The produce of the former was only between three and four quarters an acre, the latter upwards of five.

"From three to four pints per acre should be sown, if intended to stand for seed; but if designed merely for autumn, winter, or spring feed, more may be requisite; and even five or six pints may not be too much*."

"Rape-seed (says Mr. VANCOUVER) is transplanted at twelve inches square upon potatoe land, at a guinea per acre; generally stands for a crop, and always found to answer extremely well. This practice is strongly recommended where wheat straw is in much demand, as the

* Howlett.

straw

straw of the rape-seed affords an excellent substitute for littering the straw-yards, the sheds and the stall-fed cattle."

Mr. DUDLEY informs us, that feeding coleseed is declining much, from the general experience, that it leaves the best fallowed lands in an unfavourable state for *oats* and *clover*, and is of course prejudicial to the next winter crop in succession."

The produce, Mr. VANCOUVER states to be on a medium for the county, twenty-nine bushels an acre. In the parish of Bradwell, Mr. DUDLEY sets it at thirty-four.

It is largely cultivated about Hedingham, &c. and to Finchingfield, for seed. It is a very profitable crop; but Mr. KEMP thinks it draws the land so much, that he never sows an acre; if, however, he was to break up old pasture, in that case he should take a crop.

Great quantities seeded this year (1805), all the way from Hedingham to Maldon. Many farmers leave the cole stubble untouched till wheat-sowing, and then plough once and harrow in the wheat seed. Thus, Mr. PORTER of Little Leighs, who reckons the crop *kindly* for wheat. They however make it a rule to fallow after such wheat.

In Foulness Island, Mr. WOOD does not allow coleseed on the Earl of WINCHILSEA's estate, not even for feeding off on the fallows. On other farms it is found both for food and seed.

Mr. VAIZEY, of Halstead, made a very interesting experiment on turnip seed, which I shall register under the present head, which is of so much wider application, in a county where such quantities of cole are grown for seed; in that quarter of his farm where his layers came in course, he had a piece of turnip-seed; and as a variation of crops in the same quarter, and much more, in the same field, would be an inconvenience, he thought of trying the sowing of seeds over the turnips when coming into blos-

som

som in June: he did so with red and white clover and trefoil. The success exceeded his most sanguine expectation: the turnip stalks were removed by women. I walked over the piece in September, and admired the extraordinary luxuriance of the plant, which was beautiful, and very far exceeding any other I had seen this year. The importance of the trial is exceedingly great: the common husbandry is to follow coleseed by wheat, which is a severity to the land. How much better to have grasses to feed for a year, intervening without any other expense than that of seed, and to the saving of repeated tillage!! Near a ton an acre of hay might have been mown in this field.

The best farmers at Bocking, have of late years thought it more beneficial to till after cole seeded for spring corn, than to put in wheat, which, however, is still the more common practice: but how much better will clover be than either of them.

Mr. CLAYDEN, a tenant of Lord BRAYBROOK, at Audley-end, sows cole for feeding off with sheep, and also for ploughing in for manuring the land.

In the rich district of Rochford hundred they have immense crops of cole, and they are admirable farmers in the management of it: I rode through some crops of Mr. WRIGHT's at the hall, which were exceedingly fine: ploughed for seven times, manured with twenty loads an acre of dung, and all hoed out (though not for seed) to a foot asunder: this incomparable management, which stretches away so far beyond the common practice of the kingdom, produces *stalk*, which is the great value of cole; and on this fine land that stalk is as brittle as glass, the sure proof of a feeding property. These crops are mown with a short strong scythe made on purpose, and carted to the farm-yard to feed bullocks, which it fattens better

than

than any other food produced by the farm: some also scatter them on dry pastures for fatting sheep. In Lincolnshire, they know the value of cole, but none is hoed. The detail of this husbandry affords a case well deserving the attention of those who do not think highly of the plan of surveying the kingdom for County Reports; there are many such cases, which should be referred to those gentlemen, and they should be requested to decide whether the knowledge of such practices be not important?

Mr. PRENTICE, of Prittlewell, is largely in this husbandry, and his crops very fine. He is very careful in the hoeing, as he conceives that great virtue is in the stalks: he gets stalks as large as his wrist, and these are more forcing to a bullock than turnips; this is the object that makes hoeing so profitable. Mown, and carried to bullocks in the yard. He finds oats are as good after cole as after turnips; but a clear fallow will give more than either. He has fed part of a field on the land, and mown part; and the oats were a little better after feeding.

Mr. VASSALL, of Eastwood, is so well convinced of the great value of the stalk, that he does not mow, but spuds up to get the more, and every atom is eaten by sheep.

At Shoebury, Mr PARSONS hoes his cole, and some is mown, some fed in hurdles.

Mr. KNAPPING, of Shoebury, hoes, and finds that it pays well.

At Little Wakering, cole is seldom mown, but fed on the land by sheep.

Mr. RUSH, of Latchingdon, has hand-hoed cole for the sake of covering clover-seed, and found it an excellent husbandry.

Mr. WAKEFIELD, of Burnham, and other farmers in that country, is very largely in the system of sowing cole,

to

to be fed off the same year for wheat. I found on his farm several very luxuriant crops feeding off in September for that purpose, by weaned calves, and fatting sheep and lambs, &c. One intention beyond the mere value of the food is, that of treading and consolidating the land, as a preventive to the ravages of the wire-worm.

Spaines-hall. Produce of seed rises in the greatest crops and best seasons, to five and even six quarters per acre.

SECT. XVII.—HOPS.

"THE plantation of hops in this county is confined to comparatively a few parishes, the principal of these are the following: the two Hedinghams, Castle and Sible, the two Maplesteads, Halstead, the Colnes, Chelmsford and Moulsham, Shalford, Wethersfield, Finchingfield, and Great Bardfield. They were formerly much more widely extended; but whether the total number of acres was greater than at present, I am unable to say. They are probably now confined to the soils most congenial to their nature, and which, from repeated trials and long experience, have been found most effectually to answer. They were early introduced into this neighbourhood, and numerous grounds were planted with them in the parishes of Stibbing, Lindsell, Thaxtead, Broxtead, Dunmow, &c. but now there are very few remaining, certainly not twenty acres in the whole, and I believe not even ten.

"Mr. DUDLEY informs us, that hops have been lately introduced on the glebe of the rectory of the parish of Bradwell Juxta Mare, with a prospect of considerable success. The quantity and quality grown last year (I believe this was written in 1794, but am not certain) on twelve acres,

acres, refutes the general opinion, that the sea air is detrimental to this plant. Mr. DUDLEY has not told us how long the plantation had existed when he wrote this account; we cannot therefore venture to indulge any sanguine expectations. We may likewise observe, that general opinion, in matters of this kind, though sometimes erroneous, is usually founded on the experience of repeated facts. Inattention to this maxim has occasioned reiterated attempts to revive the growth of hops in this neighbourhood, but with uniform disappointment. The gardens not unfrequently flourished for a few years, and then became of little or no value. I remember one instance in particular, in which the third year after planting the produce was fine and abundant, not less, I think, than 12 or 14 cwt. per acre; the planter continued the cultivation seventeen years longer, but never had a good crop afterwards. Tired with the fruitless experiment, from which he had formed very flattering hopes, he displanted, and laid down the land to pasture; and the debtor and creditor accounts were nearly balanced. I shall be glad to hear that the Bradwell plantation proves more successful.

"1801. The greater part is now displanted, from what cause I know not.

PREPARATION.

"This is two-fold; the first respects the management on the commencement of a plantation; the second after the plantation has acquired its full strength and perfection.

"With regard to the first, when a piece of land is intended to be planted, if arable, it is ploughed well and pretty deep; if pasture, it is thoroughly digged eight or ten

ten inches deep. In both cases it is then harrowed, so as to render it tolerably smooth and mouldy. In the next place, the ground is measured and marked out, by sticking small sticks in straight lines, and at exactly equal distances of almost two yards from each other, and so regularly formed, that you have parallels or alleys every way, upwards, downwards, sideways, and diagonally. But where the ground is moory, and ditches become necessary at every five or six yards interval, this uniformity is broken in upon, and you have seldom open uninterrupted vistas, more than merely upwards and downwards. The next operation is putting in the cuttings, or hop-sets, from the neighbouring plantations, &c. which are usually three inches long. The soil is stirred, and a kind of hole made about eight inches square, where the sticks are placed, and two or three of the sets put into these sunk squares; and the moulds are then carefully drawn over them, so as to raise a sort of hillocks, which are called the hop-hills. As soon as the fresh shoots appear above the ground, a single stick, about four or five feet in length, is fixed into each hill, to train up and support the young bines; the appellation given to the stem or stalk of the hop, which Dr. JOHNSON, in his Dictionary, from a strange misapprehension, calls a particular *species of hop*. During the summer, the ground is kept perfectly clear by the hoe, and the moulds raised round the growing stems. Little or no produce is expected the first year; I have indeed sometimes known 12 or 15lbs. to the acre. Not unfrequently, no sticks are put into the hills, but the bines are tied into knots, to prevent their exhausting themselves. In the autumn, or very early in the spring, the ground is carefully and thoroughly dug, except the hills where the plants are. In the month of March or April, fresh sets of poles are fixed round the hills, generally two to a

hill, about eight or ten feet long. When the bines are about two or three feet high, women and girls are employed to tie them round the poles with sedge or rushes in a spiral direction, ascending correspondent to the course of the sun, from left to right, when you stand facing the south. This operation is generally performed three or four times in the summer, going up higher and higher each time, and at the last a standing ladder is sometimes necessary. At the first tying, I should have observed, that the best and most vigorous of the stems are carefully chosen to climb the poles, three in number, if so many are found perfectly strong and good; the remaining more weak and feeble shoots are plucked up. The hoe is all the while repeatedly employed; and the last time, the neatest of the hop-growers carefully mould up the hills pretty round and high, and the whole is as completely clean as the most highly cultivated and elegant garden. At this final operation likewise the straggling branches are pulled off from the bines, at least three or four feet from the ground. The like course takes place again the next year; with this material difference, that now a fresh stock of poles become requisite, and which are both stouter and longer than those hitherto used, in number two and three to each hill, making about twenty-five hundred, or 3000 to an acre; varying however in length from fourteen to eighteen, or twenty feet, and their largeness also is according to the richness and quality of the soil. This third year the plants, when dressed in the spring, are cut off two or three inches within the ground, which serves to recruit the decayed sets, or to plant other grounds. The plantation is now supposed to have acquired its full vigour and productiveness. The annual preparation and management every succeeding year is nearly the same as that last described, and therefore need

need not be repeated; I however forgot to mention, that every year, previous to the cutting the roots, the ground is carefully cleared round the hills, and lowered two or three inches, which greatly facilitates the operation. A still further kind of preparation is also requisite every three or four years, and that is of forty or fifty cart-loads of farm-yard dung*. This, however, though general, is not universal.

SORT.

"The sorts are exceedingly various; the Kentish, the Essex, the Worcester, the Farnham, the Flemish; each of which have their peculiar diversities. All these peculiarities, however, may have arisen from the difference of the soils upon which they have grown. But I presume not to enter on minute discrimination of the kinds, nor of their causes.

GATHERING, OR PICKING.

"This usually takes place in the earlier part of September, when the hop is found to be perfectly ripe. This ripeness is commonly discovered by its having acquired its full size, the colour changing from a light green to a yellowish hue, and the scent becoming strong and deliciously fragrant. This is however sometimes prevented by the wind and rain, which soon tarnish their beauty, and turn them brown, and injure their quality. The

* In manuring for hops (of which Mr. DUDLEY planted twelve acres at Bradwell, and managed them in a superior manner), he found it advantageous to use long fresh dung; and to answer the same end, invented a method which deserves notice; that of spreading, in November, stubble on the land, and then folding sheep on it; this was dug in, and the effect found to be very great.

general manner of picking or gathering them is this: the bines of every hill are cut with a sickle, about eight or ten inches from the ground; the poles are then forced and wrenched from the earth, by means of what is here called a sow, but in Kent, a hop-dog. This instrument is constructed of a stout strong tapering stick, near three inches diameter, and about five feet long; at the distance of nearly a foot from the larger end of the stick, is firmly fixed and clinched a small bar of iron, about half an inch square, and a foot long; this is bent nearly in the middle into an acute angle, about four inches open at the upper end, and the inside is raised and roughened by the smith, into something like teeth, which when fixed upon the lower end of the pole, and pretty near the surface of the ground, as it were, bite and hold it fast. I know not whether the reader who is previously altogether unacquainted with this implement, will have a clearer conception of it from the following imperfectly drawn figure.

"A B is the large wooden stick, C D, is the iron bar, bent into the acute triangular form, and firmly clinched upon the stick A B, within a foot of the larger end B. The pole-puller takes the instrument into his hands between A and C, fixes it on to the standing pole at the opening of the angle at C, as far as he conveniently can. The end B, resting upon the ground on the opposite side of the pole to the workman, he raises up the part A C, which acting as a lever, easily lifts the pole from its socket, though perhaps nearly a foot into the solid earth.

"When the poles are thus taken from the ground, they are carried with the bines and hops upon them, and placed

placed over the basket, or bin, round which the pickers; three, four, or more in number, are arranged in the most convenient manner for plucking off the hops, and letting them fall into the bin, or basket. The basket is generally large enough to contain about eight or ten bushels: the bin is a hempen cloth, suspended upon a kind of crib or frame, made with four corner posts, connected by small bars or poles along the sides and ends; the length is about six, sometimes eight feet, and breadth four, and will contain more than the basket. When a proper quantity of hops is thought to be dropt into either of these receptacles, they are emptied into the hop-bags, after measuring, if picked by the bushel; but if picked by the day, as is the general custom of this country, they are not measured at all, but emptied at once into the bag. The common wages of the pickers are 8*d.* a day. In Kent, they are usually picked by measure, at a penny, or five farthings, or three halfpence, a bushel, less or more, as the crop is kindly, or the contrary; and the best and most dextrous of the pickers will not unfrequently earn half a crown a day. That there should be such a striking difference in the custom of two adjacent counties, is rather surprising. The quantity picked in Kent per day is almost as much greater than in Essex, as the earnings are. At least the Kentish pickers exceed the Essex ones by one half; and I have frequently remarked, that ten pickers of the former will supply a kiln as well as twenty of the latter. But then it is to be remembered, that these latter pick them somewhat cleaner, and more free from leaves and branches.

"The hops are conveyed from the hop-ground upon horses, or in carts, to the kiln; upon which they are laid six, eight, or even ten inches, thick, according as they are more or less dry. A slow and gentle fire is kept

under them for the first hour or two, till the greater part of the steam and moisture are evaporated; then it is usually quickened till they are completely dried. They are then removed from off the kiln into the hop-chambers. There they lie in large heaps three, four, or more days, till they begin to *give* a little, as the phrase is; that is, till they have lost that hot brittle condition in which they came off the kiln, and have acquired a sufficient degree of softness, pliancy, and dampness, to secure them from injury by the operation of bagging. When ready for this purpose, the bag is let down through the floor of the hop-chamber by a hole made on purpose, and is fixed suspended by skewers from the rim of a round frame placed over the hole, and about two feet above the floor of the hop-chamber. Into the bag thus suspended a man descends, the heavier, stronger, and more active, so much the better: while in this situation, another man pours in the hops upon him into the bag (the top of which being for sometime usually above his head); the man in the bag treads round and round with his back to the sides, thrusting down his heels with all his might, going his circuit incessantly; and the hops, by a weighty and dexterous fellow, are so compressed together, that when the bag is completely full, it is comparatively as round and hard as a timber tree. The bag then passes into the hands of the excise officer, who weighs it, in order to fix the duty, always making a deduction of one-tenth for the weight of the bag. Each bag generally weighs about two hundred weight and a quarter, or two hundred and an half avoirdupois. The hops are also put up into pockets of very different sizes, to suit the convenience of private families; for which, instead of the thick coarse bagging of the full-sized bags, a thin hempen cloth like the Kentish pockets is used; whereas formerly they were all inclosed

in

in the same strong cloth, which, I am inclined to believe, was much better for long continued preservation of the fine quality and flavour of the hop.

"The Essex hops are not, I believe, esteemed altogether so strong as the Kentish; but in flavour they are, to my taste, by no means inferior; this may perhaps have arisen from early prejudice and prepossession. It is still however readily acknowledged, that they are by no means comparable, in this last respect, to those of Farnham*."

PRODUCE, EXPENSE, AND PROFIT.

"These are very different, according to different soils and situations. Mr. VANCOUVER has given the following detailed statement of these particulars, with regard to the marsh grounds in the parish of Castle Hedingham.

"To the northward of the town, the land becomes sufficiently light and dry to admit of the turnip husbandry. On the west, the parish is bounded by the river Colne; along whose course is a considerable tract of meadow and rich hop-land; the culture and value of the produce per acre of the latter, taken on an average of ten years, is as follows;

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* Howlett.

The Hop-ground per Acre.

Dr.				*Per Contra.*			*Cr.*
To interest accruing annually upon the first cost of the stock of poles, viz. 2500 at 40*s.* per hundred, being the value of the poles at the third year's growth of the plant - - -	2	10	0	By 7 cwt. of hops at 6*l.* 3*s.* per cwt. being the average produce and value per acre of the Castle Hedingham hops for the last ten years - - -	43	1	0
To the annual supply of 400 new poles, at 40*s.* per hundred* - - -	8	0	0	By 350 refuse poles at 6*s.* per hundred	1	1	0
Labour by contract, including digging, dressing, poleing, tyeing, hoeing, moulding, raking, laddering, planting dead hills, and barrowing dung	3	10	0	By old bines - -	0	2	6
Manure - - - -	3	0	0	By profit in selling bags as hops - -	2	18	0
Picking 7 cwt. the average produce per acre of Castle Hedingham Marsh, for ten years -	4	4	0	Total annual value of the produce per acre - -	£.47	3	0
Drying and bagging the said 7 cwt. -	2	2	0				
Duty - - - - - -	3	10	0				
Tithe, at 5*s.* per cwt.	1	15	0				
Rent - - - - - -	3	3	0				
Poor's rates 10*s.* other parish rates 3*s.* 6*d.*	0	13	6				
Three bags, weight 18lb. each at 2*d.* per lb. including the making - -	0	10	0				
Interest upon the first cost and annual supply of baskets, stools, pitches, barrows, ladders, forks, and other small implements - - - -	0	5	0				
Twitching and ditching	0	5	0				
Total annual expense per acre - - -	33	7	6				
Total annual net profit per acre - -	13	15	6				
	£.47	3	0		£.47	3	0

* This, it is supposed, includes carriage and sharpening. The ash-poles are seldom shaven.

"Here is nothing allowed for sharping and shaving poles; such, in Kent, is usually 2*s*. per hundred; nor any thing for carriage home of poles, which, for such large poles as are used here, supposing they are five miles off, cannot be less than two or three shillings per hundred, and if ten, double that sum*. And 6*l*. 3*s*. is much beyond the average value of hops."—*Anonymous*.

"This statement strikes me as carrying its own refutation on the very face of it. We see the annual nett profit per acre is the extravagant sum of 13*l*. 15*s*. 6*d*.; supposing this actually to have taken place for ten years, it is nearly impossible it should long continue. Rents would be raised, taxes and rates, and perhaps tithes, would soon follow, till the expenses and profits would be reduced to a fair and reasonable balance. But there is, I believe, no need to make this supposition. For let us examine a few of the articles of Dr. and Cr.: in the Dr. account *at the interest of the original capital*, the annual supply of poles, labour by contract, &c. manure, picking 7 cwt. drying, and bagging, &c. no great objection to; but the duty, including the three additional five per cent. should be raised from 3*l*. 10*l*. to 4*l*. The average rent too, I am inclined to think, is set too low at 3*l*. 3*s*. per acre. One of the best pieces of considerable extent is let at almost 7*l*. an acre; and another of rather inferior value, containing about the same quantity, at 4*l*. 15*s*. Supposing the remainder rented at only 3*l*. 3*s*. (which is scarcely probable), we have a fair presumptive average of at least 4*l*. 4*s*. per acre: this makes another addition of 3*s*. 6*d*. in the parochial taxes. These three articles will raise the total annual expense to 37*l*. 2*s*. The creditor side appears still more suspicious.

* They are usually laid in by the pole grower.—*J. H.*

picious. 7 cwt. for the average annual growth, is probably correct, as it might be ascertained with considerable accuracy, the tithes being compounded for by the hundred weight; but the price at which they are set, seems a very erroneous and extravagant estimate. From the books of a hop-planter in the parish of Wethersfield, I find the medium price for seven years is only 4*l.* 10*s.* 4¼*d.*; and these hops are universally allowed to be of equal, if not superior quality, to those of Castle Hedingham marsh. I have now likewise before me, from the planter's books, the produce and price of hops grown in the very marsh of Castle Hedingham, upon a select piece of ground, distinguished by the richness and fertility of the soil, as well as the quality of its produce, and I find the average price for sixteen years, ending with 1796, was about 4*l.* 6*s.*; and that even taking into the account two or three years of very advantageous speculation, it amounted to only about 4*l.* 12*s.* Putting all these circumstances together, we may, I think, fairly estimate the average price at 4*l.* 10*s.* an acre; we have three and thirty shillings then to deduct from the statament of 6*l.* 3*s.* per cwt. which amounts to 11*l.* 11*s.* per acre; this taken from the stated annual value of 47*l.* 3*s.* reduces this value to 35*l.* 12*s.* which is actually 1*l.* 10*s.* less than the expense. This affords a fair presumption that the above statement, both of expense and produce, must be fallacious; as no culture can long go forward which is finally unprofitable.

"The planter I have last alluded to, as cultivating ground of distinguished superiority, has had, on an average of the sixteen years just specified, a considerably larger produce than 7cwt. an acre per annum; even so high as 10cwt. 2qrs.; which at the average price of 4*l.* 6*s.* a hundred, gives 45*l.* 3*s.* as the annual value. But then his land being of much higher rent, and requiring larger poles, his

his annual expenses have amounted to upwards of 40*l.*; leaving, however, after all, a profit sufficiently encouraging to continue the cultivation.

"A very respectable gentleman has favoured me with the following account of the produce, price, and expense of ten acres of hop ground in the parish of Wethersfield, on an average of seven years, ending with the year 1795.

Dates.	*Produce.*	*Sums sold for.*	*Expense annually per Acre.*	
	C. qrs. lbs.	*£. s. d.*		*£. s. d.*
1789	47 0 0	300 12 6	Digging, -	0 13 4
1790	78 3 8	367 9 9	Poling, -	0 13 4
1791	40 2 16	195 16 6	Tyeing, -	0 12 0
1792	98 3 8	341 10 0	Hoeing, -	0 15 0
1793	17 1 20	97 12 0	Stacking, &c.	0 3 0
1794	93 1 19	414 19 0	Picking and duty,	3 0 0
1795	59 0 6	300 16 0	Tithe, -	1 0 0
			Rent and rates,	1 5 0
Total produce in seven years, 10 acres, -	435 0 21	7)2018 15 0	Poles, 400 yearly,	8 0 0
			Drying, -	1 10 0
		10)288 7 10	Interest, -	2 10 0
			Manure, &c.	3 0 0
			Baskets, &c. -	0 5 0
Annual produce,	62 0 19	28 16 9¼		
Annual average per acre,	6 0 22	Exp. 23 6 8	Total annual expense,	23 6 8
Nett annual profit per acre,		£.5 10 1¼		

"This Wethersfield account differs very materially from those of Hedingham. The annual value, we see, is only 28*l.* 16*s.* 9¼*d.* per acre; the expense 23*l.* 6*s.* 8*d.* leaving a nett profit of 5*l.* 10*s.* 1¼*d.* which, every thing considered, is, I make no doubt, very little wide of the fact, and affords ample encouragement to the culture. There seems to me, however, a deficiency in the statement, both of produce and expense. In the produce no account is taken of the refuse poles annually thrown out; and in the expense, the rent is set at only about 20*s.* an acre; the land is the gentleman's own, but were he to let his hop-

hop-grounds, he would probably charge 40*s.* or 50*s.* perhaps 3*l.* an acre. It is also to be observed, that, in the growth of hops in the Wethersfield account, the gross weight of bags and hops is probably given; whereas in the Hedingham statement, we have the nett weight only; and we shall, of course, find that the annual produce per acre at Hedingham, is above an hundred weight more than at Wethersfield; which is highly probable, from the greater strength and richness of the soil at the former place than at the latter. In both accounts it is likewise remarkable, that nothing is charged for the first erection, or annual rent, of the kiln for drying the hops*."

"The average annual produce, and value per acre for the last seven years of the hop culture in the neighbourhood of Chelmsford, stands thus:

	£.	s.	d.
6 cwt. 2 qrs. 18 lbs. per acre, at six guineas† per cwt. or 13½*d.* per lb. equals	40	19	0
Refuse poles, 300 at 7*s.* per hundred	1	1	0
Old bines	0	5	0
	42	5	0
Average annual expense per acre, every possible charge included	29	5	8
Total nett profit per acre for seven years	£.12	19	4‡"

* Howlett.

† In this Chelmsford account of hops, the average price of six guineas an hundred weight, it is probable, from what has been already manifested, is at least 30*s.* too high, and consequently almost 10*l.* must be deducted from the nett profit, which it will reduce to about 3*l.* per acre.—*J. H.*

‡ Vancouver.

Upon

Upon the whole, I am inclined to think that this species of culture is not so profitable as is generally imagined. The same capital employed in raising corn would at least be equally productive, and less precarious.

Note in 1784.—"Their crop last year (1783) was the greatest ever known. Being informed that Mr. ROGERS, a saddler, had a remarkable one, I went to him, and found him sensible and intelligent; he gave me the particulars of it immediately from his memorandum-book: one acre yielded 24 cwt. 2 qrs. 19 lbs. being weighed by itself in the presence of Mr. STOUR, the hop-supervisor; the prices at which they sold were 5*l.* 13*s.*, 6*l.* 15*s.*, 7*l.*, 5*l.* 5*s.*; the average of these 6*l.* 2*s.* The field of four acres cost him above 120*l.* expenses; it had been manured two years together, fifty loads of dung per acre; and again this year for the third in succession. He finds, on experience, that long raw dung is much the best, but takes care to put none of it on the hills. The average produce of all the hops at Hedingham, he calculates at eight cwt. per acre, and that the average price is 3*l.* 3*s.* The expenses upon a medium are:

	£.	s.	d.
Rent,	4	4	0
Poor rates,	0	18	0
Tithe, 5*s.* per cwt.	2	0	0
Poles,	9	0	0
Dung,	2	10	0
Labour,	10	0	0
Duty,	4	10	0
£.	34	6	0

"They are fond of long poles, even such as are two rods long, and thirteen inches round at bottom; such cost

3*l.* a

3*l.* a hundred; than which there can hardly be a greater error; an acre requires 400 every year. Mr. ROGERS conceives, that planting hops in the form of an espalier, might probably answer; for he has observed, that when a pole falls, and another is obliged to be fixed in a lateral position, the hop always bears more when it grows thus horizontally."

Note in 1792.—"There are a contiguous 55 or 56 acres here, which are remarkable for yielding a certain crop, failures being very uncommon; the soil is a moory marsh, improved into a rich loam on the surface; it appears, by writings, to have been a marshy meadow in the reign of Queen ELIZABETH: there are in the immediate vicinity about 50 acres more; and it is calculated grossly, that 100 acres bring 5000*l.* a year, on an average, to Hedingham. Two roods and 25 perches were lately sold by auction, and purchased by Mr. MAJENDIE, at the price, though copy-hold, of 120*l.* which is in the ratio of 182*l.* per acre; equal to thirty years' purchase, at 6*l.* an acre: this is, I think, the highest price I have heard of land (not gardens) selling for in England, and much exceeds the price of sugar land in the West Indies.

"There is a circumstance observed here in the culture of hops, which, for those who make new plantations, is worth knowing: they succeed better in very large plantations than in small ones; for it is observed, that the parts of the contiguous 56 acres here, which are on the outsides, do not answer equally with the more central divisions, caused, it is supposed, by a want of shelter*; and they think that hops form a better shelter than woods, or other planta-

* It may arise also from other causes. See HALES' Vegetable Staticks, vol. i. p. 32.

tions;

tions; if a man adds to his hop-grounds, therefore, he should unite them, and not plant distinctly.

"Mr. BARKER MYHIL's hop-grounds being, as most others, in a marshy situation, cut very much by open drains three feet wide, he thought the land might be laid as dry without them, and therefore filled many of them up at a great expense, first putting old poles, thin hop-binds, and then earth, by which means he gained a row, and sometimes two rows, of hills.

"The following is the account of an acre of good hops, debtor and creditor, at this place:

EXPENSES.

	£.	s.	d.
Labour by contract, ...	3	10	0
Manure once in two years, 40 loads per acre, say 20 per annum, at 3s. per load, as not all so rotten as to be charged higher, ...	3	0	0
Poles, 500, at 40s. sharping included, ...	10	0	0
Picking, drying, duty, and tithe, 30s. per cwt. which, on 12 cwt. are	18	0	0
£.	34	10	0
Rent, ...	3	3	0
A malt-office will do as an oast, but allow for use of it, 1s. per cwt.	0	12	0
	38	5	0
Interest of stock of poles, 2500, at 15s., 18l. 15s. at 5 per cent.	0	19	0
Poor-rates, rent reckoned at 40s.	0	10	0
Five bags, ...	0	12	6
£.	40	6	6

PRODUCE.

PRODUCE.

" Average 12 cwt. and price, on an average of seven years, viz.

	£.	s.	d.	£.	s.	d.
1785, per cwt.	5	0	0			
1786, ditto,	5	0	0			
1787, ditto,	8	0	0			
1788, ditto,	7	0	0			
1789, ditto,	6	0	0			
1790, ditto,	5	0	0			
1791, ditto,	6	0	0			
Average,	6	0	0	72	0	0
Five hundred refuse poles, at 10s.				2	10	0
Binds,				0	4	0
Bag costs 12s. 6d. and sells for 18s.; profit, 15s. 6d. on five,				3	17	6
				78	11	6
Expenses,				40	6	6
Profit,			£.	38	5	0

" I give this account correctly as I received it; it will serve to explain the assertions of profit which have in some years floated through this vicinity; for taking the crop at twenty hundred weight (and such a produce has been known here within a few years), the amount would be:

20cwt.

	£.	s.	d.
20 cwt. at 6*l.*	120	0	0
Refuse poles and binds,	2	14	0
Profit on five bags, 12 cwt. 3*l.* 17*s.* 6*d.*	6	8	0
Therefore, on 20 cwt.	129	2	0
Expenses on 12 cwt. 40 6 9			
Picking, &c. 8 cwt. at 30*s.* 12 0 0			
Office, 0 8 0			
Three bags, 0 7 6			
	53	2	0
Profit,	£.76	0	0

"Hence then a man would make on 16 acres, the vast nett profit of 1216*l.*"

The 55 acres at Hedingham, called the Marsh, are, and ever will be, under hops; but the higher plantations have lessened considerably, by reason of Mr. ADDINGTON's last hop duty; many plantations have been grubbed up; nor will any be kept that are not on such a soil as gives as near a certainty of an average profit, as so precarious a culture admits. The Marsh is rendered much more valuable than it used to be, by a very capital improvement of Mr. MAJENDIE's proposition, to whom half of it belongs, and who has the tithe of the rest: this was an embankment of the river which is the boundary of the Marsh on one side: though it was but a brook, yet it was so choaked up with weeds and mud, that every rainy season caused floods, which damaged a large space of the hop-grounds, and prevented many operations from being performed at the right season, by waiting not only for the water sinking, but for the ground drying: digging could not be executed till April or May. The bed of the stream

is now cleared out to its width in ancient times, when it probably was formed as a fishery for the supply of the noble family who inhabited the castle. The earth from it is formed into a bank five feet high, and sloped gently to the hop-grounds, which are now planted on the slope, leaving only a space for a beautiful walk on the top, the hops on one side, and the river on the other, which winds so as to form a very agreeable garden object; the opposite bank being hops (unprotected however from floods), and a very fine ash plantation of Mr. MAJENDIE's, which margins the stream. Utility the most decisive here unites with decoration, to form a scene which, in a fine hop year, must be truly beautiful. Under the bank are four discharging trunks, with valves for letting out the superfluous water of the ditches, or for keeping it in, when a very dry year requires this bottom moisture for the hops.

"They have been cultivated many years at Finchingfield, and other neighbouring parishes; scattered colonies from the principal establishment at Castle Hedingham: Mr. ABBOT, chief tenant on the Spains-hall estate, made two plantations, in addition to an old one, which shewed that that intelligent farmer thought them profitable: a question, however, not very well decided. Mr. ABBOT spread ten loads of dung per acre per annum, so rotten, that these ten were twenty: such an enormous drain from a whole farm to a few acres, must make those few acres productive; but it does not therefore follow, profitably. The expression ought to be, the dung is profitable, rather than the hops are so: wherever the dung of a farm is laid, there will generally be the produce of it, and if the dung is not very amply valued, the profit also; but such accounts are founded somewhat in deception, and in reality mean no more than that hops will pay for dung; and so will many other crops. If a neighbour was to offer me 5*l.* for ten loads of

of such dung, he should not have it; yet in what hop account is 10*s.* a load reckoned for dung? The other expenses of hops ran high here: labour, by contract, 3*l.* 3*s.*; poles, by one account, 250 per acre, per annum; by another 400; by another 500, at 32*s.* per hundred; sharping 1*s.*, picking 12*s.* per cwt. of the crop; duty then 10*s.* 8*d.* per cwt.; drying and bagging 4*s.*; by another account, 6*s.* per cwt.; use of oast 1*s.* per cwt.; interest of 46*l.*, the value of the plantation, poles and all, on entering, 2*l.* 6*s.*; and the average price of hops here for seven years, was 4*l.* 10*s.* per cwt. In regard to the time of picking, the hops are always best where picked latest the last year."—*Note in* 1792*.

Mr. VAIZEY, of Halstead, cultivated two acres for eleven years; and on my requesting the particulars, he favoured me with the following account:

"DEAR SIR,

"Agreeable to your request, I present a copy of a memorandum of the produce of two acres of hops for twelve years, from the *second* crop after planting, to the end of its cultivation.

"The land (observed on the spot by you, I believe) is a good piece of corn land; a narrow cut off the bottom of a hill, lying on a considerable descent. The first three or four years *probably* manured *every* year; after, once in two years; the last two or three, I believe, not manured at all. The poles were long (for such ground), and the general husbandry employed, equal to common practice; and I think the usual appearance of the crops quite equal to average of similar grounds near.

* Mr. RUGGLES has since grubbed up the greater part.

" I have put the price at which the hops *were* sold, or *might* have been (as near as I could), at the fairs, immediately after the picking.

" I am afraid the facts this memorandum contains will afford no material information on hop cultivation, for which, *on such land as in question*, I am not an advocate.

" Its advantages in local situations are obvious. At Castle Hedingham, and thereabout, are instances, probably known to you, that are very profitable; but it may, perhaps, be fairly questioned, how far this cultivation is *generally* profitable; and whether the existing extent of plantations may not have been raised and continued more from an abstract prejudice on the *product* of the crop in a favourable year, than from a comparison founded on an *average* account, and a calculation of the annual expenditure, which is *simply* very considerable, and sometimes *indirectly* (as a drain for manure) more injurious to a poor farm than at first view appears.

" I remain, dear Sir,

" Your obedient servant,

" JOHN VAIZEY.

" *Produce of Two Acres of Hops, in the Parish of Halstead, for Twelve Years.*

Year.	*Quantity.*			*Price.*			
	Cwts.	*qrs.*	*lbs.*		*£.*	*s.*	*d.*
1790	8	2	0	.....	5	0	0
1791	14	0	26	.....	5	12	0
1792	18	1	0	.....	4	10	0
1793	0	2	22	.....	11	4	0

Year.	*Quantity.*			*Price.*			
	Cwts.	*qrs.*	*lbs.*		£.	*s.*	*d.*
1794	14	2	0	.....	4	17	6
1795	14	1	19	.....	5	5	0
1796	9	1	19	.....	5	12	0
1797	17	0	15	.....	5	5	0
1798	3	1	14	.....	10	0	0
1799	6	2	9	.....	14	0	0
1800	3	0	4	.....	16	0	0
1801	14	1	14	.....	5	0	0

"In 1802, one acre out of the two was left, and produced about one hundred weight and an half."

Mr. SPERLING, at Dynes-hall, grubs up one-tenth of his hops every year, digging deep for a crop of carrots, and gets a great produce of that root; he applies them to fatting bullocks in the spring, which do exceedingly well on them.

DISEASES OF HOPS.

"The great uncertainty and precariousness of the crop is principally owing to the diseases to which the hops are liable, in the various stages of their growth. In the first place, the flea, much resembling the turnip-fly, attacks them, and bites off the head, or bud, as soon as it appears: they are most abundant in warm and dry weather; and the best supposed remedy is to dung plentifully, that the plants may grow out of danger, which they are generally thought to be at two feet high: but a heavy shower is for the most part an effectual cure.

"In June and July, the green fly blows them: lice are

the consequence, which do not seem to eat, but to poison the leaf, and shrivel it up, and make it scar, as if burnt: this most frequently happens in cloudy, thick, hot, moist weather, when also the honey dews sometimes come upon them, and they become black and foul, and little or no bloom succeeds, and the crop is partially or totally prevented.

"When ripening, they are subject to become mouldy and rotten, especially in low moist situations, on low grounds, or too much sheltered; the wetter and lower parts of Castle Hedingham marsh are much subject to this complaint, which greatly injures, if not absolutely spoils, the quality of the hops, if it take place to a very great degree. The best security is dryness of soil, and free circulation of air*."

HOP-POLES.

Mr. VANCOUVER informs us, that "about forty acres of ash, and Spanish chesnut, have been very judiciously planted in the parish of Castle Hedingham, for hop-poles. The soil for the chesnut is as well chosen as the country would admit of, being that of a sandy loam. The ash upon the rich moory land promises extremely well, and the whole strongly indicates the great care and skill of the owner."

The Surveyor also recommends the following practice for the preservation of hop-poles: "Taking into due consideration," says he, "the very important benefits which are derived from coal-tar, in preventing the depredations of marine insects on plank and timber, it

* Howlett, Annals of Agriculture.

very

very naturally occurs, that a preparation of coal-tar, judiciously applied, might not only produce a similar effect against insects in the ground, but, by its gradual and regular solution, become matter of food for the nourishment of plants; and this leads to a very important consideration, of how far the application of coal-tar may be rendered serviceable, by prolonging the durability of posts in the ground, and in like manner for the preservation of hop-poles; to which particular point, it is with extreme pleasure, an opportunity offers for stating the substance of a conversation with the Earl of DUNDONALD on this subject, who recommends the following method of preparing the hop-poles, to the serious attention of the growers of hops.

"The ends of the hop-poles intended to be inserted in the ground, should first be stripped of the bark, for the length of thirty inches. The poles must then be pointed, and scorched or burnt, until the surface, from which the bark has been taken, becomes black. The customary depth which the poles are fixed in the ground, will regulate how much of the pointed end should be treated in this manner. The burnt end of the pole, whilst hot, should be dipped into thin coal-tar, which should be previously made warm, in order that the wood may absorb as much as possible. There perhaps may be an advantage in dipping the pole the whole thirty inches stripped of its bark, so that twelve inches of what is covered with coal-tar should be above the surface of the ground. The poles are then to be stacked with their pointed ends upwards, until sufficiently dry; after which, they should be dipped in coal pitch made boiling hot, and set up a second time in the same manner, and so remain until they are required for the plants. If the poles are subject to injury at the upper or smaller ends, dipping them into the coal-tar

might probably be of use, in preventing the separation of the bark, or the harbouring of insects.

"The tar and pitch may be had in different states of preparation, at the British Tar Company's Office in London. This practice was recommended, and apparently with good reason, by Lord DUNDONALD, about ten years ago*."

MR. VANCOUVER'S TABLE OF PRODUCE.

Names of Parishes.	*Hop Land.*		
	No. of Acres.	*Rent per Acre.*	
		s.	*d.*
Bulmer	—	30	0
Great Henney	—	30	0
Great Yeldham	—	31	6
Castle Hedingham	120	60	0
Sible Hedingham	110	30	0
Great Maplestead	25	30	0
Little Maplestead	—	30	0
Finchingfield	40	30	0
Wethersfield	125	40	0
Braintree	30	30	0
Bocking	30	30	0
Halstead	—	30	0
Pebmarsh	—	20	0
Earl's Colne	40	30	0
Chelmsford	—	30	0

* Vancouver.

SECT. XVII.—CORIANDER AND CARRAWAY.

" As Essex is rather singular in the production of a kind of treble crop, consisting of coriander, teasel, and carraway, a particular mention of it may be acceptable to the public. The seeds of these several plants are sown together, very early in the spring, upon a strong old lay, once ploughed; and generally yield very considerable returns. The usual mode is, for a substantial farmer to take in a sort of partner in the species of husbandry, who is in an inferior situation, and will give up his time to the hoeing and managing of it: the agreement is, that the farmer supplies the land, ploughs it, and pays all parish and other usual charges incident to land; and the labourer sows it, keeps it clean by frequent hoeings, cuts, thrashes, and makes it ready for market; and then the produce is equally divided: this connexion lasts three years, and sometimes longer. In the first, the several seeds come up, and, when of sufficient growth, are set out with a hoe; and the coriander, which is an annual, is ripe before harvest, and produces a return of from ten to fourteen hundred weight an acre. In the second year the teasel, most of which will run now, yields a load, or six score staffs, of fifty heads each staff; and the carraway from three to six hundred weight of seed. The third year the teasel declines, and the carraway is in perfection, and will yield an equal bulk with the coriander; and most of the teasel that did not run last season, will produce heads this, and afford a fourth or fifth part of the crop it did the preceding season; by which time the several plants are in general exhausted, though a fourth, and even fifth year of carraway, has been known to succeed.

" The coriander, or *col*, as some call it, and carraway, are

are to be treated with great care when ripe, otherwise the largest and best part of the seed will be lost; to prevent which, women and children are employed to cut it, plant by plant, as soon as it is ripe, and put it immediately into cloths, prepared to receive it; and in them it is carried to the middle, or some other convenient part of the field, and thrashed upon a sail-cloth, spread for the purpose, upon which men stand to receive it; who, with a few strokes of the flail, get the seed clean out of the straw, and are ready for another little load in a few minutes. The use of these seeds is too well known to need a word upon that subject. The teasel is also cut by women, who are instructed to leave the weak and rotten heads, and select only the strong and healthy ones; the others, being of no use, would spoil the sample, and the credit of the grower; at the same time these heads are cut with a stalk, of six or eight inches in length, and bound up in small bunches, or gleans, of five and twenty heads each; the like number of which bunches, or gleans, constitute half a staff; which, after a few days sun, to harden and dry them, are tied together upon a stick, or staff, of two feet and a half long, and in this form carried to market.

"The head of the teasel is of a conical form, two or three inches in length, and one, or one and an half, in diameter, at the bottom, or largest end, armed on every part with small, strong points, turned a little downwards; and are bought by the woollen manufacturers; who fix them upon frames, calculated to cover a cylinder, which is made to turn round, and slightly catch their says, bays, &c. which another part of the weaver's machine draws against them; by which means the knap is raised to almost any length the manufacturer wishes. Sometimes, where the farmer prefers a certainty, he will let his land for three, four, or five pounds, an acre per annum, for three years,

years, ploughing and paying as before, rather than risk the hazards of blights, strong winds, when the seeds are ripe, or a decay of the woollen trade; any of which, greatly lessen the profits of this speculation. After the carraway is worn out, the farmer resumes his land, and has nothing to do but plough and sow for a good crop of wheat the following year, which is seldom known to disappoint him, after the land has been thus treated*."

Mr. VANCOUVER's account of the cultivation of these seeds is as follows:

"The culture of coriander, which has been much attended to in the neighbourhood of Tolshunt Darcey, is thus managed: old lay-ground is ploughed in the beginning of March, and after the surface is completely pulverized, the seed is sown fourteen pounds to the acre; thrice hoeing and setting out the plants four inches square, will cost one guinea per acre. Average produce 10 cwt. per acre, 12*s.* per cwt. This is considered to be a very good preparation after once ploughing for wheat; and as the land is generally ploughed in two-yard ridges, or stitches of eight-furrows wide, a row of beans is generally planted with the coriander, on each side of the open furrows between the stitches, and are usually harvested at the same time.

"When carraway is sown with the coriander, from the care and attention necessarily bestowed in distinguishing the plants, the hoeing seldom costs less than one guinea and a half per acre; but the carraway is not regularly set out for a crop till after the coriander is harvested, at which time a very expensive hoeing becomes indispensably necessary.

"Teasel is sometimes cultivated in the same field, the seed being sown with the coriander and carraway; but as

* Messrs. Griggs.

neither

neither the carraway or teasel come completely and regularly the second year, both crops are usually allowed to stand for the third summer. This is esteemed good manage- for old coarse pasture grounds, which, after three ploughings, is commonly sown with wheat, and then clean chalked."

Mr. SEWELL, of Maplestead, gives the following directions for the culture:

"About the beginning of March, plough some old pasture land; if it has been pasture for a century, the better; and the soil should be a very strong clayey loam. Mix 12 lb. of carraway, 10 lb. of coriander, and 12 lb. of teasel seeds, together, which is sufficient for one acre; sow directly after the plough, and dress, I suppose harrow, the land well. When the plants appear of sufficient strength to bear the hoe (which will not be until about ten weeks after sowing), it must not be omitted; and in the course of the summer it will require three hoeings, and one at Michaelmas; each will be about 8*s*. per acre. The coriander is annual, and is fit to cut about the beginning of July; it should be left in the field after cutting, and thrashed on a cloth, in the same manner as rape-seed.

"About April following, your teasel and carraway will want a good hoeing, done deep and well, and another hoeing about the beginning of June; these two hoeings are to be done at 7*s*. per acre each. The carraway will be fit to cut the beginning of July, and must be thrashed in the same manner as coriander. The teasel will not be ready till the middle of September, when those heads which are beginning to turn brown, are cut off the stem, with a stalk a foot long; and 25 of them are tied in a bunch; 24 of the bunches are fixed on a small stick, and called a row, 240 of which make a load in bulk, equal to a ton of hay from the meadow. The work of cutting and branching

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the teasel can only be done by those who have been well acquainted with, and learned the mode; it must be looked over, and the heads cut at several times, as they ripen. The teasel and carraway are perennial, and some of the plants do not perfect their seeds till the third or fourth year, though, in general, you have a crop the second year; yet enough is left for a crop the third year; and the seeds that are scattered from the crop the second year often come to perfection the fourth year; I have known instances of this being continued for seven years. The usual way is to plough directly after the crop is gathered the third year, and sow wheat, of which commonly a good crop is obtained, the land being in fine order, from the turf being rotted, and the repeated hoeings.

"The first appearance of teasel, after it is sown, is much like a lettuce; coriander like a parsnip; and carraway like carrots. The produce of carraway has often been, on the very rich old lays in the hundreds, or low lands, of this county, 20 cwt. per acre. There is always a demand for it in the London market, sometimes so low as 12*s.* per cwt. and has been up to 50*s.* per cwt. mostly on an average at 21*s.* Coriander is also very productive on good land, often producing 24 cwt. per acre, sometimes not more than 6 or 7 cwt. the price being sometimes 30*s.*; per cwt. often so low as 10*s.* average in general, about 16*s.* London market. Teasel is used only amongst the manufacturers of ordinary cloth and baizes, to raise the wool on them that covers the thread. As we have a large business of that kind carried on in this part of the county, we have a regular demand for teasel; the average price 12*l.* per load; the produce sometimes a load per acre, often not more than one-fourth of a load. The land can only be filled with plants, and the more one kind predominates, the less must reasonably be expected of the crop that succeeds. It

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is mostly sown on land so strong, as to require being a little exhausted, to bring it fit for bearing corn. Most of the land sown with carraway and coriander; the teasel is omitted, as being a more troublesome and uncertain crop; and generally the product of carraway is much greater without than with teasel."

In Dengey hundred, and many other parts of Essex, carraway is not an uncommon article of cultivation: there are gardening-farmers, who travel about and contract for breaking up old grass-land, in order to sow this plant. The farmer ploughs to a great depth for them, and does whatever horse-work is wanted, finding the land also at a rent of 15*s*. an acre (on Mr. WAKEFIELD's farm), and the produce is divided. It is reckoned a more profitable way of breaking up grass than for common crops; but much depending on a variable price, is reckoned hazardous; though the carraway men have intelligence enough among themselves to aim at not overstocking the market.

Coriander is always the first crop, the carraway being sown with it as clover is with barley, to succeed it; and it is left from three to six years, according to the success; great hoeing is bestowed on it, to keep the land clean: when it returns to the farmer, if there be twitch, he fallows; if not, he sows wheat. Mr. WAKEFIELD's half receipt from thirty acres has varied from 180*l*. to 300*l*. a year.

SECT. XVIII.—WELD.

IN the parish and neighbourhood of Haverill, "weld is occasionally cultivated for the manufacture of check and fustian: its culture is simply that of transplanting

ing from the seed-beds at Midsummer; it stands all winter, and is the summer following, when in full bloom, cut, dried, and laid up for use. The soil it favours most, is a stiff strong loam, moderately moist, but not wet. The price from fourpence to eightpence per stone. The manufacture above-mentioned is carried on to a considerable extent; but the effect it has had on the agriculture of this parish, by inviting a great number of settlers, has been so far unfavourable, as to occasion a considerable increase in the poor's rates within the last five years*."

SECT. XIX.—MUSTARD.

"In the islands of Foulness, Wallasea, &c. and in the embanked marshes, white or brown mustard-seed is sown; one peck and a half per acre on an oat-stubble. Cutting and thraving the seed are done at 10*s.* 6*d.* per acre; thrashing is done on a sheet in the field, at 5*s.* per quarter: mean produce twenty-four bushels per acre†."

Account of the Culture and Management of Mustard-seed in the Parish of Wedford, near Chelmsford.

"The seed sown was of the white kind, such as is most usually grown in our gardens for salading; and the quantity of it, instead of a peck and an half per acre, as above stated, only two quarts.

"On the 23d of May, 1800, twelve acres were sown by the farmer who furnished the present communication; it failed in the plant, owing to the land not being so well

* Vancouver. † Vancouver.

cultivated,

cultivated, through inexperience, as it should have been; nor was it sufficiently manured, nor were the weeds properly and fully destroyed. It was reaped and harvested in August, but in consequence of these several defects, it produced only one quarter and a half per acre; yet even this crop, at 12*s.* 6*d.* per bushel, amounted to 90*l.*, that is, 7*l.* 10*s.* an acre.

"Early in March, 1801, five acres were sown, and the whole produce was only seven quarters. Of this, likewise, the plant considerably failed; it being injured by the fly; and being also sown too early, it might, perhaps, be not a little damaged by the frost. This crop, however, bad as it was, more than paid the expense of cultivation, &c. It was reaped the latter end of July.

"In the same year, that is, on the 25th of May, 1801, ten acres more were sown; the ground was well prepared, it was reaped the beginning of September, and the produce was forty quarters, which was sold for upwards of 200*l.* or 20*l.* the acre.

"The crops in all the above instances immediately followed wheat; and had not the land been prepared for mustard, it would have lain fallow, and been sown the next year with oats, or barley, so that nothing but a crop of turnips could have been produced between, in the usual way. The mustard, therefore, was, in some measure, clear gain, and the land in good condition for a crop of wheat to succeed it.

"The same intelligent farmer observes, that the usual average crop is from three to four quarters an acre; that the soil upon which he has sown is light and loamy; that the mustard is so far from exhausting, or injuring the soil, that it is enriched and pulverized by the leaves and flowers which fall upon it, and that he intends, about the latter end of next July, to sow mustard upon a fallow,

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to be ploughed in (after a frost to kill it) about the beginning of December, or sooner, as a manure for barley or oats the following spring. It is seldom troubled with weeds, as by its quick growth it soon overtops and destroys them; but it may not be improper to hoe it once.

"As soon as the wheat field is cleared in the autumn, it should be prepared for sowing mustard, by ploughing it up and fallowing it till April or May, to destroy the weeds, and to get it into as fine a state as for turnips.

"It is sown after wheat, and wheat is considered as a proper crop to follow it: not having yet sown it on the same land successively, he knows not how it would succeed. It is best to sow it as soon after a shower as may be. It is cut, harvested, gathered, and thrashed in the field, after the same manner as rape or coleseed.

"*Culture at Prittlewell, near Rochford.*—Make a winter fallow from land fresh broken up; but mustard-seed may be advantageously sown after wheat, provided the land be properly manured, as for wheat or other grain.

Brown mustard-seed should be sown in February, white in March, it being more tender, consequently more liable to be injured by frost. It matters not what soil it is sown upon, provided it be rich and fertile.

"The average produce per acre about three quarters. Quantity of seed required per acre half a peck. As to the mode of culture while growing, hoe it, and set it out the same as turnips, not too thick, as that draws up the plant too weak.

"*Method of Harvesting.*—The *brown* mustard is reaped and tied in sheaves, the same as wheat, and is thrashed in the field when fit, at the expense of 5*s.* a quarter.

"The *white mustard*-seed is reaped and laid in gavels

(or handfuls) upon the stubble, the same as coleseed, at an expense of 6*s.* per quarter, and also thrashed in the field. *Brown* mustard very much exhausts and impoverishes the soil; but the *white* does not.

"When the land is very good, it sometimes produces five or six quarters an acre."

"The discrimination of the effects of the *brown* and *white* mustard-seed upon the soil seems highly important. It is also to be observed, that the expense of thrashing, &c. is given from places where the price of labour is greater than in most other parts of this county*."

1784. Foulness. Very profitable here, 3, 4, and even 5 qrs. at 4*l.*; but strains the land much.

Mr. WAKEFIELD cultivates white mustard: sows it on a wheat eddish; hoes it very well three times, and sows wheat after it. It is, however, a ticklish crop, for one frosty morn will kill it, and it is subject to be eaten by the black caterpillar. Most thrash it in the field on a cloth, like cole, but some trample out the seed by horses. It is very expensive, and troublesome to thrash: the produce 2 qrs. an acre: price from 8*s.* to 20*s.* a bushel.

Produce in Foulness Island, according to Mr. WOOD, three quarters and a half; Mr. POTTON three quarters; sometimes four.

In Rochford hundred, clover not generally sown with it, but wheat.

SECT. XX.—BUCK-WHEAT.

"THE cultivation of this I am entirely unacquainted with; and I believe there are few parts of this county in which it is much attended to. Mr. VANCOUVER tells us,

* Howlett.

that

that in the neighbourhood of Ardleigh and Little Bromley, it has been sown and ploughed under for manure when in full blossom; that this is generally a preparation for wheat, but has not answered sufficiently to induce a continuation of the practice*."

SECT. XXI.—TARES.

Mr. Fisher Unwin, at Coggeshall, remarked, that the husbandry of that vicinity was very much improved, as this crop was greatly increased.

Mr. Wright, of Hatfield, made the same observation on that neighbourhood; the farmers now sowing them very generally. Ten years ago there was scarcely any in the parish. He introduced them, and had 40 acres this year. He feeds many with ewes and lambs. He also soils 18 cows and 15 horses on them.

There is a considerable increase in this article of culture around Colchester.

Mr. Hardy, at Bradfield, sows two bushels an acre.

Mr. Spurgeon shewed me a piece of winter tares up and green before one farmer in five had sowed any; but he had summer-fallowed the land, which is a singular management. Intends, when the crop is off, to *case* it about for wheat.

Mr. Newman, at Hornchurch, thinks this crop one of the main pillars of good husbandry: he has now 20 acres; and he gets better wheat, and better crops of all sorts after them, than by almost any other preparation. He has now a good crop of Swedish turnips after a great crop of tares fed. He drills them at nine inches, in order that one horse-hoeing may kill the charlock.

* Howlett.

Mr. BRIDGE, of Buttsbury, has a very high opinion of tares; he thinks that a full crop ameliorates the land more than any thing.

The Rev. W. MACKLIN, of Chesterford, finds tares so useful for soiling, that he is never without them. They improve the land greatly, and prepare well for barley, and good crops are certain without dunging.

Lord BRAYBROOK, at Audley-end, sows them mixed with rye, for the spring food of his sheep: also alone for soiling horses, which do better on them than on other food, and make much manure.

Mr. CLAYDEN having a large breadth of poor land, sows tares as one effective means of improving it; he runs hurdles across them as in feeding turnips, for eating them on the land by sheep, folding the flock at night, as an extension of the same improvement.

Soiling horses is well understood about Terling, though Mr. STRUTT, having much grass, does not practise it. When clover fails they are substituted.

Mr. PORTER, of Little Leighs, took me into one of his fields of 30 acres, that yielded wheat on trefoil and ray fed for two years, and all dunged. Twenty acres of the stubble marked a fine crop (the whole four quarters on an acre on an average, and therefore this near or quite five); the other ten, where the land was rather the better, very inferior, and he could attribute the difference to no other cause than the 20 acres a few years ago being under tares, which were fed: but the worm had got the plant on the ten acres, which often happens if ray be sown. It is not a proof against tares. The small difference in soil might be in favour of the worm: on the contrary, the worm might be favoured by the tares.

Of this crop Mr. SEWELL has a very high opinion; and thinks it one of the best articles for varying a course when

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the land is tired of clover. He is attentive in mowing it for soiling to mow stitch by stitch, that the ploughs may enter immediately, then sows barley with clover for wheat. He thinks it very difficult to banish fallows on strong land without tares.

Mr. COKER, of Borely, has drilled tares at nine inches with success: two bushels and an half of seed per acre.

Mr. BRIDGE, at Coggeshall (seedsman in the Borough), cultivates white tares, and has found on three years trial, that when sown on the same day and the same land with common spring tares, they will be podded before the others are in blossom.

In discourse with Mr. RUSH, of Latchingdon, on the question of mowing or feeding clover, he instanced the case of a field of tares near Maldon; part was mown green for soiling, and part later for hay or seed; oats succeeded, and were best where the tares stood the longest time. The comparison merits noting, but it was not decisive. Was the land ploughed in the first case instantly after the scythe?

SECT. XXII.—SAINFOIN.

THERE is at Cryssal Grange a red sand on a sandy bottom, without any chalk under it, on which Mr. WEDD has 150 acres of sainfoin, some of it near twenty years old.

Sir THOMAS LEONARD, at Avely, informed me that there is in that vicinity a good deal of sainfoin on the lands which have a chalk bottom.

At Chesterford much sainfoin, and all for hay. Mr. NASH, for breaking up a field of it, mucked or folded,

and then ploughed it for barley, and got a very fine crop. It runs here to the lob grass.

The Rev. WILLIAM MACKLIN here sowed ten acres of this grass with barley, and got a load and a half of hay per acre the first year, from land that would not have let for more than 5*s*. He found both hay and rouen excellent for cows.

Lord BRAYBROOK, at Audley-end, has 38 acres of this noble plant in a perfection not often seen. His most intelligent bailiff and steward, Mr. NOCKOLD, gave me the following detail. It was a part of the park that was laid down to grass many years ago, and worn out. He ploughed it up and harrowed in oats, getting six quarters an acre; he was successful, but, the wire-worm considered, it would have been safer to pare and burn. He next winter fallowed for barley, and got six quarters per acre of that also; then he turniped it, and got a beautiful crop; but they were much damaged by the black canker or caterpillar: the end of April and beginning of May 1804, he ploughed and harrowed in five bushels of sainfoin-seed, and four lb. trefoil per acre alone, sowing no corn. In September he mowed 25 cwt. of hay per acre, of a quality singularly excellent; a crop decidedly gained by no corn being sown. In the winter manured with 60 bushels of coal-ashes per acre, from Cambridge. In 1805 mown again, the crop more than three tons per acre. I saw the four stacks of this hay; and they certainly speak sufficiently clear, that the crop was immense. The beginning of September the rouen, which was very great, was fed with fatting beasts and store cattle. I rode over the field, and did not see a spot where the plant missed.

Mr. NOCKOLD, on the farm he holds for himself under Lord BRAYBROOK, ten years ago laid down a field to sainfoin; he has mown it nine times, and has had on an

average

average two tons of hay per acre; but he has manured it with coal-ashes every year, from 80 to 100 bushels per acre, at 2*d.* per bushel, the price of the ashes, and near 4*d.* more the expense of carriage (30*s.* per waggon load of 100 bushels).

Mr. CLAYDEN, a very spirited and meritorious tenant of Lord BRAYBROOK, laid down to sainfoin 50 acres of land at a distance from all manuring except coal-ashes, the carriage of which renders them nearly equally applicable to all parts of a farm; and dressed the whole with those ashes: this is great: others generally content themselves with a small field, but 50 acres proved the energy with which he carries on his business.

SECT. XXIII.—LUCERNE.

THE Rev. Mr. HAND, at Billericay, has a rood of land under lucerne upon a rich dry friable loam, worth an high garden rent so near the town: it is in rows of 18 inches; and now in the fourth year; at the time of sowing he sowed also a seed-bed adjoining, from which to supply vacancies, and this he has done with such attention, that there is not the smallest gap in any part of the piece. Like every other careful cultivator who has adopted 18 inch spaces, he is obliged to *reap* it; every spring he digs the intervals, and he hoes it after every cutting; has manured it but once, but intends it every second year. I saw it the middle of October in the fourth growth, and it was two feet high. He has cut it so early as April, but always in May; from the middle of which month it supports for four months two horses with scarcely any thing given to them besides, after which the produce lessens; but still it yields much. The spring digging takes four

men a day. The expenses in so small a spot of ground are of course high, for the digging and hand-hoeing might be executed by horse-work on a larger scale. The ground is not only rich, but warm and well sheltered.

Mr. COOKE, of St. John's Green, Colchester, has an acre of lucerne, which has proved very profitable to him; part of it is five years old, and the rest six or seven. It was drilled at twenty inches in April; if earlier, apt to fail; on a rich deep, dry loam, on a gravelly bottom. It is difficult to supply vacancies by sowing; it must be by transplanting. Mr. COOKE remarks: he digs between the rows every autumn, leaving it rough for the winter; and rakes it in the spring. Once in three years, he manures it with rotten dung. He attempted to mow it with a scythe; but the spreading branches escaped cutting, and he found it absolutely necessary to reap it with a reaping-hook. He seldom cuts it more than thrice in a season, as it is better to have three full growths, than four more moderate ones. The first cutting in May this year (1803), kept six horses six weeks; the second cutting produced rather less. The produce of the third is more uncertain, as it depends much on the season. It should not be cut till in bloom, as it does better than if earlier, and more flashy, to use the expression of the gentleman himself. Mr. COOKE spoke in the highest terms of its merit, and as food for horses.

		£.	s.	d.
First crop.	Six horses, six weeks, at 3s.	5	8	0
Second crop.	Six horses, four weeks, at 3s.	3	12	0
Third crop.	Six horses, two weeks, at 3s.	1	16	0
		10	16	0
	Per acre, ... £.	21	12	0

EXPENSES

EXPENSES PER ACRE.

	£.	s.	d.
Digging,	1	0	0
Raking,	0	5	0
Hoeing,	0	15	0
Manure,	2	0	0
Reaping,	1	0	0
Conveying to stable,	0	10	0
Rent, tithe, and rates,	5	0	0
£.	10	10	0

It should be considered, that when the horses were feeding the first crop in April, they were in hard work, and ate chaff and corn; the second crop was ate in the stable also, till eight o'clock in the evening, and then put out for the night; the third crop the same; yet the saving of hay and other green food was very considerable, and I think equal to the valuation put upon it. It cannot be expected in lands in general to make so great a produce, this being in a garden, secure from cold winds, and perhaps upon a soil particularly suited to lucerne, except in very dry summers; I cannot see that the last crop is less value per week than the other, as it comes when feed on the light soil is very scarce; therefore have made it the same.

SECT. XXIV.—THE DRILL HUSBANDRY.

THERE is a scattering of this mode of culture throughout the county, but no district in it where the practice is established as it is on the sands of Norfolk, and on the clays

clays of Suffolk; nor is the increase of it rapid in any part of Essex.

Mr. COKER, at Borely, has drilled all his farm for eight or nine years, wheat, barley, oats, pease, beans, some tares, and some turnips. He has had such success, that he is convinced of the superiority of this method to the broad-cast. His *horse*-hoeing is all done by an ass, and very effectively.

Mr. HONEYWOOD drills wheat and barley, and has got good crops, but the soil at Marks-hall being very wet, strong and tenacious, the bailiff remarked that not one season in twenty would suit it. But note—nothing known here of putting in barley without spring ploughing.

Mr. TWEED, of Sandon, began the drill husbandry with COOKE's implements ten years ago; and has for eight years drilled his whole farm; the soil so strong and wet, that he never has an acre of turnips on the whole farm. He has no doubt at all of the superiority of the produce and profit to those of the broad-cast husbandry. But he is in the Suffolk system of discarding spring-ploughings for spring corn of all sorts.

1. Fallow,
2. Wheat drilled at nine inches; seed one bushel, to five pecks; two inches deep; horse-hoed thrice: first with the fixed harrow, the rest scarifyings: produce three quarters and an half an acre. Has had over fourteen acres from fourteen bushels of seed, six quarters one bushel and an half, and half a peck of white American wheat per acre, not laid, by drilling at nine inches.
3. Beans, pease, or tares: beans and pease at eighteen inches, tares at nine and twelve. Two bushels and an half of pease or beans; three of tares; beans four inches deep, pease three. Horse-hoed three, four,

four, or five times. Produce of beans four quarters; of pease three. Tares mown.

4. Oats or barley, but most of the former, as the soil is bad barley land: two bushels seed barley per acre, three of oats; both two inches and an half deep; produce, barley four quarters, oats five.
5. Clover, chiefly drilled; and covered by the last scarifying of the corn; succeeds better than in the common way: mown for hay or soiling.
6. Wheat, drilled and managed as above: produce three quarters.
7. Pease drilled.

Mr. ROGERS has been in the drill husbandry eleven years. The rows of his wheat at nine, and also at twelve inches; barley and oats at nine; pease at eighteen; but the short strawed frame pea at twelve; turnips at twelve for sheep feed, but at eighteen if for a full crop for bullocks, &c. He horse-hoes all these crops; the pease three or four times.

Seed wheat one bushel to one and an half; barley and oats one and an half to two; frame pease three bushels; others ditto one and an half; tares one and an half for mowing, to two for feeding;—remarking, that all crops which are to be fed should be thick, and all to be seeded should be thin: an observation respecting both distance of rows and quantity of seed, much deserving attention.

His average crop of wheat three quarters and an half; and of barley five. When he was first seen to horse-hoe his wheat, several of his neighbours (who were, however, great advocates for hand-hoeing) pronounced the operation dangerous; and some time after, in conversation, it was currently reported, that he had damaged his crops considerably, and made them root-fallen by the operation; which

which being reported to him by a person who was present, he walked with that gentleman into four wheat fields, two of which had been horse and hand-hoed, and the other two had no hoeing of any kind. The gentleman finding some spots in two of the fields with root-fallen plants, pointed to them as proofs that the observations were just, but it happened to be exactly the reverse. The two fields in which root-fallen plants were found, were those that had no hoeing; and the other two, which were entirely free from the malady, were those that had received both horse and hand-hoeings. This does not prove that hoeing would prevent the evil, but it clearly proves that in this case horse-hoeing could not occasion it. Mr. ROGERS, however, remarks, that he is always attentive to horse-hoeing early; for whenever any ill consequences have resulted from the operation, he conceives them to have resulted merely from doing it too late.

He drills all his white corn, and pease and beans; and many turnips. He has a very high opinion of the husbandry, and especially in the point of saving seed, not as an object of calculation in its value, but on the principle that the plants are in a good measure productive in proportion to their thinness on the ground. He thinks that in common management they are crouded to the lessening of the crop. There is a great deal of truth in this, taken locally, for it is a question of soil and management in points unconnected with seed. Mr. ROGERS has a fine dry sound friable loamy sand, on a permeable gravel bottom; and in addition to this, he is an excellent farmer in manuring, ploughing, and cropping: these circumstances operate greatly in lessening the necessary quantity of seed to be sown: but in his conversation, I am apt to think that he carries it much too far as a general position, and that if others under less favourable circumtances

tances were to lower the quantity of seed sown or drilled, they would suffer by it.

Mr. KEMP, of Hedingham, drills much corn, and prefers it to the broad-cast method.

Mr. HANBURY, at Coggeshall, never drills, nor any person in the neighbourhood, except Mr. HONEYWOOD (whose absence at one time I called, and his illness at another, I have reason to lament). Mr. HANBURY thinks the practice may answer to those who can or will give it a certain degree of attention; but that for others, it will not be so beneficial as the broad-cast.

Mr. AMBROSE, at Copdock, near Colchester, has for sixteen years drilled all the corn on his farm: this year (1805) he has 130 acres of wheat, 90 of barley, 43 of oats; four of pease; and 15 of broad-cast tares, 20 of turnips, and two and an half of cabbages. He is as perfectly satisfied of the superiority of the drill culture for corn in general, as he can be of any fact in agriculture. He uses COOKE's drill, and his distance is nine inches. His crops large. The year after he took his farm he had but three sacks of wheat per acre; he can now get three quarters and an half, and sometimes much more. Throughout the country, there is more drilling and less dibbling than there were.

Around Kelvedon it does not gain ground: several farmers that tried it have left it off.

"The drill husbandry is, I think (says Mr. WESTERN), gradually, but at the same time, very slowly getting into more general practice. I have no doubt myself of its superiority over the broad-cast system, when it is well understood; at the same time, I think upon these stiff wet lands, there are difficulties in the way of its adoption and practice, which the light land drill farmers are by no means aware of, both as to putting in the seed, and the use of the horse-hoe afterwards. I have had my drill machines made to cover at

eight

eight or nine-inch furrow stitches, to go with two horses, and the wheels are always in the stitch furrows, which I am sure is the best method upon these lands."

Mr. LEE, of Maldon, has drilled, but left it off, and thinks he can beat it in the broad-cast.

Mr. WAKEFIELD, on his farm of 1700 acres at Burnham, has drilled or dibbled all his corn. The practice spreads about Latchingdon but slowly; but he has not convinced his bailiff. *Let Mr. WAKEFIELD drill an acre, and I will sow one broad-cast by it, and I will venture a year's wages that the broad-cast beats.*

Mr. WRIGHT, at Rochford-hall, one year drilled all his oats, and nearly all his barley, at nine inches; but he suffered by it: he thinks that he had not plant enough; and wherever the crop is under-seeded, chick-weed and other weeds are sure to abound. He found also, that the wire-worm getting into the rows, had an opportunity of following them, and eating the corn worse than in broad-cast crops. With wheat he succeeded better, but not so well as to induce any great extension of the method: he means, however, to try a bean-*etch* with wheat this year. The mildew is another objection, for the drilled corn is more liable than thicker crops. For drilling, he has likewise found it necessary to pulverize the land more, and in this case the worm abounds more; and he has often remarked, that the more beautifully the land worked, the worse the crop.

Mr. COLCHESTER, at Laindon, is a driller, and lent his drill to Mr. GEORGE GARDINER, as what he conceived might be useful against black grass. Mr. GARDINER got a very fine crop by the use of it; but the quantity of that grass *in* the drills was great; however, he destroyed so much as to afford reason to think that a spirited use of the tool would go far to eradicate the plant.

The

The Rev. Mr. HAND, at Dunton, on a small glebe made some trials which gave him a good opinion of the husbandry; he had resided much in Northumberland, and brought thence Mr. BAILEY's drill for single rows; he used it for beans and barley; the beans at 30 inches, and the barley at 18: he horse-hoed them twice, and hand-hoed and weeded them, and they were the cleanest corn in the neighbourhood. A small part of the barley was not horse-hoed, and that by much the worst.

Mr. NEWMAN, of Hornchurch, drills all his corn, and has done so for five years, except one year omitting it for his barley; and he is clear and decided in the benefit of the practice. If his future drilling depended on the single machine he now possesses he would not take 1000 guineas for it. He uses M'DOUGAL's drill, and prefers it to Mr. COOKE's, having worked them together.

Mr. BRAMSTONE never drills—he has not heard or seen any thing sufficient to convince him that the method is superior to broad-cast. It ought to be introduced on such clays for spring corn; but in conjunction with the system of banishing spring ploughings.

The Rev. W. MACKLIN, at Chesterford, began drilling in 1803, when he thus put in 30 acres of wheat at twelve inches, and hand-hoed it twice. The crop two quarters and an half an acre, or the general average broad-cast. He also drilled the same year 100 acres of barley at the same distance, which proved a better crop than the broad-cast. At the same time 30 acres of oats, the crop middling. In 1804 he drilled 40 acres of wheat, which proved for a time remarkably flourishing, was hand-hoed twice, but was so mildewed as to be good for little; but the broad-cast was the same. He likewise drilled sixteen acres of turnips, at twelve inches which were a fine plant but being early, were mildewed.

His

His opinion in general is, that drilling is a good practice when the land is very clean and in good heart, and especially for wheat; but that it will not answer for any sort of corn if plenty of seed be not delivered.

Mr. BURREL, of Birdbrook, has for four years drilled wheat and barley at nine inches, both horse and hand-hoeing; he does not think that a drilled will on comparison with a broad-cast crop beat it, but looks to the progressive effect of cleaning for the chief benefit.

The Rev. Mr. SCOTT, at Little Oakley, has drilled all his white corn, and with such success, that he means to continue the practice he began three years ago. He sows clover with the drilled barley broad-cast, and harrows it in; and has had above ten quarters an acre of oats *drilled*. He has 280 acres drilled per annum: uses a large drill, which covers an eight-furrow stitch, made by ASBY. His rows are in general at six inches, and he does ten to twelve acres a day. He finds it advisable to have a man from Suffolk to work the drill. He gets greater crops than in the broad-cast way.

Mr BLYTHE, of Kirby, has drilled all for the crops of 1803 and 1804; his drill, made at Darsham, in Suffolk, carries ten furrows.

Mr. COTES, of Great Holland, drills all his barley on fallows, and has put much in without any spring-ploughing on the eight-furrow stitch. He drills also much of his wheat: horse-hoeing or hand-hoeing twice.

Mr. BAWTREE, at St. Osyth, has drilled to a considerable breadth; has had as much as 66 acres of drilled wheat in a year; the produce with him has been about equal to broad-cast crops.

Mr. JOCELYN, of Pitsey, has for two years drilled some fields of wheat on fallows at nine inches, and it has turned out

out just as good as broad-cast, his looker informed me. The soil very harsh and tenacious.

About Avely much drilling, and well approved.

Let the land (says the Rev. H. BARKER, late of Whitham) which is to be drilled, be deeply ploughed (or scarified), rolled and harrowed, until there is a fine tilth at least seven inches downwards; but if intended for turnips, cabbages, &c. the land should be a still deeper tilth, if the nature of the soil will admit of it. Let it not, however, be supposed that I am here recommending deep ploughing on lands where the soil does not extend more than a few inches in depth; in such cases let the plough go as deep as it conveniently can, without bringing up gravel, chalk, brick-earth, &c. The land being prepared by a fine and regularly deep tilth, set the teeth of the drill eleven or twelve inches apart, and drill from one bushel to six pecks of wheat, from five to seven pecks of barley, and from one bushel and an half to two bushels of oats, per acre. Immediately after drilling, harrow the land once with a light harrow, in the direction of the drill, should any incrustations be afterwards formed on the surface, pass a light roller over it. At the usual time of hand-hoeing, horse-hoe the corn, taking care, that the hoes go in nearly as deep as the preparatory ploughing. Continue to use the horse-hoes, scarifiers, and corn cultivators, as long as the state of the land, and of the crop, may require. The proper and frequent use of these excellent instruments* will keep land in nearly perfect order. If the drill husbandry be thus practised, I dare venture to affirm, that on all light and mixed soil lands, it will have a most decided preference.

* Made by Mr. COOKE, Red-lion Square, London.

SECT. XXV.—WEEDS.

In examining the arable management of Essex, I found that certain weeds are apt to be so predominant on certain soils, as to influence very materially the husbandry applied to them, and this to a degree that makes it necessary to treat the subject unmixed with other objects.

Black Grass—*Alopecurus agrestis.*

This plant is the curse of the fine pale impalpable loams of Bradfield Wicks, Ramsey, and the Oakleys, &c. Those loams class high among the finest soils to be met with in the kingdom; but this weed abounds to such a degree; the seeds in perfect concealment and torpid through a dry summer-fallow, but vegetating in such profusion when autumnal rains come, that the fallows which a stranger would consider as beautifully clean, become speedily to the eye a very meadow; so that nothing is even a partial cure but a ploughing after such rains come; and of necessity perhaps given when the land is too wet to plough, were it not for this essential object; of less consequence indeed in mischief, as the winter frosts following, prevent permanent ill effect. I was surprized that an annual plant could possibly be the occasion of so much evil, as I conceived that a steady attention to one fallow for preparing the land for such autumnal growth, and then ploughing them down, would, with occasional weeding, extirpate the enemy; but Mr. Hardy, Mr. Woodroffe, and the Rev. Mr. Scott, assured me of the contrary. Mr. Hardy thought that a two year's fallow would do it, and nothing else: the earth to the utmost depth it was ever ploughed, is full of the seeds, which

which vegetate but at a certain depth from the atmosphere. The good farmers all object to wheat following the beans which terminate their course of five years, on account only of this weed, which is sure so to choak such wheat, that it would be destroyed if 15*s.* or 20*s.* an acre were not bestowed in hand-weeding, which would still leave many behind to fill the land with seed.

Bad as this weed is, it is an admitted fact, that if ray-grass be sown with clover, the black grass is overpowered, and can make no head; and every one knows that it never appears in land laid down to grass after the first year. Beans well managed are free from it; whence it appears, that it is the autumnal growth which is to be guarded against—so difficult when the land is under wheat.

Mr. WOODROFEF hand-weeds his wheat on account of this weed, very carefully by women at 8*d.* a day; and sometimes at the expense of 14*s.* or 15*s.* an acre; and has done it at the expense of more than a guinea.

The Rev. Mr. SCOTT, at Little Oakley, confirmed these accounts; and that weeding wheat has cost a guinea an acre. An autumnal ploughing of the fallow when wet, the only means to destroy it; but hoeing good for that purpose.

Mr. BUXTON, at Layer de la Haye, in a very different country respecting soil, mentioned another curious circumstance of this weed: that when it is caused to abound, by taking wheat after the beans which terminate the course, the clover is very apt to fail in the next round, though a complete summer-fallow has intervened. He further remarked, that this weed most abounded on *old* chalked lands, and but little on those which have been chalked lately, and which had not been so manured before: but fresh chalking on old chalked lands does not check it. Lime, however, he has found to check it a

little on strong lands; though apparently attended by no other benefit.

Mr. COOPER, on his strong land farm at Langenhoe, is much troubled with this grass; and for this reason, often fallows after beans, however well they are hoed.

Upon the very strong brown clays of Wigborough, they are plagued sometimes with this grass.

Not much at Birch-holt, on the white clay bottoms, as it does not affect that soil.

On the heavy lands of Dengey hundred this grass is also a great plague; they can kill twitch by a fallow, but not black grass. The best system Mr. LEE, of Maldon, knows, is to fallow for oats: ploughing late in autumn, and again in spring, checks it.

Abounds much at Snorum, and Latchingdon, on their stiff clays. Mr. RUSH called it the bane of the country.

Mr. BAWTREE, of Southminster, has had wheat so full of this grass, that it has cost him 1*l.* 11*s.* 6*d.* per acre to hoe it. To plough and sow clover land late with wheat, is a good preventative.

Little black grass at Bradwell.

Upon the strong clays at Assingdon, they are much troubled with it. Mr. KEYS mentioned an extraordinary circumstance in his own memory; that they had none, or next to none, 30 years ago. I travelled a part of Essex, and published the result 38 years ago, and I regret not having been in this district, to have noted the course of crops, as a change might have accounted for the difference. Mr. KEYS further remarked, that if land be laid down for grass for seven years, it is cleared of this pest. But the misfortune is, that the soil will not do for grass. It wears out.

The rich land at Prittlewell is not free from this grass:

Mr.

Mr. PRENTICE has found that a winter fallow after a summer one, is the best cure.

At Pitsey I found complaints of it; the soil very strong; they sow their wheat the later on this account.

This grass abounds so much on the heavy lands at Dunton, and to Billericay, that the farmers appear to be gradually changing their course from sowing wheat on fallows, to oats, that they may thereby have a better opportunity of destroying it.

Charlock—*Sinapis arvensis.*

Mr. BAWTREE, of Southminster, has known chalk to clean the land of charlock and warlock.

Chick-weed—*Alsine media.*

On the fine loams on the coast of Tendring hundred, I remarked this plant as a common weed. A sure proof of good land in good heart.

Couch—*Triticum repens.*

It is remarkable, that upon the fine impalpable loams of Tendring hundred, this common enemy of farmers is not often met with; even in foul lands over-run with other weeds.

Mallow—*Malva sylvestris.*

Upon the rich loams of Tendring hundred there is such a sprinkling of mallows, that would be sufficient alone to give note of fertility.

Knot-grass—*Avena elatior.*

Mr. NEWMAN, at Hornchurch, has found this the most troublesome weed on his farm; he has burnt the bulbous

roots of it to the amount of a waggon load an acre; and in wheat it rises above the crop.

Wild Oats—*Avena fatua.*

This weed is much complained of at Felstead. Mr. WATKINSON, an old farmer there, assured me that they had of late years increased so much, that they threatened to become quite a nuisance. The farmers have tried many ways to check and extirpate them, but all in vain. Mr. CLEMENCY, of Saling, has tried many experiments upon this point, but all in vain; what has answered best has been sowing wheat after pease. It is no bad anecdote in the history of fallowing, to find a district where the prevalent rotation is, 1. Fallow; 2. Wheat; 3. Fallow; 4. Barley; so pestered with a weed that some of their crops are half ruined by it. If fallows will not keep land clean, why fallow? Mr. WATKINSON, in his father's time ploughed a field shallower than common, and the wild oats came there less than usual; but depth of tillage cannot have any general effect, because the oat comes in spots of roods and half acres, and two or three acres in a field of eight or ten all ploughed the same depth.

He assured me that he had gone to the expense of weeding crops with great care, but that it did not appear to lessen the quantity afterwards.

At Dunmow, the same complaints: the wild oats a terrible nuisance. Ploughing stubbles in October, Mr. FOWKE has found to kill many, but it is not an effective cure.

They will lay in the ground many years without vegetating. In the Roodings also, they abound so much, that it is sometimes difficult to distinguish the crop of barley.

Mr. PORTER, at Little Leighs, had wild oats till the lands

lands were clayed, but few since. It is a whitish clay marl. He thinks to plough the fallows deep at first, but in other tillage shallow, a good system against this weed.

Hogweed—*Polygonum aviculare.*

Upon the fine loams of the maritime parishes of Bradfield, Ramsey, Dover-court, and the Oakleys, this weed is a great plague on the bean stubbles: when I proposed shimming or broad-sharing those stubbles, to prepare for wheat, this tough weed was named as the objection. It is an insufficient reason, as I know by experience, that it may be eradicated by these operations.

Crow Garlic—*Allium vineale.*

I observed in Mr. WAKEFIELD's fields, feeding with sheep, that they ate this plant clean up.

SECT. XXVI.—WIRE-WORM—SLUG.

WIRE-WORM.

THE ravages of the wire-worm in the country about Burnham, form a very serious evil: I found on Mr. WAKEFIELD's farm great mischief done by them: large patches of wheat crops destroyed; and acres that should be cole quite bare. That gentleman has very heavy stone rollers, which he uses as a preventative and a cure; but thinks that good trampling is more effective; and with this view sows coleseed largely on fallows where wheat is intended, which he feeds off for the purpose of consoli-

dating the soil. He cannot observe that the worm depends at all on the course of crops; but some fields are much more subject to it than others. Rooks, or sea-gulls, give no security, for here are thousands, and they follow close at the ploughmen's heels. Heavy rolling good, and he has a four-horse stone roller on that account; but he never saw a crop saved entirely, when once they began with it. As treading and trampling are certainly beneficial, and whatever keeps land in a consolidated state, he thinks the whole furrow of clover-lays, and feeding green crops (as cole before winter) on the fallows, the most beneficial preventative. They are rarely found on strong land.

In Foulness, they have the worm on new broken up land, but not very common in old tillage.

The strong loams on tile clay at Sandon very subject to the wire-worm: Mr. TWEED finds heavy rolling beneficial against them.

On the strong and rich loams and clays of Little Oakley, the Rev. Mr. SCOTT has found the treading of sheep excellent against it. It abounds even in crops that were fallowed for; a flock of sheep broke into a field of fallowed barley, and trod a part of it very much, in that part no worm appeared, but many in the rest of the field.

Mr. KETCHER, of Burnham, remarked that where cole is seeded, there the worm is very greatly checked; and he further observed, that wherever hedge-row earth is carted on to the land, there the worm abounds most.

Mr. BARRINGTON, near Rochford, is much plagued with this insect on the lighter soils; much harrowing and rolling, and at last rolling down with a heavy stone roller drawn by four horses, is the system adopted by him to prevent or check its ravages.

Mr.

Mr. WRIGHT, of Rochford-hall, has suffered dreadfully by the prevalence of this pernicious insect; and he has paid of course much attention to the means of prevention and cure. Stone rolling is the principal reliance: he has a roller that weighs two tons, and drawn by six horses, which he uses regularly. In sowing spring corn he rolls it immediately, and even does half a field across, not to wait for finishing; and for wheat also in the same manner, though it is not so injurious to wheat as it is to spring corn. When he has seen wheat in November attacked by it, he has carted and spread turnips, eating them with sheep on the wheat; and this has proved effective. They have plenty of rooks, but find no security in them. In various parts of the kingdom the notion is, that clover and other lays breed the worm much more than land in tilth; but here they abound much more in spring corn sown on fallows, and no where are fallows better made. Mr. WRIGHT had a field of wheat sown early, that made a beautiful appearance through February, but it was attacked in March without his suspecting the worm. Riding over it, he found the surface slightly bound (called here being *capt*); and his horses feet sinking through the hollowness left by frosts, he discovered the enemy. He stone rolled it immediately, and the wheat which had been at a stand recovered directly, and grew rapidly; but this sudden luxuriance after the check from the worm was mischievous in another respect, as the whole was mildewed. He has had turnips and cole eaten even after hoeing; and Swedish turnips are particularly subject to it. Inquiring if potatoes had any effect in clearing land, by acting as an attraction to them—Not at all, he replied, for I have had the worm in oats after them. Deeper ploughing than common, rather encourages them: a field that had been ploughed very deeply, being sown with oats, they were so eaten,

eaten, that he ploughed up the crop and sowed them again; and a neighbour who had for ten years ploughed deeper than common, left off the practice, as he thought that it increased both weeds and the worm. Mr. WRIGHT some years ago ploughed up a wheat stubble in December, and leaving it till oat sowing, put them in without any more tillage; these oats were also severely attacked. He did the same for four acres of barley; here he escaped, and the crop was good. The ravages of this insect may be conceived from Mr. WRIGHT having from this fine soil, capable of yielding ten or twelve quarters of oats per acre, thrashed only 29 quarters of oats from 22 acres drilled after cole on a fallow manured and sheep fed; and notwithstanding the oats came up beautifully.

Mr. PRENTICE, of Prittlewell, is troubled sometimes with the wire-worm but not much: he stone rolls for it, but driving bullocks, and other cattle and sheep is the best remedy, as the more the land is pressed and trodden, the better: he has before Christmas found the rolling had been insufficient, and drove sheep and bullocks, and thus effected the cure. Sometimes he has dibbled in fresh seed on the eaten spots. The land at Prittlewell so nearly resembling Rochford-hall, and Mr. PRENTICE more generally taking turnips or cole on the fallows, than Mr. WRIGHT, whose great complaint is in the spring corn, seems to afford a suspicion that a crop is a better preventative than a fallow: not by treading as the crop is taken off, but by a much more impeded system of tillage; the looser and more frothy the soil, the more is the worm harboured.

Mr. PARSONS, of North Shoebury, finds the worm more in clover-lay wheat than in that following beans. It attacks the oats as soon as they are up. The stone roller which he uses against it weighs one ton and an half, and

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is drawn by four horses: he rolled 200 acres last spring. He sows three bushels of wheat, on account of the worm.

Mr. KNAPPING, of Shoebury, has been much injured by the wire-worm. He has rolled for it so often in vain, that he is tired of trusting to that method: he thinks hoeing the wheat the best remedy. Last year he had 19 acres of fine wheat eaten up by them in Foulness Island; but for oats he rolls: driving sheep for treading better than rolling, and sheep better than beasts. Folding sheep would knead too much, so that the wheat might not get through.

Dr. ASPLIN, at Little Wakering, informed me that the wire-worm is very mischievous: stone rolling the remedy, with three horses on sowing, and with four in March, as soon as the land is dry enough. His father finding a crop attacked, mustered all the horses he could collect, and had them led in strings on the wheat backwards and forwards; and it answered well. Sheep, and sometimes oxen, are driven for the same purpose. He has had less wire-worm after cole that was seeded, than usual, even in a field very subject to it. The seed earth upon a fallow (five ploughings) he gives as thin as possible, *because the less stirred the less worm.* The bean stubbles they plough but once for wheat; it was the practice to *case* them, but they left it off for the same reason. All this affords some reason to think that a journey to Suffolk would answer well to the farmers of this country, to learn to put crops in without any seed-earth at all.

Mr. VASSAL, of Eastwood, thinks that early sowing is a security against the worm as well as against the mildew; but stone rolling excellent. He has ploughed a foot deep, without finding the smallest increase of the worm from it.

Mr. THOMAS PITMAN, of Barking, has been much more troubled

troubled with this worm in his wheats after clover, than in those after potatoes: rolls for it with a two-horse roller; but trampling the land with sheep, or horses, or cows, or bullocks, better far than any thing, and beats all the rolling that can be given. Seventeen acres that were much attacked was part of it much trampled in hunting, insomuch that it was thought to be greatly damaged, but there the wire-worm was so checked, that the crop was good: the rest of the field much damaged.

Lord PETRE ploughed up a part of the park at Thorndon, and sowed oats, which were eaten by the wire-worm, and yielded a very poor crop. It was then fallowed and limed, and sown with wheat: the crop five quarters by estimation. I saw the stubble, and it was great. No worm in this crop.

Mr. HAND informed me, that a field at Dunton was fallowed, part of it clean fresh limed, and part with lime and earth; the wire-worm abounded a good deal in the wheat after the latter, but none where the clean lime was laid.

Mr. COVERDALE, of Ingatestone, has found that sowing cole on fallows, and feeding it off for barley or oats, is a preservative against the worm. He summer-fallowed a field for barley, and the crop was entirely eaten; he then fallowed and manured, and sowed cole, which is very fine for a late sown crop. He has found rolling the wheat down immediately after sowing to be very effective in preventing the ravages of this insect, and equally useful against the effect of frosts, laying bare the roots, in which case so many plants are apt to die. He had a crop of barley on a fallow, which was so attacked by the worm, that it was plain it would destroy the whole; he hoed it thoroughly and saved the crop.

Mr. MANSFIELD, near Epping, and his neighbours, are not troubled with the worm, except on new broken up soils;

soils; but the slug is common. The soil strong and wet.

Mr. COOPER, of Langenhoe, is troubled with the wire-worm, especially in wheat upon fallows, but not on clover; there the slug is apt to abound: against the former he rolls heavily, and then hand-hoes well, which are the best remedies.

They are sometimes troubled with this worm in Mersea, and it is an inducement with Mr. BENNET HAWES for dibbling wheat, as the treading is some security against it, and he uses this also as an argument for feeding clover.

SLUG.

The strong lands at Sandon are much subject to the depredations of the white slug, or snail; and especially bean and pea stubbles, if sown to wheat.

The same observation was made by Mr. OSBORNE, at Great Wigborough, where these slugs abound to an uncommon degree in wheat after either clover or beans; but they have no wire-worms: the soil a very strong brown and fertile clay.

I found Mr. BRIDGE, of Buttsbury, ploughing up a bean stubble, beautifully clean, for wheat; and these slugs were laid bare in great numbers, which alarmed him for his wheat: they have a bluish skin on the back, but white bellies, and are about half an inch long. They had eaten him up a piece of rye kept for sheep food. Not a rook following the ploughs. They have none; probably from destroying them.

Mr. BARRINGTON, near Rochford, has been troubled with the white slug in bean stubbles, which do much mischief to the wheat sown there.

CHAP. VIII.

GRASS.

THE marshes of Essex are very extensive, and some of them very valuable, and the district of Epping feeds considerable herds of cows; but these excepted, the grass lands of the county are certainly of inferior consideration and merit to the arable lands. The subject admits the following division:

1. Grass in general,
2. Mowing and feeding,
3. Laying down,
4. Breaking up,
5. Marshes,
6. Saltings,
7. Rouen.

GRASS LANDS.

At Belchamp Walter, a narrow valley of meadows, which though valuable, do not equal the best arable sand, yet two loads an acre of hay is not very uncommon.

Around Ingatestone there are about 1000 acres of grass, and in general pretty highly manured.

To mow meadows, and make the hay, 10*s.* 6*d.* per acre; to mow, make, cart, and stack, horses included, 21*s.*

At Ingatestone, to mow, make, and load, last year, 25*s.*; on an average 20*s.*; if every expense of team, &c. be reckoned, without straw for thatching, it will amount to 30*s.*

Mr. TWEED, at Sandon, has wrought a great improvement

ment in 52 acres of meadow: they had been ploughed, and full of rubbish; he laid them down again, the last, seven years ago, and they are now very fine, yielding two loads of hay an acre.

The part of the county in the vicinity of London which is under grass, wants little discrimination; it is within reach of that capital as a market for hay, and as a supply of manure; the consequences are considerable exertions and high rents; marshes in the hands of butchers rise to 9*l.* and 10*l.* per acre; and hay lands at Woodford, &c. are at 2*l.* and late leases 3*l.* Mr. HATCH, at Claybury-hall, has lately lett 100 acres at 3*l.*

Around the Ongars, thence to Epping, a large district in that vicinity, and much of the way to Harlow, is covered with very rich grass, kept in good order by the exertions of the occupiers; the rent is from 30*s.* to 50*s.* when valued distinctly from other land. Much is mown for hay, of which large quantities go to London; and much applied to dairies of cows, and some to herds of suckled cows.

"The best of our pastures are to be found in the parishes and neighbourhoods of Epping and Harlow, Broxtead, Dunmow, and Bumstead. Our meadows are chiefly on the banks of our several rivers, the Lea, Roding, Chelmer, Colne, &c. which so abundantly water and fertilize our vales; and our marshes are principally to the south, and south-eastern parts of the county, bordering either upon the river Thames, or some of the creeks which empty themselves into it, or into some branches of the main ocean.

"The proportion of grass land to arable in this county, I cannot presume to estimate with any degree of satisfactory probability. Were I to hazard a conjecture, founded upon pretty general observation of farms in different quarters of

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the county, I should suppose it to be nearly as one to seven or eight.

" 'The meadows upon the river Colne,' says Mr. VANCOUVER, 'are much injured by the keeping up of the water for the supply of the mills.' Similar effects are probably produced by similar causes upon other rivers*."

" A considerable improvement has been lately made in the rough marshes here (Tolesbury), by removing the ant-hills; the operation is performed by chopping round the hills with a heavy adze or grubbing hoe, the cutting edge of which is circular, and ten and an half inches wide; the depth of the blade, including its neck to the eye (or where the handle is fastened), is eight inches and an half; from half a dozen to half a score strokes will belt the largest hill, and loosen it from its seat, which isalways left lower than the adjoining surface of the marsh, to receive and hold the rain water, by means of which, the ants are more completely destroyed. Boys follow the grubber, and carry the ant-hills into the rills, and low places in the marsh, and thus a considerable increase of surface is obtained, that in the course of a year becomes profitable by getting coated with grass, and at an expense which seldom exceeds 15*s*. per acre†."

" The improvement of old pasture land by the removal or destruction of ant-hills, has long been effected to a very considerable degree in the north-eastern part of this county. I remember large pastures so full of these destructive excrescences, that you might easily step from one to the other, through several successive enclosures, and they so impoverished the soil, that it was scarcely worth 5*s*. an acre. Since their destruction, they have become smooth and fine, and increased in value at least 15*s*.

* Howlett. † Vancouver.

per

per acre. The manner of destroying these diminutive artificial barren mountains was very different from that described by Mr. VANCOUVER, as practised in the rough marshes. It was this: a very thin sharp spade, nearly in the form of the moon four or five days old; the extremity of the horns, as I may call them, were about ten inches apart. With this instrument, in the months of October and November, a man going round the bottom extremity of each hill, put it (the half moon spade) upon the crown or top, thrust it down under the greensward coat or covering, till the spade comes to the bottom circumference on a level with the pasture. This slice was not entirely cut or broken off, but turned down with its mould side upward, and its sward side upon the surrounding surface. This operation he repeated till the entire circuit of the hill was finished, and the whole contents, stript of their covering, were laid entirely bare. Then came another workman, who, with a common spade, dug out the soil with all the ant inhabitants, throwing them around him on every side. When this was completed, and the bottom made smooth, mouldy, and soft, he turned the turf with its soil-side downward, and so completely filled the cavity of the scooped out hill, that you could scarcely discern where the slices met together. This last workman was followed by a couple of boys, who, with hoes, or other convenient instruments beat to pieces the clods throughout of the hills. But even this seldom making them sufficiently small and pulverized, a gate, thick raddled with bushes, was, after the first frost, drawn over them. By this operation they were converted to a perfect powder; and being worked as it were into the surface, became, instead of a destructive nuisance, a fertilizing manure. In the spring a heavy roller was used, till at length the whole face of the ground, which had been deformed all over with hide-

ous poisonous wens, was smooth, beautiful, and smiling. The vigilant future attention of the farmer, however, was not hereby rendered altogether unnecessary. The remains of the swelling ulcerous sores were annually rising in little pimples, as I may call them; but these were so trifling, that they have been with the utmost ease, as it were, instantaneously crushed.

" Another mode of extirpating ant-hills, now practised in this neighbourhood, is this: the hill is cut round with a spade about three inches deep, taken entirely up, and laid with its grassy side downward upon the soil; the ants are all cleared out of the hole; if any remain, the hole is left open, that the rain may complete their destruction; the cover which was dug out continues with its mould side upwards for three weeks or a month, till the frost or rain has killed the ants which that also contains, and it is then replaced in the socket or hole from whence it was taken, which it exactly fits, is trodden down, and if necessary, smoothed with a roller, and every thing else done as in the former method. I scarcely know to which of the two modes to give the preference; though I am inclined to think the first the most completely effectual, but am by no means confident, not having made sufficient observation respecting the latter*."

" While I was at Spains-hall, Mr. RUGGLES offered to several of his neighbours a large field of standing grass, ready to mow for hay; part of it at 25*s.* an acre, and part at 35*s.* and refused by all. The ground being exceedingly good, and the crop large, I expressed much surprize at this; when I was assured that sheep would not pay for hay; that they would eat 20*s.* a head in hay, and not be

* Howlett.

5*s.* the

5*s*. the better for it; that the same remark is applicable to cows, which will never, for any quantity, pay more than 1*s*. 6*d*. per cwt.; that there is not a meadow scarcely in the country, but would be ploughed up, if the landlords would allow it; whence it is sufficiently plain, that they esteem corn to be vastly more advantageous than grass, even on land which shews signs of being singularly adapted to it. I do not take this to be uncommon in various other districts, and it therefore merits one or two observations.

"1. I attribute it to an erroneous calculation of tenantry, who are too apt to persuade themselves, that if they give up land at the end of a lease much better than they received it, the landlord's gain is their loss. Now in such soils, grass will almost constantly improve, until the rent will exceed the rent of arable, and this improving of fields in such manner that another is to reap the benefit, is a circumstance grating to tenantry.

"2. When the practice is found in the fields of yeomen, owners of their farms, it may be the remains of a prejudice derived from a different situation.

"3. I attribute much of it to a cause very common, and widely spreading, th[illegible] of corn being incomparably better understood than live stock: this I take to be very much the case in this part of Essex; perhaps the observation is applicable to the whole county in general.

"There are no sheep here, but Norfolks and bastard Wiltshires, or Hertfords; no other attention paid to them than to make them save-alls, that is, a few ill-conditioned ones kept to live upon fallows: cows are few in number, few persons either curious* or attentive to the breed; and as

* Those who consider themselves in this light, keep chiefly the Derby breed, which I take to be inferior in flesh and work to Sussex, and in milk to Suffolk.

to fatting stock, I heard of very few. Considering that few counties are more conveniently situated in relation to Smithfield than this part of Essex, and that dairy produce sells beneficially, there can be little doubt but were cattle and sheep as well understood as arable land, that grass would be here, what it is in so many other situations, more profitable than tillage, the expenses of which are so much higher; not implying by the term grass, the whole of a farm being so, but a considerable portion of it, viz. two-thirds, or half at least, if the soil is well adapted to it."—*Note in* 1784.

" The manner of making hay varies extremely, according to the age and ripeness of the grass; I mean the natural meadow, pasture and marsh-land grasses, and no less variety must arise from the state of the weather.

" At the commencement of the hay season, when the grass is full of sap, and abounds in all its natural juices, it is left, after mown one or two days, upon the swarth unturned and untouched; on the second or third day the swarths are turned over, and after having lain a few hours with its originally under-side exposed to the sun and wind, it is broken and shaken to pieces with forks, and dexterously thrown and spread over the meadows as lightly and uniformly as possible. Before sun-set it is raked up into light rows, not larger, if so large, as were the swarths. If the weather be precarious, it is sometimes thrown a little together with forks, and made into small cocks or heaps, containing each scarcely more than a single horse would eat in a night. But this is quite unnecessary if the weather be fair and settled. The next morning, in either case, as soon as the dew is evaporated, it is again broken, shaken, and dispersed abroad as before. If likely that day to be made fit to be conveyed to the barn or stack, it is thrown nearer and nearer together with

with the fork, till it is formed into large rows ready to be pitched on to the cart, or waggon. If it be not in a proper forwardness for this, it is best to rake it into swarth rows, or, as they are here called, wind-rows, as on the preceding evening, though somewhat larger. Should the weather be uncertain and threatening, it may be prudent to raise it into pretty large substantial hay-cocks, compactly and conically formed, and all the loose hay raked off the sides, which should be made perfectly straight and smooth, and the top pointed almost as much as a sugar loaf. Thus prepared, it will stand a smart and soaking shower of rain without any injury except merely to the surface.

" If the grass be not cut till it is fully and perfectly ripe, the business of hay-making becomes much shorter and more expeditious. The grass is shaken out immediately after the scythe, and if the wind be rather brisk and drying, and the sun bright and scorching, hay is sometimes entirely made and ready to be carted by the evening; but very commonly in the course of the next day. But in all the stages of hay-making, nothing requires more the eye of the judicious master, both for expedition and security; nor is it a matter of inconsiderable difficulty to ascertain precisely when the grass is fittest for cutting; but the extreme variety, and consequent uncertainty of the weather in this climate, makes it the excess of folly to be over nice in this particular*."

Messrs. GRIGGS observe, that 'nearer London (than Epping) their grass land is mown twice a year, and upon an average, will produce three loads an acre, of 1800 weight a load; which is mown, made, and stacked in four days, if the weather will permit; for as soon as it is cut, the

* Howlett.

field is filled with women and children, who spread it, and turn it three or four times in the course of the day, which expeditious method is almost sure to make the hay good.'

"When the stack is two, three, or more rods in length, in order to prevent its firing, I have known the following precaution adopted: as soon as it is raised up to the eaves, or the line from which the roof is sloped and tapered off, it is cut down at several intervals (if the length admits of it) of a yard or four feet asunder, quite down to the ground, and the hay taken from the several interstices, is thrown upon the stack on each side towards raising it to the intended height. Over the several cuts, large boughs and branches of elm are laid, sufficiently strong to support the remainder of the hay necessary to complete the heap. The vacant spaces formed by the several cuttings are a most commodious and safe receptacle and shelter for many implements of husbandry, as ploughs, harrows, rolls, &c.*"

Mowing and Feeding.—Lord PETRE has at Thorndon one pasture which he values very highly for its quality in feeding; and on inquiry of Mr. MILES, for the circumstances of it, I found that it had never been mown.

Mr. COVERDALE, of Ingatestone, has some rich grazing meadows on a brook, which are never mown; they are noted for their fattening quality: he thinks (erroneously I conceive) that it would be better to mow now and then.

Mr. WILLIAMS, of Ongar, whose experience and abilities merit great attention, never mows his best grazing lands.

Mr. HANBURY, at Coggeshall, who grazes on a respectable scale, mows and feeds distinctly—he is clear that grazing lands on these cold hills should not be mown.

* Howlett.

Laying

Laying down.—Mr. WRIGHT, who has laid down several fields, and intends more, finds that the best method is to sow the seeds alone on a fallow in August. He sowed part of a field with hay-seeds and ray-grass and part with mixed seeds from a London seedsman, at a much greater expense; and in about a month after sowing, the former carried much the better appearance: the latter is under-seeded.

Lord BRAYBROOK laid down a small piece by fallowing for turnips, which were fed on the land in spring, and then being ploughed thrice, was sown after Midsummer with five sacks of clean hay-seeds from Newmarket, 10 lb. of trefoil, and 10 lb. of white clover without corn, and the success was complete. Mr. NOCKOLD is clearly against mowing new lays that are to remain.

At Hallingbury, Rise, &c. in the Rooding district, Mr. CHAMBERLAIN assured me that their heavy loam on a clay marl will not, when laid down, become good grass for many years: the quantity under grass is so small, that it is no object, yet it is unprofitable to lay down. He remarked that Mr. HUBLAND having so much grass, would beat them all in farming. That gentleman has, however, laid down a large field, and by manuring, has not permitted it to decline; he hurt it, as he thinks, by sheep-feeding the first year; it should not be mown, but fed with cattle. Mr. BRAMSTONE, at Skreens, made the same observation on his lawn. The fact must depend on the grasses sown; all the world knows, that there are many plants and grasses that cannot be hurt by sheep-feeding, for the more they are eaten the more they spread: the plants should be pointed out which are damaged. Sheep may certainly be turned in too soon, but if sown in August, as all grass ought to be, and not fed till March or April, never fear hurting by sheep. Whoever has once got a turf, is an

ideot if he ever ploughs, Mr. CHAMBERLAIN remarks; but it will require 30 years to give it. "True," replied Mr. HUBLAND, "but manuring will do the business from the beginning."

Soil for.—The fine pale impalpable loams from Bradfield along the coast, around almost to St. Osyth's, will form excellent meadow and pasture: when a piece of ray-grass and clover happens to be left three, four, or five years, it runs well to herbage; and wherever a piece of upland meadow in the higher vales occur, it is generally excellent; but in proportion to the firmness of the loam, not being harsh clay. At Bradfield, five acres carried six cows and a bull this year from May-day, and would support them through autumn: it has, however, been very well improved.

In Dengey hundred I was repeatedly assured, that the land does very ill for new lays; that it gives a crop or two, and then fails for many years, till a course of time gradually clothes it: in Mr. WAKEFIELD's farm, at Burnham, however, I found in his marshes a piece of two acres laid for a drift way, which contradicted this general assertion. White clover and hay-seeds were sown, and they promise to do, if not in the best style, at least not badly.

At Bradwell they assert the same thing; the land, good as it is, will not run to grass: it does for two or three years, but then is good for little.

Mr. PRENTICE, at Prittlewell, has laid down a field convenient for one of his farm-yards, with red and white clover, trefoil and ray-grass; he has found that it holds good for two years, whether fed or mown; declines for two more, and then *works*, and is good.

I have seen clover-lays at Wethersfield cover themselves the second year with a beautiful fleece of white clover,

clover, though none was sown. On Mr. RUGGLES's farm at Finchingfield, there are fields which have this disposition in a less degree; but on the poor *red* land (as it is miscalled) at Felstead, Dunmow, Great Waltham, &c. they assured me that that soil would not *graze* at all.

Dengey hundred, Mr. LEE, of Maldon, classes with the soils that will not run to good grass.

The strong clays at Latchingdon do badly for grass: even old pastures will not force a bullock.

Mr. WAKEFIELD has tried laying down some fields to grass, but it will not do: the idea is general in Dengey hundred; but I did not meet with one man who has read the *Communications to the Board of Agriculture*, vols. iii. and iv. consequently not one who is truly a master of this subject. They are like physicians who never heard of SYDENHAM. When once practical men write books, practical men must read, or grope in the dark. I do not assert that new lays will do in Dengey, but I conceive that on this point the inhabitants know little more of the matter than I do. I never saw the attempt without ray-grass, yet nine in ten of them assert that ray is hurtful.

Mr. VAIZEY, of Halstead, has laid down two fields with white clover and ray-grass, by sowing in June; one of them he seeded the year after sowing, and gained twenty bushels of ray, and three bushels of white clover per acre, selling the ray at 7*s*. per bushel, and the clover at 56*s*. per cwt. The lay is not equal to what it would have been had it been fed from the first, but is a very good one.

The Earl of St. VINCENT, at Rochetts, has laid down twenty-five acres that were worked out, and would bear nothing; after clean fallowing, draining, and manuring with earth and lime, sown with white clover and ray-grass; one field of sixteen acres has been done four years, and

been

been manured with barrack dung; they have succeeded well; and the grasses have not declined; the management has been excellent; it has been fed constantly, which is the true and correct conduct with new lays. The soil, loam on clay and on blue pebbles; various. Such had been the exhaustion of these lands, that the intrinsic value, free from future improvements, was very small indeed: perhaps not 5*s.* an acre. Were they now to be lett, Lord St. VINCENT could get 40*s.*; the profit of such improvements is therefore decidedly great. His Lordship is very attentive to his grass lands, keeping a person whose only business is spudding docks, nettles and thistles; yet the number of these weeds, from continued attention, is not great. Good ditching, draining, and manuring, with much live stock, prove sufficiently that Lord St. VINCENT is an excellent farmer.

Viewing a field laid down two years on Mr. BRIDGE's farm at Buttsbury, which gave signs already of declining, I asked if he had not mown it? *Oh! no; the scythe should never come on land for some years after laying down.*

Mr. DYER, at Ongar, has laid down near 100 acres to grass: I walked over several of the fields, and they show a very successful attention to this branch of husbandry: the soil, a loam on gravel. Some have been done nine or ten years, and they never declined at all; they were sown with hay-seeds from the best dairy lands, white clover, and trefoil, with barley on a fallow; the three first years they were fed, which Mr. DYER thinks a material point, and he has manured it thinly and often.

Mr. MANSFIELD, near Epping, has laid down several fields to grass, in a manner that does him credit: they have been laid from three to six years, and have the appearance of good meadow of at least twenty years standing. He hollow-drains and fallows completely, and sows the

grass-

grass-seeds with oats, sowing all the sorts he can get, except ray, of which he does not approve. One of them he has never mown, but has dunged four times in six years: another he fed for two years, and another for one; but makes it a rule to keep the scythe out as long as he can: the longer the better; early mowing, he thinks the cause of many failures.

On such land, in common practice he thinks to mow and feed alternately good management, and saves the dung-cart. Elsewhere he has rich grazing land, and there he never mows.

The richly improved meadows around Ingatestone, which I viewed, and which being in rouen, shewed much cocksfoot in the extraordinary luxuriance of its growth, are full of it to an uncommon degree: I have heard its being coarse, objected: these are old grass lands.

"I have tried several methods," says Colonel BURGOYNE, "and am convinced that the best is to sow clover and grass-seeds early in the autumn, without a crop. I sow no hay-seeds, which I have always found mixed with the most noxious weeds. In the month of August 1791, I laid down six acres, on two of which I sowed the meadow foxtail, and the meadow fescue, Dutch clover, and a little rib-grass. Last summer it produced a prodigious quantity of grass, and is now equal to the best old pasture, worth 40*s*. per acre. On the other four acres I only sowed clover, rib-grass and trefoil; as I rather chose to trust the natural grass of the soil, than to sow hay-seeds full of weeds. These four acres are good pasture, but not equal to the other two, as they do not abound with those two excellent grasses, the meadow fescue and the meadow foxtail, which, for early growth, sweetness, and great produce, I esteem far above all other grasses."

Mr.

Mr. MAJENDIE'S Experiments on Grasses.—" The ideas suggested by the late ingenious Mr. STILLINGFLEET, in his valuable tract on grasses, have always struck me as natural and practicable. The disadvantages resulting from the usual mode of laying down lands to grass are so great and evident, as to make it an object of considerable importance to agriculture, to substitute a better. The seeds collected from a hay-rick, or the sweepings of the loft, generally consists of grasses of various sorts, adapted to various soils, and ripening at various periods; they are, besides, too often incorporated with the most noxious perennials, which being promiscuously thrown on the land, it follows, that instead of an herbage at once luxuriant and nutritious, the soil is impregnated with grasses perhaps totally uncongenial to its nature, together with other rubbish highly detrimental to pasture.

" Under the impression of the bad consequences attending such a process, I have often been led to think, that if to the general study of the grasses, in respect to their qualities, quantities, and times of ripening, was superadded the particular selection, and enlarged cultivation of such as seemed to promise most, it would prove of infinite use to the science of agriculture, by rendering it possible to procure the pure unadulterated seed of the distinct species; which, by leading to a judicious combination of the best, would in time produce a far superior, as well as more certain mode of acquiring good pasture better than that now in use.

" With this view, and as a leading step to such a design, I have for some time past selected one grass, as a particular object of my attention; the result of my observations on it I have taken the liberty of communicating to you.

" Meadow

" Meadow Foxtail Grass—*Alopecurus pratensis.*

" In the month of June 1786, I collected a small quantity of the seeds of the *Alopecurus pratensis*, from a pasture of mine near St. Alban's containing by measure, seven pecks; with this, in March 1787, I laid down a small field in this place, of three roods; the field had been a hop-ground, the soil excellent, and the seeds were sown (contrary to the usual method) without a crop of corn: with the grass-seeds I sowed six pounds of the white or Dutch clover; in the course of three weeks the young grass made its appearance, and continued to grow with great vigour during the summer, and though, from the small quantity of the seed, it did not cover the ground till towards the end of autumn, yet I was able to mow it once, and the produce, inconsiderable as it was, proved excellent food to my horses. I cautiously rooted out the perennial weeds, and by the beginning of winter the ground was so completely overspread, as to wear the appearance of an old pasture. In the spring 1788, the grass grew rapidly, and at so early a period as the first week in May, was in full ear; by the 14th of which month I might have mown it for hay; my object, however, was to collect the seed for a future, and more enlarged experiment, so that I suffered it to remain till the 27th, when the ears were reaped precisely after the manner of wheat, and carted home. The next day the stubble (as I call it) with the bottom of Dutch clover, was mown, and on the 3d of June I housed one ton of hay from the three roods; the seeds, on thrashing, amounted to forty bushels. I now proceeded to lay down a field of seven acres (the soil a good earth, neither wet, nor over dry) in the same manner as the former, and after the rate of four bushels per acre of the grass-seeds, together with eight pounds per

acre

acre of the *Trifolium repens*; this was effected on the 3d of July 1788. The succeeding autumn proved moist, and favourable to vegetation; so that the grass and clover made so rapid a progress as to enable me to turn out, on the 8th of October, ten lean Scots which remained constantly day and night, and ten horses at night only, for the space of three weeks. The great severity of last winter had not the smallest visible effect on the colours, and did not entirely check the vegetation of the grass; this degree of hardiness I must consider as a circumstance greatly in its favour, as several other grasses seemed injured, especially the *Poa trivialis* (rough stalked meadow grass), which appeared weak and discoloured, and in some places I observed that the blade had perished.

"From the unusual backwardness of the last spring, the grass was somewhat later than the preceding year, but the clover was in perfect forwardness early in June. Observing a particular luxuriance in the latter plant, I determined to let the whole stand for a crop of its seed, being aware that, by so doing, I should leave time sufficient for the seeds of the grass to sow themselves, to the future benefit of the field; accordingly it was suffered to remain uncut till the 1st of August, at which time the heads of the Dutch clover appeared perfectly ripe, the field was mown, and on the 6th of the same month I carted eleven tons of the most excellent hay that could be produced; the crop of clover seed will amount to sixteen bushels. This field is now in the completest state, and leaves me every reasonable hope of its becoming a highly profitable pasture, far preferable to what I might have acquired from the usual, but uncertain, method of laying down lands to grass; nor can I doubt that it will fully recompense the attention and perseverance I have bestowed on it.

"From

" From these, and other observations made by me on this grass, I am induced to make the following remarks.

" The *Alopecurus pratensis* is likely to prove very useful to its cultivators, from its earliness, it being generally the second to flower of those grasses most esteemed for agricultural purposes, and indeed I have not unfrequently remarked it to precede the *Anthoxanthum odoratum*, which is usually the first.

" It is eaten readily, and with relish, by horses, cows, sheep, and swine.

" It produces a great burthen of most excellent hay, which, from its being so early in a fit state for mowing, leaves ample time for the ground to bring a plentiful crop to perfection.

" This circumstance, and its being considerably earlier than the *Lolium perenne* (rye grass), was the reason of my experiment.

" Though to a commom observer, this grass, from the breadth and quantity of its foliage, might seem somewhat coarse, yet on examination, it will be found by no means so as to prejudice the hay from it, or disgust the cattle when depasturing.

" The *Alopecurus pratensis* is certainly subject to the depredations of a small maggot, which lodging itself in the seed vessel, destroys the seed; this has occasioned a surmise, that the grass in question could not be generally cultivated, but I presume I may, from the above experiments, venture to assert the mischief not to be so great as to exclude this useful grass from introduction on the most enlarged scale of agricultural practice.

" This grass delights mostly in soils which are inclinable to moisture, yet not so entirely but it will succeed perfectly on good upland, which are not absolutely arid.

" Upon the whole, it may reasonably be concluded that

the culture of the *Alopecurus pratensis* would be no unworthy object of the farmer's attention; it is greatly superior to his *Lolium perenne*, in being earlier ripe; it seems also more nutritious, from the form and greater luxuriance of its foliage; indeed its generally good qualities have been so strictly attended to by me for three years past, as to induce me fully to agree with the ingenious Dr. PULTENEY, who says, that the *Alopecurus pratensis* is amongst the most grateful of all grasses to cattle.

" Meadow Fescue Grass—*Festuca pratensis*.

" This grass is by no means uncommon, is easily raised as strictly perennial; and though not so early as our meadow foxtail, is by no means late, and possesses every quality to recommend it to the attention and culture of those who, in forming perennial lays, prefer the slow, yet cleanly mode of sowing pure seeds, of the best grasses, to the rubbish of the hay-rick or loft.

" In the month of August 1789, a field of exceeding good soil, containing two acres and two roods, being prepared for laying down by a clean fallow, was sown with twelve bushels of *Alopecurus pratensis* and twenty pounds of white clover. As I had no pure grass-seeds in any quantity, except those of the *alopecurus*, my intention was to form my lay with the seeds of this grass only, and the white clover; but, just as they were sown, it occurred to me, that I had raised, in a small bed in my garden, about three quarters of a peck of the seeds of the *Festuca pratensis*; I therefore directed these to be thinly and evenly distributed over the whole field.

" In the summer 1790, the crop, amounting to about two tons, was mown, and the after-grass fed later than Michaelmas. In the ensuing summer, 1791, the same process

process was adopted, with a general increase of crop; to which a due attention in rolling, and bush-harrowing the lay, may be supposed to have contributed.

" But the circumstance which, in this last season, chiefly attracted my attention, was the rapid increase of the *Festuca pratensis*, which was so remarkable, as to determine me to reserve its seeds in the following summer. Accordingly, in the beginning of July last, 1792, the field was mown, and the panicles of the *festuca* were picked by children from the swarths, and thrashed upon a cloth in the field, the stubble being made and carted with the crop of hay. The seeds were immediately cleaned and dressed, and amounted to one hundred and ten pounds in weight.

" When it is considered, that in forming this lay, scarce three years since, so small a quantity of these seeds as three quarters of a peck, weighing only two pounds, were sown, the present increase offers a strong proof of the merits of this grass, as an abiding plant, as also of its rapid increase from the root, on soils suitable to its growth.

" As I have bestowed some attention on the culture and qualities of the *Alopecurus pratensis*, it may not be uninteresting to institute a comparison between this useful grass and that now before us; and it will be found, that however it may differ from the former in some essential points, it is nevertheless to be classed amongst the most valuable grasses we possess, which will, I doubt not, hereafter lead it into general notice.

" The *Festuca pratensis* is by no means so early as the *Alopecurus pratensis*, not producing its panicle by three weeks so soon; failing, therefore, in this valuable point, it cannot be placed in competition with the latter grass, for the essential, and, to the farmer, inestimable purpose

of early feed in the generally starving months of March and April.

"In perenneity they seem equal, but the *festuca* possesses a great advantage over the *alopecurus*, from the facility with which it is cultivated; if the seeds are gathered at a proper time, and in a due state of ripeness, they vegetate almost immediately after being sown, and increase by the root with great rapidity; the *alopecurus*, on the contrary, besides being much slower in its first appearance after sowing, is, in some seasons, so infested by an insect, as to destroy the seed to that degree, that the cultivator, after great care and perseverance in procuring them, may be greatly disappointed in his expectations of produce*."

"Another advantage attending our *festuca* is, that it is by no means so local as the *alopecurus*, which, though sometimes found in dry situations, is ever most at home, most productive, and consequently most valuable, in those inclinable to moisture; whereas this *festuca* will flourish in both†.

"In moist situations, the crop from the *alopecurus* is generally larger than that from the *festuca*, which may be attributed to the greater breadth of its foliage.

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* "For an account of this insect, see a very ingenious letter from the Reverend Mr. GEORGE SWAINE, of Puckle Church, Gloucestershire, in the 76th and following pages of the second volume of the Bath Papers. See also the article *Alopecurus pratensis*, in a publication by the same gentleman, called *Gramina Pascua*, in which the subject is still more minutely investigated. The article *Alopecurus pratensis* may also be consulted in that splendid, and, to the nation, honourable work, the Flora Londinensis of Mr. WILLIAM CURTIS; as also in the 11th page of his Practical Observations on the British Grasses."

† "We have observed it in the sand-pits at Charlton, and the osier grounds near Battersea."—*Curtis's Flora Londinensis*. Article Festuca pratensis.

"For

"For pasturage, these grasses seem equally coveted by horses and cattle; the hay of the *festuca* is also very good; but I can from confirmed experience assure you, that that from the *alopecurus* is better; indeed no hay can in flavour, succulence, and nourishment, exceed the meadow foxtail hay.

"As these two grasses, after due attention in collecting and raising a necessary quantity of their seeds in the garden, seem, from a variety of experiments in the field, to be highly useful in agriculture, it may be hoped that some of your ingenious correspondents will be induced to select and cultivate other grasses with similar success, till at length the natural and well-founded theory of the ingenious STILLINGFLEET may be happily realized.

"My field laid down with the *Alopecurus pratensis*, was mown on the 1st of August, 1789, and its produce eleven ton of hay; the reason of its being mown so late is there stated, and the effects fully answered my expectations; for by the ripened seeds sowing themselves, the field improved in fulness of plant, whilst the sale of 16 bushels of the white clover seed produced 40*l.** I shall now proceed to state to you the subsequent management and produce of this field.

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* "The seed was very good, but a quantity raised by me last year was of so fine a quality, that my seedsman informed me, it was greatly superior to several cargoes just then arrived from Holland. Why are we to be almost entirely indebted to foreigners for a plant so generally indigenous with us? Several farmers in my neighbourhood have lately cultivated the *Trifolium repens* as well as myself; and have remarked, that the wheats sown after it, wear a more promising appearance than those after the red clover: this is important, for if it becomes an established fact, it will be an additional inducement in favour of its culture, for the sake of instituting that change in the rotation of crops, so frequently insisted upon by many enlightened farmers."

" The lay was shut up on the 6th of August, 1789, as soon as the above eleven ton of hay were carted off, in which state it remained until the 13th of October following, when nine large bullocks (purchased at Braintree and Wool-pit fairs in the autumn of the preceding year, and which were at this time nearly fat) were turned into it, where they remained in the most plentiful after-feed until the 28th of that month. They were succeeded by five cows, which were also in the field fifteen days, and four horses eleven nights only, and on the 27th of November the lay was cleared, and finally shut up for the winter.

" In the spring 1790, the field was bush-harrowed and rolled; the grass had by this time acquired a greater strength of vegetation than in the former year, and assumed a very promising appearance at an early period, and being in high perfection in the second week in June, was mown on the 11th of that month; on the 17th of which the produce, amounting to fourteen tons, was carted. The hay, both in flavour and colour, was of the most excellent quality; and the weather proving favourable, the whole was stacked without damage. Soon after this the field was dressed with a rich compost of farm-yard dung, rotten leaves, and some quantity of coal ashes, at the rate of 20 loads (of three horses to each) per acre, which being carefully and evenly spread, the lay was on the 26th of June shut up for the second crop.

" The grass made a rapid progress through the months of July and August, and on the 3d of September was mown, for the second time, and with the same success of weather attending as on the first crop; seven ton and an half were carted; but here I must observe, that it was not without reluctance that I permitted the field to be mown a second time, because, although the hay was well made, and as well got in, yet even with these advantages, the inferior

ferior quality of rouen hay*, at this season of the year, is well known to every farmer, and if the weather proves unfavourable during the making, though but for a few hours, it would be damaged so as to become of little or no value. The hazard, therefore, attending this crop is great, whilst the produce at best can be deemed only of an inferior quality. On the other hand, the luxuriancy of autumnal grass is the farmer's pride, as well as profit; is of the greatest use to cattle, and best adapted to the purposes of pasturage. Nothing, therefore, could justify the above measure, but the satisfaction of ascertaining with accuracy the quantity of produce and the effects of a second crop on this particular grass: in respect to the former, the produce may fairly be deemed ample; and as to the latter, the grass seemed to spring up after the first; indeed, this grass seems to me to possess a quality not common to many others, that of sustaining scarcely any check from the wound of the scythe.

"On the 11th of September, 1790, the field was again shut up, in expectation of the eventual advantage to result from the after-feed, which might yet arise before the winter. In this we were not entirely disappointed, for on the 5th of November eight Scots (purchased October 3d at Braintree) were turned in, and remained fourteen days, which with eight horses six nights, and four horses eleven nights, conclude the produce of this field to the 2d of December last, on which day it was finally cleared from the stock.

"The produce of the field during the above period (from the 6th of August, 1789, to the 2d of December,

* "A provincial term for the second crop of hay."

1790), will perhaps appear in a more concise form by the following extract from my minutes.

"*Little Castle Field.—Seven Acres.*

"1789. After-feed.

	Days and Nights.	*Nights only.*
9 large bullocks, from Oct. 13 to Oct. 28,	16	0
5 cows, from Nov. 13 to Nov. 27, ...	15	0
4 horses, from Nov. 17 to Nov. 27, ...	0	11
18 total cattle. Total, ...	31	11

"1790. Hay Crop.

	Tons.
June 17, carted	14
September 3, carted	$7\frac{1}{2}$
	$21\frac{1}{2}$

"1790. After-feed.

	Days and Nights.	*Nights only.*
8 Scots, from Nov. 5 to Nov. 18, ...	14	0
8 horses, from Nov. 16 to Nov. 21, ...	0	6
4 horses, from Nov. 22 to Dec. 2, ...	0	11
20 total. Total, ...	14	17

"Having thus given you as exact an account as I was able, of the management and produce of this field, it may not be amiss to subjoin a few remarks, in addition to those transmitted to you in my former letter, which a continued attention, with an increased experience, enable me to suggest with somewhat more confidence than before.

"And first, concerning the merits of this grass, I am well

well convinced it will be found to answer every reasonable expectation from it on soils adapted to its growth, either as hay or pasture; cattle relish the former entirely, and the bare state of the field on the 3d of December last, clearly shewed the avidity with which it had been cropped. In my experiments, I have purposely omitted stating a few days during which sheep were occasionally turned into the lay, because the time was but short; but they depastured as freely as the larger cattle, and I have had sufficient proofs upon another pasture formed by me of this grass, that it is highly grateful to them.

"In forming this lay, my wish was to have sown it with a mixture of grass-seeds, such as I was sure were suitable to the soil; but the absolute impracticability of procuring them pure, induced me to give up all thoughts of so desirable a combination, and to content myself with the seeds of this grass which I had separately cultivated. I trust, however, the time will arrive when it will be possible for the farmer to procure the seeds of the best grasses, in quantities sufficient to enable him to form his combination of them upon just principles; first, by adopting the grasses to the soil intended to be sown; secondly, by selecting, as much as may be, such grasses as produce the greatest quantity of hay or pasture, ripen nearly at the same time, and which possess the greatest degree of perenneity. By these means, the land will yield the greatest possible produce of the grasses, will establish themselves so as to extirpate others of a lesser degree of durability than themselves, for it may, I presume, be asserted, that a plant introduced on land of a nature to encourage its growth, will flourish in it in proportion to its degree of perenneity, whereby it is endowed with powers of establishing itself fully, and at the same time of extirpating all neighbour-

ing annuals, biennials, as well as such perennials as are of less degree than itself. Thus it has appeared to me in practice, and this may serve to answer an objection made to the theory of STILLINGFLEET—that the natural grasses, or such as are the spontaneous produce of the soil, will in time overpower and destroy those imported, and thus defeat the labour and hopes of the cultivator.

"The *Alopecurus pratensis* appears to me from experience, to be intended by nature for moist situations, and though it will succeed well in good upland soils, that aré not absolutely arid or bound, yet it will be found greatly more productive in the former situations; but to attempt the culture of this grass on mountainous places, or on dry sands, would be to no purpose.

"A gentleman highly conversant in agricultural subjects has suggested to me, that it will be scarcely possible for this field to continue to produce so large a crop as that of 1789, and that perhaps one-third of this great crop must be laid to the score of fresh soil; for that it is observable, that when grasses or any other plant have been long continued in one spot, they cease to be equally productive as when first sown or planted: with this idea I shall readily concur, and candour must induce me to suspend any final opinion on this subject, until a course of years shall enable me to speak with perfect conviction. Perhaps in no science is it so difficult to form experiments with certainty and effect as in agriculture; a combination of circumstances seems to step in between the cultivator and his experiment; and though he be strictly accurate in his report, a difference of soil, situation, and most of all, of seasons, will often prevent the establishment of his experiments into general principles.

"This, however, far from deterring, should stimulate the

the industrious and practical agriculturist to persevere in his remarks, with the laudable hope, that a due course of time, and strict attention, united to a frequent repetition of his experiments, may give a degree of stability to them. By this he will enjoy the satisfaction of having contributed something in his day, to the improvement of a science, at once delightful to himself, and highly beneficial to the public at large."

Mr. MAJENDIE had cultivated these grasses with so much success, that I was desirous of knowing his general idea of them from 15 to 20 years after his first exertions; and his account to me (1805) was this: he has a large field sown with the meadow foxtail and white clover: after some years, not finding it so bulky in produce as it ought to be, he sowed it all over with meadow fescue, which took well, and it is now a very valuable meadow, which he would not plough up on any consideration: there is a great deal of meadow foxtail still in it: his fat bullocks do remarkably well in it; indeed no where so well as there.

Another meadow sown with meadow fescue, remains, and the grass abides well, is very valuable, and he will never plough it: he thinks these grasses equal in goodness, but the foxtail gives more hay, and is as sweet for feeding; and if he wanted to lay down more land to grass, he should sow these two grasses, provided the soil was moist enough for the foxtail.

Breaking up.—Mr. WESTERN broke up an old grass field by ploughing with four horses very deep, and sowed in 1803 coriander seed, which paid him 12*l.* an acre; in 1804 carraway, a light failing crop; in 1805 carraway again,

again, 10 cwt. an acre, at 70*s.*; in 1806 it will still be carraway; and in 1807 wheat.

Marsh.—Mr. LEE, of Maldon, has 250 acres of marsh at Goldhanger, worth 20*s.* an acre, which carries 70 bullocks and 300 wethers and lambs: feeds in winter on hay and turnips; having 350 acres of arable, worth 30*s.* most of it also at Goldhanger, and the rest at Totham. He stocks the marsh at the rate of two acres to a bullock.

The marshes near Maldon, and to Bradwell, are much better than those on the north shore of the Blackwater; but Mr. LEE observes, that those from Bradwell to Burnham are much better than any. He mows 30 acres of marsh every year; and I may note, that hitherto I have found every man in the habit of mowing and grazing alternately: a bad system on uplands, but pernicious on marshes. At Goldhanger Mr. LEE has 30 acres taken in ten years ago; for which he had the Society's medal; also 15 taken in four years ago: these last have not produced much yet.

The marshes in parts of Dengey hundred would be more valuable, were it not for want of fresh water in very dry seasons: it has happened that cattle have been driven five miles to Burnham-street for water. It is an almost universal custom to mow the marshes in Dengey hundred, though grazed at times. Mr. WAKEFIELD thinks it a very bad custom, in which he is certainly right; the scythe ought never to go into grounds that are dedicated to fattening bullocks.

It is a very great drawback from the value of the marsh grass in Foulness Island, that they want water for their live stock in dry summers: they have been forced in such to bring it from Wakering, at the distance of six or seven miles. I saw the sea pouring into the ditches through tunnels

nels in the banks; this is to keep the ditches full enough to act as fences, *and to prevent the evaporation of the fresh water ponds:* it ought to render the inhabitants the more healthy.

At Bradwell it was remarked to me, that the uplands were enriched by the marshes, and the marshes impoverished by the uplands; as the crops are carried from the former to the latter, but the dung not returned. Much marsh land ploughed; but some has been laid down, and in 20 years it becomes good grass: when good, they think it ought not to be broken up.

They would want water much in the marshes occupied by Mr. BARRINGTON, of Droggets, if artificial ponds were not made; they are long and shallow.

The exertions which the Rev. H. B. DUDLEY has made on his Tillingham marshes, have been of decided importance, and have operated not only to their own extent, but as an example to all his neighbours. They were flooded except the ant-hills, all which were carefully cut off and formed into composts. The old ditches were scoured, and many new ones made. Three hundred acres of saltings were taken in by a new embankment.

The marshes on the banks of the Thames are greatly superior to those on the ocean, or the Blackwater: at Avely they lett for 3*l.* an acre, the tenants doing half the repairs of the wall; they are not allowed to mow them, which is justly thought to be very mischievous to such valuable bullock land: here I was informed, that the best are at Plaistow, and lett at 7*l.* or 8*l.* per acre to London butchers.

But at East Ham I was informed of marshes lett to these butchers at 9*l.*, and even 10*l.* per acre, and heavy complaints that they paid, and would pay no more rates than others who hired their land at 2*l.* or 3*l.* per acre; this was

new

new to me; but the matter has not been carried to Chelmsford, and therefore remains the object of country conversation.

A circumstance in the marshes of Dengey hundred occurs, which has not equally struck me on other coasts; and this is, their rising in elevation towards the sea; it does not appear to be regularly thus; but at Southminster, on the marshes of Mr. BAWTREE, it is strikingly so. The first line of marsh next the uplands is lowest, and are at the same time the poorest; they gradually rise in advancing towards the sea. It does not at once appear to what cause this is to be attributed, unless the sea has of late ages been much more productive of ouze than in former times.

"The islands bordering upon the sea coasts (Mersea excepted) and the lands which have been produced by, and embanked at different periods from the sea, were formerly under pasture, but of late years a considerable portion of them have been brought under the plough. A state of pasturage is unquestionably best suited to these lands, particularly after they have been properly improved and brought to a good herbage. In that state they would be most profitably employed in grazing sheep and cattle, were it not for an inconvenience which they all labour under, in the want of a constant supply of wholesome water. With regard to such of these lands as are appropriated to tillage, the practice of exhausting them before they are again laid into pasture and grazing ground, ought carefully to be avoided; yet in all cases where the rough and uncultivated marshes have been previously chalked, they should be kept in occasional motion with the plough for three or four years, and then laid down for permanent pasture; but where this indulgence may not be allowed by the landlord, the journal at Tolesbury states, that at a moderate expense, a very considerable improvement may be

be made in such marshes, by removing the ant-hills into the rills and low places. The water, without injury to the fences, might be run down to a lower level, by cleansing and deepening the partition ditches; and thus the rushes would be destroyed, and a more regular and effectual fence preserved, together with a better supply of more wholesome water during the dry season.

" After exposing the cold and long settled soil of the old marshes, to open and meliorate for three or four years under the plough, the last crop should be taken and the land again laid down into grass. From this treatment a very superior herbage would be produced, answering equally well for making into hay as for feeding green, and fattening cattle.

" The hay which is generally made from the coarser marshes, though shut up in due season for that express purpose, as well saved, and of an equal quality to the eye, is not to be compared in point of nourishment, to an apparently good hay made from the higher lands; and as the grass of the one is composed of nearly the same variety, and found in the same proportions as the grass of the other, the difference can only arise from a want of that uniform growth and perfection in the marsh grass, as there is in that which is grown upon the higher lands.

" This explanation is strongly supported by the feeding quality of the marsh grass, when selected by the cattle and eaten green.

" The embanked marshes at Southminster, which are very productive and extensive, consist chiefly of a deep hazel-coloured loam, upon a very fine sea sand or silt. This property is extremely valuable, and would be much more so, were it possible to command a supply of water during the dry season: so long as the springs are flush upon the higher country, the water continues tolerably abundant

abundant and wholesome; and is diffused through the levels with great equality, judgment and economy: but when those resources fail, which unfortunately is too often the case in the summer season, the distresses in these marshes for drinking-water, and for fencing, are very great indeed.

"The rough and unimproved pastures in the neighbourhood of Manuden, Berden, and Clavering, seem in a great measure to owe their present inferiority to the very wet and compressed state in which they have been lying for ages. Upon such as have been hollow-drained and kept open with the plough a few years, and then laid down into pasture, improvements have been made that are truly astonishing. The general opinion upon this question among the most attentive and diligent farmers is this, that the pasture lands upon the wet, cold, tile-earth bottoms, ought to be kept under the plough two or three years in twenty.

"The low pastures and meadows in this neighbourhood (Chesterford, Hadstock, &c.) being subject to frequent overflowings from the river Cam, are reduced to a very inferior condition, which is only to be improved by some regulations, requiring that river to be properly cleansed out, and its bed deepened. The water might be run down to a lower level, and the adjacent lands, by being relieved of their superabundant water, would in a short time become extremely valuable.

"The average rent of the prime pasture ground in the county is 28*s.* 2*d.* making a difference of 9*s.* 1½*d.* per acre between the pasture land of the first, and that of the second quality. That the rough and unimproved pastures are rented on an average through the county at 6*s.* 10*d.* per acre; that the embanked marsh ground averages 15*s.* 7½*d.* per acre; and that there are 4600 acres of salt marsh,

which

which at this time, may be conveniently enclosed from the sea, and gradually improved to an equal value; that the meadows in severalty average 22*s.* 10*d.* and those that are half-yearly 25*s.* 8*d.* leaving a difference of 2*s.* 10*d.* per acre, which is by no means proportioned to the superior quality of the latter land; that the arable and grass land through the county, when lett in farms together, and without distinction of price, equals 14*s.* 6½*d.* per acre.

"In the marsh islands about two and an half acres of the feeding marshes are usually allowed during the six summer months, to the grazing of a runt of about thirty-six score: horses, cows, and sheep are generally depastured in the same marshes for the remainder of the year, feeding them down as close and as bare as possible by the end of January, at which time they are shut up for the spring, and for the early summer's growth.

"The Scots and other cattle, brought from countries watered with lively and refreshing streams, are very subject to the red water about Midsummer, but which being timely observed, the remedy is not very difficult. A scouring also frequently comes on about Michaelmas, which is only to be stopped by immediate removal and change of food; if long unobserved or neglected, it always proves fatal. The pole-evil and fistula are extremely troublesome among the horses; every effort to prevent their gathering has hitherto proved ineffectual, and to cure them after the ulcer is broke, is held to be a very uncertain and almost endless task*."

Mr. Bawtree, of St. Osyth, has made great exertions in clearing his marshes from ant-hills; he spaded, and collecting them in heaps, added dung and chalk, and has spread the compost, to the amount of sixty loads per acre

* Vancouver.

of

of the hills, on some of his fields, to their very great improvement, as well as to that of the marshes cleared; he does not at all approve of burning them, having tried it.

It was not without amazement that I was informed in Dengey hundred, that they have marsh farmers who do not thatch their hay-stacks; and some that do not thatch beans; and that their shepherds, in the consumption of hay, scatter it about the fields to certain waste; but I suppose not so in their opinions.

Salt Water.—The effect of breaches in banks by which the sea overflows the marshes for a longer or shorter time, is not clearly ascertained.

"An object not beneath notice, is thought to be a general commission of sewers, for the repairs and preservation of the sea walls along the coast, which protect the lands most capable of improvement, from the destructive inundations of the salt water, which is known to leave such fatal effects behind it, that the land is not worth the tillage for several years after it has been overflown; besides, that the expense and trouble which may have been laid out upon it, are for ever lost. At present, it is common for the owners of land to manage their own walls according to their own discretion, by which means the neglect of an individual may cause not only ruin to himself, but to many of his more careful neighbours, and spread a general distress around him*."

"If salt water is on the land only a few hours its benefit is great; it is the continuance only that is injurious. I have had land under salt water at least twenty-four hours,

* Vancouver.

which

which after one fallow would bear a crop, and in the third year appeared benefited: on a piece of wheat land in January the water remained about two hours, the crop was 11 coombs per acre, landlord's measure. It destroyed all the insects *."

Saltings.—From the southern point of the marshes against the ocean, between the Blackwater and the Crouch, there is a breadth of saltings (salt marsh not embanked, over which the tides flow) which are very valuable, and in some places of considerable breadth. Beginning at the south, the succession of proprietors are: 1. a school at Seven Oaks; 2. the owner of Coney-hall (agent, an attorney in Golden-square); 3. Mr. FINCH, of Billericay; 4. the Charter House; 5. the owner of Court Farm; 6. Mr. FENSHAW, at Bridgwic; 7. Mr. BAWTREE, embanked; 8. Rev. Mr. DUDLEY, embanked from 6 to 7 miles. Probably seven remain yet to be taken in, forming above 2000 acres, which call aloud for embanking.

There will speedily be a power of taking in more saltings at Bradwell, for Mr. SPURGEON has rode to a distance on the sands where he could not walk at present, the ouze is so fast accumulating.

The great exertion that was made at Tillingham by the Rev. H. B. DUDLEY ten years ago, I heard on every hand commended as one of the most considerable that Essex ever saw: 300 acres of saltings were taken in by a wall so complete, that the expression used was, "it was executed *famously!*" He took down hills and banks, filled up rills, and reduced the whole to a level. The cartage was all done by bullocks. He formed also a decoy. It is rented under the Dean and Chapter of St. Paul's; was 800*l.* a

* Mr. Boggis.

year for 800 acres, 140 of which were arable. This Michaelmas (1805) he has re-lett the 1100 acres for the remainder of his lease at 1750*l.* per annum: and in the estimation of the country, his profit (so great was the expenditure) cannot be much more than repaying an expense in which the public good has been promoted in an extraordinary manner.

Notwithstanding the embankments, by which much land has of late years been gained from the sea, on the coast of Dengey hundred, yet that element in time past has made great depredations here. There is a sand called Buxey-park, and old seamen now living have heard their grandfathers say when they were boys, that Buxey-park was covered with trees; and it is asserted, that foundations of houses have been seen there. Also at St. Peter's Chapel, at Bradwell, the sea gained much in former times, as the remains of buildings are said to be still visible on the sands at low tides.

ROUEN.

Mr. KETCHER, of Burnham, lays up a pasture for spring food for his sheep, and finds it of astonishing use; and is determined not to be without so great a resource.

Mr. DYER, of Ongar, shuts up grass for the use of his ewes and lambs in March and April: he finds the young grass shoots up with it in an extraordinary manner; and his flock does better on it than on turnips.

Mr. THURLOW, at Gosfield, shuts up a space of grass from the beginning of September to lambing time, and finds it of very great use to his flock.

CHAP. IX.

GARDENS AND ORCHARDS.

" ONE circumstance respecting the species of gardens we are now speaking of, must powerfully strike the most superficial observer, and that is the prodigious augmentation in the value of landed property thence arising. Their annual rents, from their artificial richness, their high cultivation, and various abundant fertility, are vastly higher than those of either arable or pasture; though even these in similar situations of vicinity to considerable towns, are frequently lett at more than twice the average of counties at large. But gardens are lett considerably higher still. They are, I believe, from 40*s.* to ten, twelve, or even more pounds an acre. It would be a curious object of agricultural research, to ascertain the number of acres under this mode of culture in the kingdom; the increased quantity within the last forty or fifty years; the consequent aggregate of advanced rents, &c. It must have been enormous, from the increased size and population of our large towns in almost every part of the nation, especially Sheffield, Manchester, Leeds, Liverpool, Birmingham, and wherever else our manufacturers, trade and commerce have most flourished.

" But what is of much more consequence, the produce of our cottage gardens is very considerably improved within the last forty years: especially with regard to that most useful of all vegetable garden productions, the potatoe,

and which the poor man may and does convert to a vast variety of useful purposes, and thereby in some small degree alleviates the hardships arising from the deficiency of agricultural wages. But it is to be remembered, that a considerable proportion of our labourers have no gardens at all; and even when new cottages are built, very seldom is any proportion of ground allowed for this purpose; which is a strange piece of ill judged penurious policy*."

There are many cherry orchards at Burnham, Southminster, &c. and to prevent the cows that were feeding in them from eating the branches of the trees, they buckle a circingle round the body across the chine, and to this attach a sort of halter on the head, which passes between the legs, to keep them from raising the head high enough to browse the trees.

CHAP. X.

WOODS AND PLANTATIONS.

"OUR natural woods are very much diminished, both in number and in extent, within the last fifty years†; and the diminution still continues to go on more rapidly

* Howlett.

† At this very time (1801) a wood near Maldon, containing 80 acres, is falling.

than

than ever. Whether this be judicious and prudent in the proprietors, taking an extended comprehensive view of their estates, is difficult to say. The present and immediate temptations are great and powerful. Amongst these are the high price of timber, topwood and bark; the low rents of the underwood being, according to Mr. VANCOUVER, scarcely 9*s.* an acre; the increased profits of agriculture, &c. These, and some other temporary transient advantages may sometimes compensate for the stubbing up ordinary woods, and which are not highly favourable for the production of the best timber. But those which are so, contribute to enhance the value of estates perhaps more than any thing else, and render it highly improper to destroy them, if due regard be had to the interest and advantage of posterity in the future value of landed property. An instance tending to illustrate this, occurs to me respecting some woods, though not of the most excellent and prime quality, yet of a very considerable degree of goodness: upon an average of the fellings of the last seven years, the underwood being fifteen years growth, the value of the timber, timber-tops, bark, and underwood, has been at the rate of nearly 50*l.* an acre. Supposing this repeated every fifteen years, here is an annual rent of upwards of 3*l.* per acre. It is also to be observed, that the price of all the specified particulars will gradually increase; the trees too did not average twenty-five feet per tree; but it is well known, that from that size to a load each, the augmentation goes forward with accelerated rapidity, and it is perhaps no exaggerated estimate, that the real average value would be nearly double the above, or that the annual rent would amount to 5*l.* per acre; of which 4*l.* at least is neither tithed, taxed, nor rated, nor subject, if freehold, to any other burden or deduction whatever. What mode of common agriculture can be

equivalent to this? to stub up such woods would be the excess of folly. Whether any such in this county have undergone this fate, I presume not to say. Nothing but immediate interest, or extreme necessity, could surely ever dictate a measure so destructive and ruinous to both public and private utility.

" The quantity of woods and woodlands in this county I am unable to ascertain; but were I to hazard a conjecture, founded on some degree of observation, I should estimate it at not much less than 50,000 acres. Of these I suppose two-thirds are of inferior quality; but blended with those of prime denomination, may not improbably give us an average annual value, comprehending tops, timber and bark, of 40*s*. or 50*s*. an acre. To this we may add vast quantities of timber in and near our hedge-rows, especially on the richer and more fertile soils of our heavy land farms, which, though detrimental to the profits of the tenant, are highly advantageous to the landlord. Putting all these circumstances together, it is far from unlikely that the timbers of Essex, oak, ash, and elm, grown and growing, constitute an estate, free of taxes, rates, and tithes, worth, at thirty years purchase, not much less than three millions sterling.

" As to the new plantations of woods, strictly speaking, I know not that we have any; we see indeed here and there a few inconsiderable pieces of ground planted with chesnut, ash, &c. and we have also plantations in abundance of fir and forest trees in belts and clumps, &c. for the decoration and embellishment of the grounds of gentlemen's country seats; and hence in time may arise no inconsiderable supply of several species of timber, to compensate, in some inferior measure, for the havock and devastation that have been made of our old self-planted woods. These ornamental plantations have been much

more

more numerous and extensive within the last forty years than in any prior period of equal duration. If this fact needed confirmation, we have, I think, a strong presumptive one in the vastly increased number of nursery-grounds not only in the immediate vicinity of the capital, but also near some of our large towns in different parts of the county.

"The woodlands of Essex are extensive, and would supply a vast quantity of well grown straight timber, could the proprietors be induced to suffer them to stand till they arrive at their full size; but the very distant prospect of seeing young trees become fit for His MAJESTY's dock-yards, the late high price of bark, valuable in proportion to the sap, or growth in the tree, and the real injury they are to the underwood, which we fell every twelve, fourteen, or sixteen years, together with the increase of rent paid for land, preclude all hopes of keeping up our stock of the most necessary timbers, and even seem to threaten the destruction of most of our woods, which are yearly lessened to convert the land into farms. The management of underwood, particularly where the stubbs are young, might, it is presumed, be improved by obliging the woodmen to cut it even with, if not rather below the surface of the ground; by which means the stubbs would produce more plentiful shoots, and afford a quicker growth, besides that the quantity cut would be considerably increased, as it is no uncommon thing to see the old stubbs left a foot or two high, after the wood is felled; and if more attention were paid to the draining of woodlands, the owners would find a good account in it, when the wood next came in course for felling*."

* Messrs. Griggs.

"The land in the parish of Birdbrook is particularly favourable to the growth of oak timber; several fine standards are detached through the pastures, one of which measures at five feet from the ground eleven feet nine inches in circumference. Poplar, maple and plane tree are common to the soil. In Baythorne-hall garden, by the side of the river Stour, a clump of alders justly excite notice and admiration: the largest of these trees (and they run tolerably even) at five feet from the ground, is seven feet four inches in circumference, and is in height from 30 to 35 feet of clear timber.

"A considerable improvement has been made at Finchingfield, by forming walking paths through the wet woodlands: foot drains, or those one spit wide and deep, are there cut parallel to each other, and at the distance of from 18 inches to two feet apart; between these drains the sods that are raised are laid; thus raising a path-way above the general level of the wood, and at the same time forming drains which effectually relieve the wood of its superabundant water: hence a more durable undergrowth is encouraged, and as oak timber is always found to flourish better in woods moderately moist, than those that are wet, there is reason to believe that a due attention to this point, in the wet heavy woodland counties, would prove highly beneficial, and much promote the growth and durability of oak and other valuable timber."

"The woodlands in the higher parts of this country are found very much to favour the growth of an inferior dwarf oak, and hornbeam, though in Danbury park, which hangs to the south, and is situate about midway of the hill, by far the largest and best growth of sweet chesnuts are to be seen of any in the county.

"Hatfield Broad-Oak, or Takely Forest, is about one half

half covered with wood, amongst which, with a great deal of other very valuable timber, is an oak that measures at five feet from the ground, fourteen feet in circumference, and is thought will cut to timber at the height of 90 feet from the ground: one of its branches, near the top, and on its north west side, is a little stagged, but in every other respect the tree indicates sound health and increasing substance.

"The clear rich lands of Woodside Green, and every other part of the forest, which is not usefully employed in the growth of timber, might be materially improved by enclosure for cultivation, or for the purpose of encouraging the growth of oak and other valuable timber.

"The undergrowth of the wood-land is cut once in eleven years, and produces 8*l.* 15*s.* per acre at the stubb. There are 500 acres of forest land in this district, appropriated to the growth of oak and other valuable timber.

"Woods are well attended to; the quantity small; cut at twelve years' growth, worth at the stubb about 8*l.* per acre; consist of ash, sallow, hornbeam, hazel and thorn*."

"This neighbourhood (parish of Boreham) is plentifully wooded. The woodlands, which are generally kept in the hands of the proprietors, are for the most part cut at fifteen, sixteen, or seventeen years growth, and are more or less valuable, according to the quantity of hop-poles they produce, which is the chief article worth attention; as firewood is very cheap, owing to which considerable portions of woodlands are cleared annually, and brought under the plough†."

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* Rev. Mr. Biske. † Anoymnous.

OSIER PLANTATIONS.

" A very profitable kind of plantation is that of osiers, which, within the last twenty years, is very much enlarged in this neighbourhood, and I believe in most other parts of the county, and the profits arising from them greatly augmented, perhaps in some proportion to the increase of our trade and commerce, with which they seem immediately connected, and to which in various ways they are highly subservient.

" That I may give the clearer and more distinct conception of the information I have been able to collect, I will first mention the general soil best suited to this species of plantation.

" The best soil is the marshy moor, well drained, differing in degrees of dryness, according to the several different kinds of osier. Generally speaking, those moors which have been displanted of hops, on account of the high state of manure in which they are left, are the fittest of all grounds. The first operation for the purpose before us is, the soil is digged a full spit, or spade deep, in the course of the autumn, October, November, or December, as may happen to be most convenient or seasonable. The following February, or March the plants, setts, or cuttings, are put into the ground in rows about twenty inches asunder, and the plants about eighteen inches from each other in the same row. From 16 to 18,000 setts, according to the strength or richness of the soil are required to plant an acre. The setts usually are twelve or fourteen inches long, cost 5*s*. or 6*s*. a thousand; they are thrust into the soil by hand, and without even a dibble, and are left about four or five inches above the surface. The expense of digging, the price of the setts,

and

and the operation of setting, cost from 8*l.* to 9*l.* per acre.

" When the plantation is completed, then follows the management whilst growing: they are well hoed or weeded in the course of the spring and summer two or three times, and kept perfectly clean, the growth and produce depending much upon it; and this is well performed at an expense of from 20*s.* to 30*s.* per acre, according to the tendency of the soil to the production of weeds. The same care and attention is equally necessary every succeeding year.

" The next operation is cutting the plants, which is usually first performed in the months of February or March, immediately following their plantation, and the same each succeeding year. This is done with a short hand hook, or bill, cutting the plants as near the stock as may be. They are then tightly bound in bundles or boults, as they are called, of forty inches in circumference at the bandage, which is a foot from the bottom or breach ends. These boults are then set upright in gently running water, ten, twelve, or fourteen inches deep. Should they be placed in merely stagnant water, it would probably soon become putrid, and greatly injure the plants. They remain in this situation till the latter end of May, when they are successively taken out of the water, and peeled by women and children, who in this neighbourhood are paid 2½*d.* a bunch, or boult; with an allowance of small beer and half a pint of ale a day. According to their different degrees of dexterity, they earn at this proportion of wages from 4*d.* to 9*d.* a head per day. A number of peelers standing near each other, or sitting upon stools and chairs, as happens to be most easy or convenient to themselves, a small tub of water is placed by them, into which they dip the rods to make them peel the better,

better, and the rods in peeling are drawn two or three times through the top of a cleft stick or stake fixed tightly into the earth for that purpose. When thus stripped of the bark they are again bound up into boults, after having been sorted according to different sizes, and are ready for market. Those rods which are of the largest size are the most valuable. Four score boults make a load; the largest and best are here sold at 22*l.* the load, the small inferior ones at 18*l.*

"In unseasonable years they cannot be peeled at all, and some persons choose to sell their own growth in all seasons unpeeled, for hampers and coarser sort of baskets; but this mode is not esteemed so profitable for the grower. Unpeeled they sell for only about 10*l.* the load; the peeling costs about 20*s.* a load; and the rods, by being peeled, are reduced in quantity upon an average from a load, or eighty boults, to about fifty; consequently the loss to the grower by selling his rods unpeeled is at least 30*s.* or 40*s.* a load.

"The rent is various, according to the goodness of the soil and plantation, from 50*s.* to three, four, or even five guineas per acre; and this perhaps upon land which in its rough state of pasturage was scarcely worth 10*s.* That this mode of cultivation is highly advantageous to the landlord, there can be no doubt; and if we attend to the produce, it must be no less so to the tenant. The rough rods from the ground of the best and most suitable quality, will produce on an average nearly eight score boults, or two loads per acre; which, at 10*l.* a load, amounts to 20*l.* If we balance this produce against the expenses of every kind, the account will stand nearly as follows:

EXPENSES.

EXPENSES.

	£.	s.	d.	£.	s.	d.
Rent per acre,	4	0	0			
Poor's rate,	1	0	0			
Annual culture,	1	10	0			
Tithe,	1	0	0			
				7	10	0
Produce,				20	0	0
Balance,			£	12	10	0

"This is an enormous profit; but perhaps I have set the average produce too high; I will therefore sink it to 15*l.* which, considering the land by supposition is of the prime and best quality for the purpose in question, is certainly low enough, and still leaves a profit of 7*l.* 10*s.* per acre. If the rods are peeled, 30*s.* or 40*s.* are to be added to this. Can any common species of culture be comparable to this? and as the demand for its produce is daily increasing, from our rapidly advancing commerce, and we have such quantities of almost worthless moorish coarse pastures and meadows, it seems rather strange that it has not more generally attracted the public attention.

Different Sorts of Osiers.

"1. *Osier.*—This is of a whitish light yellow colour, and requires a good dry soil, and the rods peel the easiest of all others.

"2. *French*—is of a brownish colour, delights in a dry soil, very hard to peel, and is therefore left to stand longest in the water; but its rods are the very best.

"3. *New kind.*—Darker brown than the last, thrives most in a moist soil; the rods exceedingly good, but

in general more liable to be diseased than any other sort.

" 4. *Skit.*—A very old kind of osier; requires nearly the same soil as the last mentioned species; red colour; rods good and easy to peel, not unlike the common willow.

" 5. *Cooper Twig.*—An old kind likewise, suited to a moister soil; the rods inferior to the others, yet more profitable to the grower, from a more abundant produce; but the demand for them being diminished, the plantation of them is also gradually decreasing.

Mr. WAKEFIELD, of Burnham, tried osiers in a plantation well fenced and managed in his marsh land, but they all failed: he conceives that either the salt soil or the sea air are prejudicial to them.

MR. VANCOUVER'S TABLE OF WOODS AND FORESTS.

Names of Parishes.	Woods.		Forests.		
	Undergrowth at what age cut.	Value at the Stubb.	No. of Acres.	Present Value.	Improved Value.
	Years.	*s. d.*	*Acres.*	*s. d.*	*s. d.*
Helion Bumstead	10	120 0	.....	....	....
Haverill	10	120 0	.....	....	....
Sturmer	14	200 0	.....	....	....
Birdbrook	15	270 0	.....	....	....
Ridgewell	16	180 0	.....	....	....
Ashen	12	120 0	.....	....	....
Ovington	14	.....	.....	....	....
Belchamp St. Paul's	12	120 0	.....	....	....
Borley	14	.....	.....	....	....
Bulmer	12	95 0	.....	....	....
Little Yeldham	14	140 0	.....	....	....
Sible Hedingham	12	140 0	.....	....	....
Great Maplestead	14	120 0	.....	....	....

Braintree

Names of Parishes.	Woods. Undergrowth at what age cut.	Woods. Value at the Stubb.	Forests. No. of Acres.	Forests. Present Value.	Forests. Improved Value.
	Years.	*s. d.*	*Acres.*	*s. d.*	*s. d.*
Braintree	15	160 0	.....	....	....
Bocking	15	160 0	.....	....	....
Gosfield	12	170 0	.....	....	....
Black Notley	12	.....	.....	....	....
White Notley	12	.....	.....	....	....
Great Leigh	15	130 0	200	5 0	20 0
Felstead	14	120 0	.....	....	....
Thaxtead	14	160 0	.....	....	....
Barnston	16	180 0	.....	....	....
Mistley	15	80 0	.....	....	....
Ramsey	13	120 0	.....	....	....
Allesford	14	90 0	.....	....	....
Stanway	12	60 0	.....	....	...
Great Bromley	12	80 0	170	6 0	14 0
Little Bentley	12	80 0	.....	....	....
Layer Marney	17	90 0	.....	....	....
Feering	12	75 0	.....	....	....
Downham	10	65 0	.....	....	....
Langdon Hills	10	60 0	.....	....	....
Cranham	14	60 0	.....	....	....
Hempstead	14	200 0	.....	....	....
Radwinter	14	160 0	.....	....	....
Little Bury	10	180 0	.....	....	....
Little Chesterford	10	176 0	.....	....	....
Great Chesterford	10	176 0	.....	....	....
Elmdon	10	180 0	.....	....	....
Great Crishall	10	180 0	.....	....	....
Little Crishall	10	180 0	.....	....	....
Langley	16	240 0	.....	....	....
Rickling	11	16 0	.....	....	....
Elsenham	9	180 0	.....	....	....
Berden	10	120 0	.....	....	....
Saffron Walden	12	.....	.....	....	....
Hatfield Broad Oak	....	.....	500	....	....
Waltham Abbey	....	.....	10,000	5 8½	20 0
Totals	13	111 6	10,370	5 6	12 6

Mr.

Mr. MAJENDIE, of Hedingham-castle, has been a very successful planter, and has been twice rewarded by the Society of Arts with their medal.

Ash.—Three acres of moory bottom by the river were planted with ash for hop-poles; cut off at two years' growth for stooling; they were cut at eleven years, when one-third produced 2900 poles, at 30*s.* per 100, or 43*l.* 10*s.* Take this as the produce of one acre for thirteen years, and it is 3*l.* 7*s.* per acre per annum: the next cutting will of course be much more numerous.

Spanish Chesnuts.—Eleven acres of these were planted by themselves, on a rich dry loam around the castle, and here they do best; but where the soil is wet from tenacity or springs, they will not thrive. At two years he cut them, and some of them since to great profit; he gripped the ground into panes; and they are thriving greatly: they make the best hop-poles, exceeding all others in duration. He has planted another acre of them: and half an acre in a belt; also three acres mixed with oak, which have been cut for hop-poles, and produced 1000 of great size at eleven years growth, cut three years ago, and are now thriving abundantly in a new and more numerous production of poles. In this system it is necessary to wait 13 or 14 years for the produce, but it pays exceedingly well. Mr. MAJENDIE remarks, however, that such plantations should be near enough to the proprietor's residence, for the fences being well attended to, as without a certain degree of anxiety relative to these, losses might be great. Ash thrives best on low moist soils: none of them will do on clay.

In 1762 several acres of Scotch pine were planted at Finchingfield seven feet asunder: many are now (1785) in girt near the ground three feet four inches; at six feet high about two feet seven inches, and about 25 feet in height. Soil a stiff clayey loam; value of the ground, 12*s.* an acre.

There

There are very great woods at Hempstead, Bumpstead, &c. belonging to Mr. HERVEY, the member for the county: an acre of copse at 13 years sells for 12*l.*

Many woods have been grubbed in the vicinity of Halstead, &c. Mr. SEWELL 60 acres; on one piece he mucked for cole for the first crop, and got six quarters and an half of seed an acre; then oats eight quarters. The soil a tender loam on a white clay marl. He under-drained and manured previous to sowing any thing.

About Hatfield Peverill, and (according to the account of the Rev. Mr. BRIDGES, of Danbury, who views from his lofty situation a rich circumference of 120 miles) through the whole country, many woods have been grubbed up to great profit. Cole for seed was first sown; then oats; then wheat; the crops immense; insomuch, that the three, sometimes two, and in a few cases even one, paid the value of the fee simple of the old wood: but they yielded badly, not paying at 14 years growth above 5 or 6*l.* per acre.

Twelve years ago Mr. ROGERS, of Ardleigh, grubbed a wood of sixteen acres and an half; he chalked, fallowed, and mucked it all in one year, at an expense of about 300*l.* from that time to this it has never rested, but produced crops of a very different value from any copse: it has, however, in common with his other fields, never been sown with two white crops running. In 1802 it was under tares fed. In 1803 it was drilled with barley at nine inches, and produced eight quarters an acre: in 1804 white clover, which was thin from the greatness of the barley. In 1805 I viewed it under oats drilled at 12 inches with two bushels of seed; a standing crop, but as great as could stand—a very noble crop indeed, reaping by a party of the Ayrshire militia, who had one of their

wives reaping also: a fashion which the Essex women shewed no disposition to copy. *Hum!*—said one of the men—*they like drinking tea better than work.*

Mr. BLYTHE, of Kirby, grubbed a wood in 1801, which in 1802 he sowed with oats; the crop ten quarters an acre. In 1803 it yielded beans four quarters; in 1804 wheat four quarters; and in 1805 oats, apparently five quarters. Next year he fallows and chalks it.

Mr. SAVILLE, of Bocking, has grubbed 40 acres: the first year after, he fallowed it; the second, planted beans; then took wheat; next he fallowed for barley, which crop I saw in 1805, and it was great: clover is sown with it, and wheat will succeed the clover. An old workman of Mr. SAVILLE's has assured him, that 500 acres of wood-land have within memory been grubbed in this immediate vicinity. It has answered greatly.

Above Major CARR's, at Eastwood, in Rochford hundred, is a chain of woods extending to the back of Rayleigh, and to Hadleigh, to the amount of about 2000 acres. Colonel SPARROW, of Huntingdonshire, has the largest space of them; Mr. BRISTO the next; they are cut at fourteen years growth, the whole made into faggots and sent to London, except a few hoops and hurdles. All are in the landlords' own hands; the produce on an average five guineas per acre: coals 46*s.* per chaldron. To grub an acre costs 9*l.* besides the roots 3*l.* more, as Major CARR has found in converting some acres. These he bought at 15*l.* an acre, fee simple.

After grubbing, the ground must be drained and chalked, before it will produce any crops worth cultivating, and then would not lett for more than 15*s.* an acre, as the soil is very strong and wet. The first crop he took on the part he grubbed was oats; the second beans; and the third

third wheat. On another piece first dunged for potatoes, the second barley of this year; the result was, that the oats were good, being six quarters an acre; the barley very bad: the wheat indifferent, about two-thirds of a crop. The potatoes 300 bushels.

At Thundersley, where there is much wood, part of the copse is cut at eleven or twelve years' growth, into lengths of three feet, for burning into charcoal. The burner is paid 20*s*. per 100 sacks, each of eight pecks; he does not cover the heaps with turf or earth, but with rushes, fern, thistles, long grass, weeds, or stubble, which the master finds; but if the burner gets them he has 2*s*. per hundred more. He burns two heaps a week the year round, five cords in a heap; the master buys the wood at 14*s*. to 17*s*. the cord of twelve feet long, three and an half high, and three broad. A team of five horses in a six-inch wheeled waggon comes every week from London and takes 200 sacks.

Sir THOMAS LEONARD, at Avely, has large woods in his hands, but he informed me that they are not valuable, 7*l*. to 10*l*. an acre at fourteen years' growth: no wonder, for they are full of fine timber: few seats are more magnificently surrounded by masses of deep shade, embosomed in noble groves of the finest timber. The first view of the house in the approach from Purfleet, is singularly beautiful for a country not broken by inequalities of surface.

Mr. BRIDGE, at Buttsbury, five years ago grubbed in winter eight acres and an half of copse wood; in the spring he ploughed and planted potatoes; the crop 1700 bushels; gave them, as they happened to be very cheap then, to his cows; they were beneficial in this consumption, but not much so; they gave a wonderful flow of milk, but it

summer-fallowed, hollow-drained,
ing leads an acre of marl, though
and strong, sowing oats, he got
was sown with the oats and dunged,
beans dibbled on every furrow and
a great crop; now wheat is put in, and
order.

wood, in the parish of Fingeringhoe, of 47
belonging to the Earl of WALDEGRAVE, nearly all
was said to be hired at 20*s.* an acre, the te-
at all expenses. Soil a poor gravel.

Osyth are near 1000 acres of wood, which it is
would not pay well to grub up, as the land is not
good quality: the sea banks occasion a very large
consumption of the produce.

Mr. SAVILLE, of Bocking, planted five acres of
mooty land, fourteen years ago with ash, and they have
thriven so greatly, as to promise to be the most profitable
crop on his whole farm.

In the parish of Great Yeldham there are eighty to ninety acres of copse wood, which are cut at twelve years' growth; they yield very few hop-poles; are lett with the farms, in the lump, and not at any acreable rent.

Mr. RUGGLES keeps in his own hands 105 acres of wood at Spaines-hall; it pays him better than any part of the estate. The underwood yields 150*l.* a year, besides the receipt by timber; of this he has cut in 20 years (but the growth of a former period) to the amount of about 2000*l.* still leaving 40 young trees per acre.

He fells about eight acres and an half per annum, which pay him, clear of charges, 18*s.* at 15 years' growth, tithe taken in kind, per acre per annum. Hop-poles are the most considerable article, the price 31*s.* 6*d.* to 36*s.* per hundred,

hundred, with some offal ones at 20*s*. The value of these is indeed so great, as to render oak-timber unprofitable, by insuring this more important growth, the rise in which has been remarkable, from 25*s*. a hundred in 1784, to 36*s*. at present. In 1791, the poles from nine acres sold for 81*l*. From these 105 acres, Mr. RUGGLES, in once going over, will clear away oak-timber to the value of about 4000*l*. which at four per cent. is 160*l*. a year, besides the prodigious benefit of freeing the underwood, from a shade that injures it so much. In order to increase the growth of the ash for poles, he lays down the growth at two years old into vacant spots that want thickening, by bending, and fastening down with a hooked stick, and covering the layer with a little earth. I was also desired to remark, that the timbers were sawn down, not chopped as formerly, by which near a foot in length was lost; and by smoothing the root end with an adze, they shoot again, and become a stubb; the trees, however, are not larger than from ten to fifteen feet each in general.

PARTICULAR TREES.

At Hempstead I viewed two immense oaks, one of which is apparently of very great antiquity: they are unfortunately both pollards, but the size such as must astonish the spectator.

At Gosfield, by the road leading from the turnpike to Mr. THURLOW's house, are two venerable remains of oak pollards: but by the Marquis of BUCKINGHAM's house are eight magnificent elms, well worth a longer walk to view them.

Mr. WESTERN, at Felix-hall, has two venerable oak pollards; one 17 feet nine inches in circumference at

five feet from the ground; the other the same at three feet, as there is a wen at five.

I had much pleasure in viewing one of the three original Lombardy poplars, which Lord ROCHFORD brought from Italy, and planted at St. Osyth above 40 years ago, and from which much the greater part of those which are scattered through the kingdom, originated: it is a very beautiful tree; guessed to be above 70 feet high, and at five feet from the ground measures seven feet three inches in circumference.

Very near it is the largest and most beautiful Portugal laurel I have any where seen; it is almost of a semi-globular form; feathered all round to the lawn it grows in, and is 52 yards in circumference.

At a small distance from these prodigies of vegetation is another at least equal, an arbutus, which would make no inconsiderable figure at Killarney.

In these grounds of Mr. NASSAU, are many other exceedingly fine trees of uncommon growth; which is not surprising, considering the fine rich sound loam they grow in, partaking largely of the fertility of which I have made particular mention.

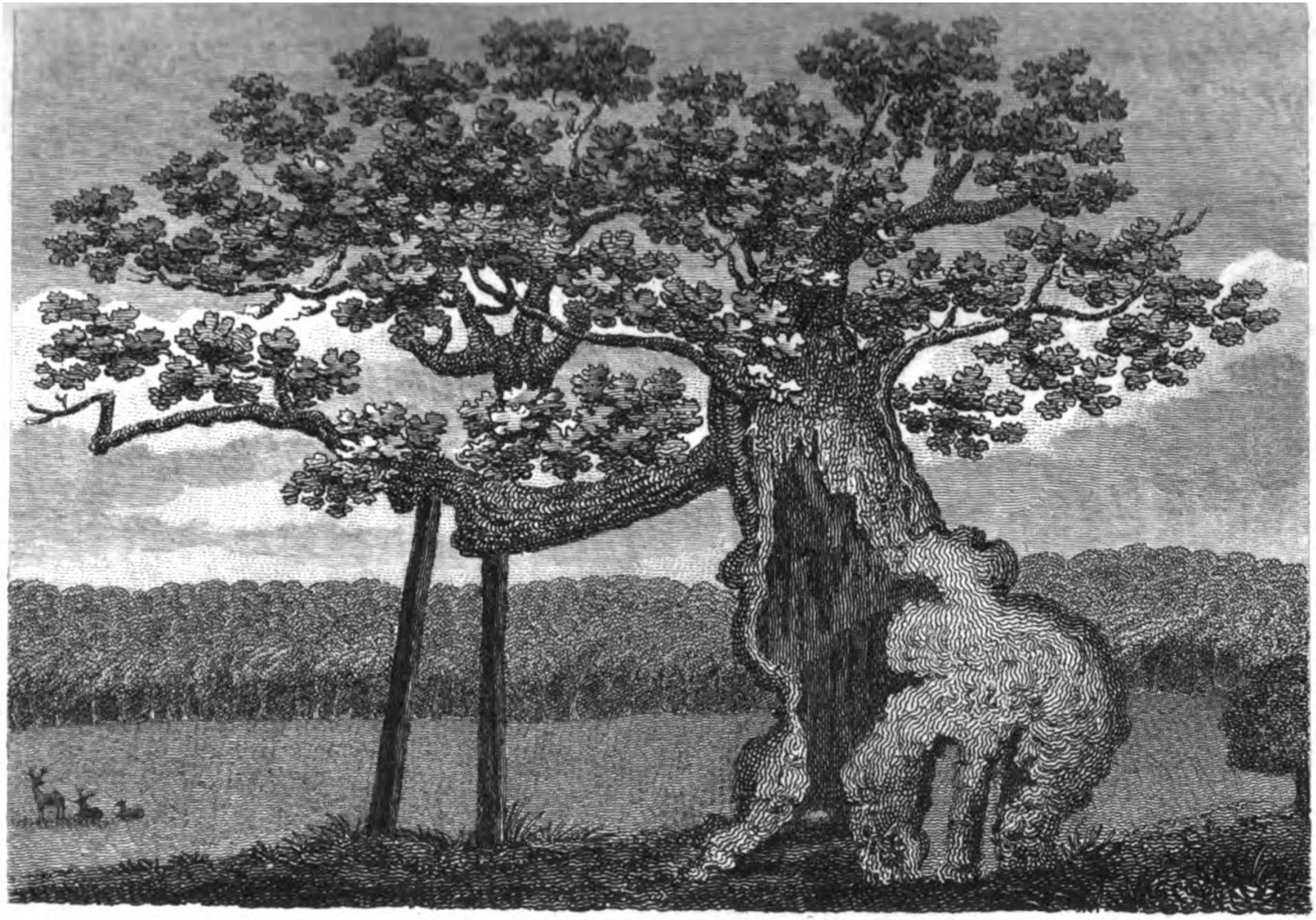
Sir THOMAS LEONARD, at Bell-house, Avely, has some of the finest trees of their sort that are any where to be seen: the abeles are supposed to be the largest in England. The elms are very great.

Lord PETRE, at Thorndon, has sold 13 oaks for 600*l.* at 13*l.* a load including top and bark.

Sir JOHN BARRINGTON possesses in Hatfield forest a very beautiful oak, for which a timber merchant offered 100 guineas.

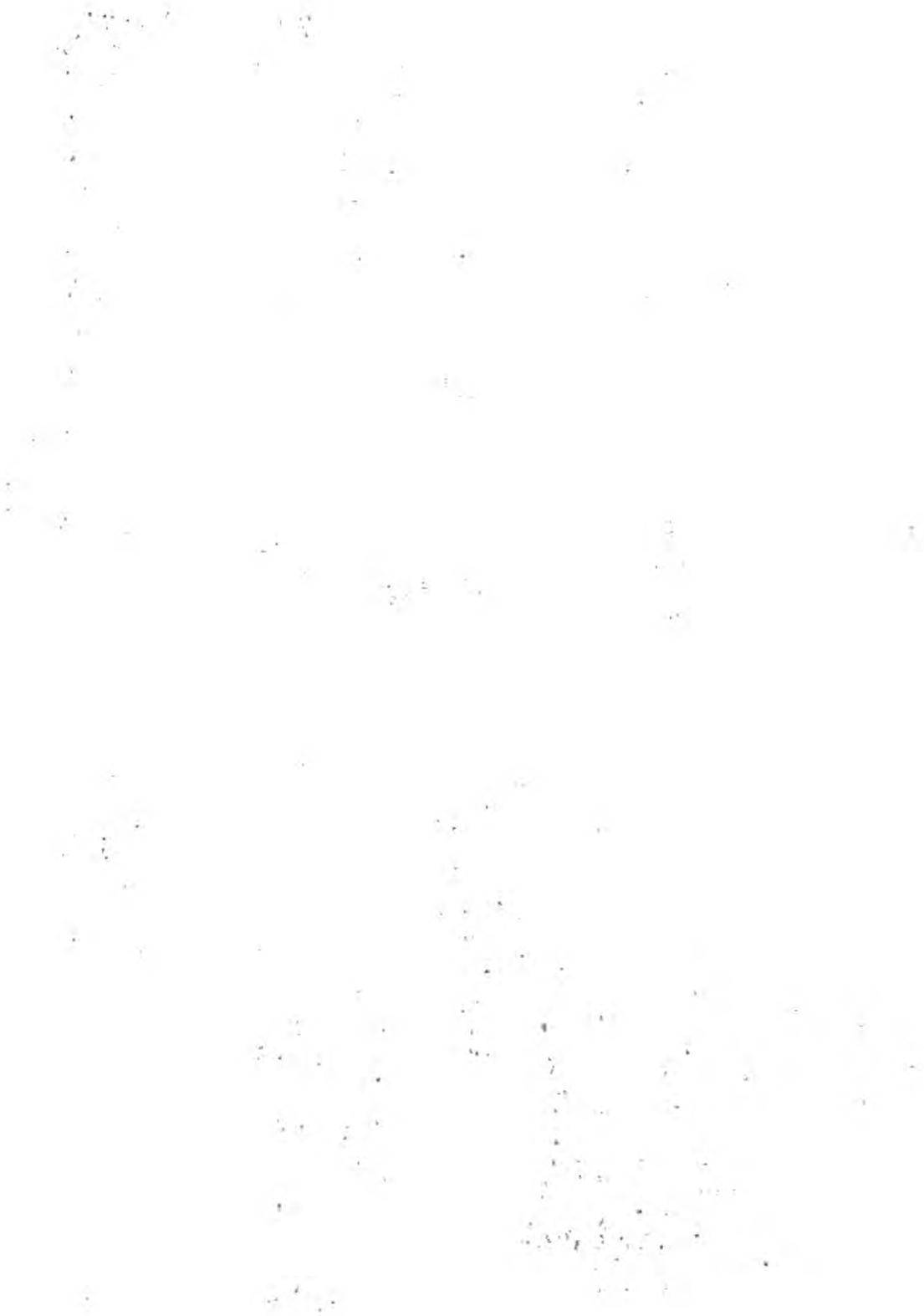
Near it is the ruin of a most venerable one, which gave the name of Broad-Oak to Hatfield *(Plate* XLV.*)*

Mr.



Neele sc. Strand.

Original Hatfield Broad Oak.



Mr. HUBLAND has at Hallingbury, a fine oak thirteen feet six inches in circumference at five feet from the ground.

ALLEN TAYLOR, Esq. of Wimbish, 1792.—Young's Oak at five feet from the ground; it is eight feet five inches and three quarters in girt; and a larch only twelve years old, at the same height from the ground two feet four inches.

1805. Young's oak, eight feet ten inches. The larch five feet one inch.

The oak in thirteen years has increased four inches and an half. The larch two feet nine inches. What a difference!

I hope that Mr. TAYLOR, and those who follow him, will publish the future progress of these two trees.

CHAP. XI.

WASTES.

"OUR waste lands, including the forests, may be estimated at full fifteen thousand acres; the greater part of which is as capable of producing corn, after a certain time for necessary improvements, as the adjoining lands, and would in most instances, it is presumed, be made profitable to the community; could some method, such, for

instance, as passing a general act of parliament, to ascertain rights, be passed*."

"There are in VANCOUVER's first district, two hundred acres of waste forest land, which, by enclosure, may be improved to the proprietor in its annual value 15*s*. per acre. There are one hundred and forty acres of common that, by enclosure, may be improved 11*s*. 6*d*. per acre per annum.

"There are in district 3, one hundred and seventy acres of thicks, or forests, which by enclosing may be improved 8*s*. an acre; and in like manner, there are 265 acres common that may be enclosed and improved 10*s*. per acre.

"There are in district 5, sixty acres of common, which by enclosure are capable of being augmented in their value 8*s*. 6*d*. per acre. And there are 3770 acres of waste commons (including Tiptree-heath) which by enclosure are capable of being improved 10*s*. 4*d*. per acre.

"There are in district 7, 150 acres of waste land, which by enclosure may be improved about its present annual value, 11*s*. 4*d*. per acre.

"There are in district 8, 200 acres of improvable common, which by enclosure may be augmented in its value 9*s*. per acre.

"In district 10, 430 acres of commons, improvable by enclosure 7*s*. 4*d*. an acre.

"In district 11, there are 2520 acres of highly improvable waste land, which by enclosure may be augmented in annual value 17*s*. 1*d*. per acre.

"In district 12, there are 300 acres of improvable waste or common, which by enclosure may be augmented in its annual value 15*s*. per acre.

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* Messrs. Griggs.

"In

"In the Corporation of Colchester, which comprehends sixteen parishes, and of which, Greenstead, Beerchurch, or West Donyland, Lexden, and Mile-end, are the four out parishes, and annexed thereto; about one-third of the arable land lies in half yearly common fields, the enclosing of which, and throwing it into severalty, is much desired by the most intelligent persons in that neighbourhood.

"The adjacent forests of Epping and Hainault, are viewed as an intolerable nuisance, and are equally regarded as such, at Chigwell and at Loughton, where the farmers uniformly declare, that the privilege or commonage is by no means equal to the one-tenth part of the losses they constantly sustain from the deer in breaking down their fences, trespassing upon their fields, and destroying their crops either ripe or green. Against these depredators it is further alledged, that there are no fences, however laboriously contrived, expensive, and formidable against other animals, that will in any wise avail: add to this, that the evil is continually increasing, from the annual increase in the stock of deer.

"These forests, so near the metropolis, are well known to be the nursery and resort of the most idle and profligate of men: here the under graduates in iniquity commence their career with deer stealing, and here the more finished and hardened robber secrets himself from justice, or retires for a time with his plunder from his haunts in London, where his arrest is certain whenever it is determined by the master robber, or the robber-catcher, that the active and actual robber is to be *done*.

"In district 14, there are 2203 acres of commons, which by enclosure may be improved 18*s*. 2*d*. per acre.

"There are in the county 370 acres of thicks, or forest lands, which by enclosure may be improved 12*s*. 6*d*. per

per acre; there are 10,000 acres of the same description of land, not producing or being favourable to the growth of oak, or other valuable timber, in the forests of Epping and Hainault, at present estimated to produce 5*s*. 8¼*d*. per acre; but which in a state of enclosure for cultivation, might readily be augmented to 20*s*. per acre; and finally, there are 14,237 acres of waste common land, which being enclosed, would immediately be increased in its annual value 11*s*. 4¼*d*."

Names of Parishes.	*Commons.*				
	No. of Acres.	*Present Value.*		*Improved Value.*	
		s.	*d.*	*s.*	*d.*
Fordham	20	4	6	14	0
Thaxtead	120	7	6	21	0
West Bergholt	160	5	0	16	0
Great Horsley	300	4	6	14	0
Boxted	360	5	0	15	0
Dedham	220	6	0	16	0
Ardleigh	360	3	6	15	0
Bradfield	100	5	0	16	0
Little Bromley	50	5	0	16	0
Frating	80	2	6	14	0
Allesford	80	2	6	14	0
Wivenhoe	170	2	6	12	0
Greenstead	130	4	0	14	0
Mile End	200	5	0	15	0
Lexden	260	3	0	14	0
West Donyland	26	2	6	15	0
East Donyland	26	2	6	11	0
Fingeringhoe	77	2	6	15	0
Layer de la Haye	230	6	0	14	0
St. Osyth	—	10	0	20	0

Weeley

Names of Parishes.	*Commons.*				
	No. of Acres.	*Present Value.*		*Improved Value.*	
		s.	*d.*	*s.*	*d.*
Weeley	25	4	0	14	0
Great Holland	40	5	0	15	0
Peldon	30	6	0	16	0
Layer Breton	30	8	0	15	0
Little Broxted	3000	2	6	10	0
Woodham Walter	100	2	6	14	0
Woodham Mortimer	100	3	6	15	0
Little Baddow	170	5	0	14	0
Great Baddow	200	5	6	16	0
Chelmsford	50	5	6	16	0
Stock	100	2	6	10	0
Great Burstead	50	2	6	12	0
Purley	60	6	0	15	0
Woodham Ferrars	40	7	6	20	0
Rettenden	350	7	6	20	0
Hawkswell	100	5	0	15	0
Hadleigh	100	4	0	12	0
Ramsden Cray	200	7	0	15	0
Ramsden Bell-house	200	7	0	15	0
South Bemfleet	30	4	0	10	0
Dunton	20	7	6	21	0
Orset	300	7	6	21	0
Bulvan	200	5	0	18	0
Ingrave	100	5	0	15	0
Upminster	100	2	6	12	6
Rumford	1500	5	0	20	0
Great Worley	300	2	6	12	6
North Weald	300	6	0	21	0
Little Bury	20	4	6	20	0
Little Chesterford	200	4	6	20	0
Hadstock	125	4	0	15	0

Names of Parishes.	Commons.				
	No. of Acres.	*Present Value.*		*Improved Value.*	
		s.	*d.*	*s.*	*d.*
Chrishall	125	5	0	15	0
Hatfield Broad Oak	60	5	0	15	0
Harlow	600	5	0	25	0
Roydon	100	4	0	20	0
Nasing	453	10	0	25	0
Chigwell	750	2	6	25	0
High Ongar	100	5	6	21	0
Stapleford Abbot	200	5	0	25	0
	14,237	5	4½	16	8¾

" In no part of the kingdom can the value and importance of land be so great, as within a short distance of the metropolis; yet in this county, to find such extended and compartively unproductive wastes, is not more matter of surprise to foreigners, than a source of real injury to the kingdom at large. The journal has already expressed so fully the present value, and the probable improvement of which these lands are capable, that little further remains to be noticed in this place, than a few observations touching the expediency of keeping such parts of the forest land as are favourable to the growth of oak timber, expressly for that purpose.

" The right of cutting wood, varies in different parts of the forest; and where it is left to the discretion of the inhabitants, nothing but mutilated hornbeam pollards are to be seen, whose heads are cut whenever a few faggots can be collected from them.

" No bushes are there allowed for the protection of the young plants, without which, a succession of trees cannot

cannot be preserved against the bite of the deer and other animals.

" On that part of the forest, within the parish of Epping, consisting of 527 acres, the lord of the manor has by different grants from the crown, the exclusive right of all timber, underwood, and bushes. The land is well adapted to the growth of wood in general, more particularly to that of oak, which by the judicious management of the present possessor, is in a very flourishing state.

" The soil of the forest is either of a brick earth, or a cold gravelly clay; and (as was observed) the deer have increased very much of late years, not to the advantage of the neighbouring farmers, whose crops of hay and corn are certainly much injured by them.

" Nearly, perhaps quite, ninety-eight parts in one hundred of the lands in this county have been enclosed time immemorial*; there are still, however, Mr. VANCOUVER informs us, 10,000 acres of forest land, which at present is worth only about 5*s.* 8*d.* an acre, but by enclosure and due cultivation, might be worth 20*s.* per acre; and that there are between fourteen and fifteen thousand acres waste common land, which, by being enclosed, would be immediately increased in annual value 11*s.* 4½*d.* This on a very moderate estimate, would increase the aggregate improved produce to the community at large, more than 50,000*l.* a year, and to the immediate proprietors not

* The forest of Essex, in the reign of JAMES II. extended almost over the whole of the county, and though since that time it has been very much diminished, yet I conceive Mr. VANCOUVER under-rates the number of acres, now remaining, and large tracts of commons continue unenclosed, though emancipated from the forest laws; so that the number of acres to be enclosed certainly exceeds what he states them at.—*J. C.*

less

less than 12,000*l.*: considerations of high importance, private and public*.

" So much has been said on the subject of enclosing, both in the several County Surveys, and other recent publications, and their beneficial tendency towards the improvement of agriculture and the increase of population, salubrity, &c. so clearly and satisfactorily proved, that it is quite unnecessary to add any thing further†."

" That enclosures of any lands that had lain in an uncultivated state, should have been ever subject to the whim and caprice of a single individual, is a very striking mark of the ignorance of the times when such laws were made; and which it might be expected, the present generation, from the very great and important information received from men who, in the cause of humanity, have exerted their abilities in such manner as to do honour to human nature, would not suffer long prejudice so far to operate on their minds, as to wish to continue so absurd a system; but that the legislative power would immediately pass such a law as would enforce the regulations which rendered Essex an enclosed country. As the waste lands in all counties are the property of the whole body, that part of the whole body politic appointed to govern all (if they consider the general good), will make such laws respecting the good government of the whole, as shall have the most salutary effects. As all the lands remaining uncultivated in any country, are not the property of any individual while they remain in that state, it might be wise, and it certainly would be of infinite profit to the nation at large, to have them cultivated; as all the produce must come to market; and whether the

* Vancouver. † Howlett.

interests

interests of an individual, or the good of the whole is considered, they must turn out advantageous. At present, they remain in a state of nature, and are productive of no one good; when the legislature might, by a proper mode of regulation, and giving proper assistance to the poor cottager, enable him in the course of a few years to live happy and comfortable, to support a family with decency, and instead of his children becoming burthensome to the parish on which he resided, contribute to the support of the aged and infirm, the only people who ought to want any support*.

"If we consider the real situation of waste lands, and that they are not, nor cannot be deemed the property of any other than those who convert them into use, and render them serviceable to the state in which they lie, and as the jarring interests of individuals constantly prevent this salutary measure taking place, if the Legislature would empower the parties to divide those lands into portions, and enable the proprietors to improve them, it would mutually assist each other's interest, and increase the real wealth of the state; and by the great increase of inhabitants that must necessarily take place on the cultivation, would render certain objections made to the improvements on Epping-forest, null and void, as the improvements would be made as much from the number of inhabitants as from the wealth of the proprietors, and would always keep pace with each other; would be done at a trifling expense, as the labourer would be in the sure and certain hope of receiving his due reward, and would doubly exert himself to bring the land into that state that would more than doubly repay the expense. The rent received by a landholder does not alone constitute his real wealth; it depends also on in-

* Annot. MS.

creasing

creasing the number of his tenants, and every one of these that he has enabled to enrich his land, and to live comfortably, must always view him in the light of a father, and be at all times ready to sacrifice his life in his defence, from every motive that gratitude and self interest can dictate; as, from his having an interest in the state, he conceives himself a member of it; his assiduity will increase his prosperity, will increase his attachment to his country; and should it ever so happen that his country should be invaded, the cultivation of the waste lands under proper regulations and divisions, will be found to be the most effectual and the most safe and certain means of defence. The peasant who derives his support from the produce of the earth and his own industry, would lay down his life in its defence and support*."

EPPING.

"This forest was formerly called the Forest of Essex, being the only forest in that county, and anciently comprehended the whole of it. By a charter of grant of King JOHN, dated 25th of March, in the 5th year of his reign, and confirmed in the 8th of EDWARD the Fourth, all that part of the forest which lay to the north of the highway from Stortford to Colchester (very distant from the present boundaries) was disafforested. The forest was farther reduced by a perambulation made in the 29th of EDWARD the First, in pursuance of the *Charta de Foresta*; but the metes and bounds of it were finally, by an inquisition and perambulation taken on the 8th September 1640, by virtue of a commission under the Great Seal of England, in pursuance of the act of the 16th of CHARLES the First, for settling the bounds of the forests.

"The boundaries fixed by that perambulation, of

* Fieldhouse.

which

comprehend twelve parishes lying wholly within the forest, and parts of nine other parishes, which are situated partly within, and partly without the forest, viz.

Parishes wholly within the Forest.	*Parishes partly within the Forest.*
Wanstead,	Chinkford.
Layton,	Stratford,
Walthamstow,	East Ham,
Woodford,	West Ham,
Loughton,	Little Ilford,
Chigwell,	Great Ilford,
Lambourn,	Barking,
Stapleford-Abbots,	Dagenham,
Waltham Holy Cross,	Navestock,
Epping,	Theydon-Bois.
Nasing,	

" We found in the office of the Surveyor-general of the Crown Lands, an ancient plan or draught of the forest, delineating the bounds according to the perambulation in the 17th of CHARLES the First, and the nine walks into which it was then divided; but not distinguishing the open from the enclosed lands, or the private property from that of the Crown; nor describing the contents of either; we have therefore endeavoured to form an estimate of its general contents, from the map of the county of Essex published in the year 1777, from a survey taken a few years before, in which the bounds of the forest, and the division between the open and enclosed lands, are described. According to a computation made from that survey, the forest contains, in all, about 60,000 statute acres, of which about 48,000 acres are the estimated con-

tents of enclosed private property, and the remaining 12,000 acres the amount of the unenclosed woods and wastes.

" The Crown has in this, as in other forests, an unlimited right to keep deer in all the unenclosed woods and wastes within the perambulation, unless some parts have been disafforested by grants which have not come to our knowledge; and the owners and occupiers of lands within the bounds of the forest have a right of common of pasture for horses and cows, no other cattle being commonable in the forest. Those within the parishes of Stapleford, Lambourn, Chigwell, Barking, and Dagenham, and at Woodford-bridge, within the parish of Woodford, turn into the part called Hainault forest. The cattle are sent in as early in the spring, and remain as late in the winter, as the owners choose; but the forest is constantly cleared of them during the fence month. The cattle are marked by the reeves of the respective parishes, with a particular forest mark for each parish; and we are informed that the general rule has been, to admit one horse or two cows for every 4*l.* of annual rent; but that, in some instances, the reeves have marked cattle in proportion to the value of newly-erected houses, which we conceive to be an infringement of the rights of common appertaining to ancient messuages and lands, as well as of the rights of the Crown, by surcharging the forest.

" We have received representations from the owners and occupiers of lands in twelve parishes within, and adjoining to the forest, of the injury they sustain from the deer; and requesting that we would recommend to the Legislature the disafforestation and enclosure of the forest, or that the deer may be removed, or confined within a park, or parks. These representations are signed by more than two hundred persons, among whom

whom are several of great property, and of the first respectability.

" On a survey of the timber in the King's woods, taken in the year 1783, it was found that the whole number of oak trees, from ten feet upwards, was 11,055. Of these, 2760 were reported to be trees of thirty feet and upwards, and to be fit for the use of the Navy; 7825 were young trees, from thirty feet down to ten feet each; and the rest scrubbed and unthrifty. On the whole, the number of oaks was less than four trees to the acre, and of those thirty feet and upwards, less than one to an acre.

" The surveyor whom we employed to take a plan of these lands, represents the greatest part of them to be of a strong loamy soil, very favourable to the growth of oak timber; and that even those parts which are of a lighter soil, are productive of fine oaks. The situation of the forest, for convenience and cheapness of carriage of timber to the dock-yards, is the most favourable of all His MAJESTY's forests, being only three miles distant from Ilford-bridge, whence the river Rodon is navigable to the Thames.

" From many circumstances stated in the preceding part of this Report, it appears obviously to be for the interest of the public, that the part of this forest called Hainault, in which the soil, timber, and wood belonging to the Crown, should be retained and improved as a nursery of timber for the supply of the Navy.

" That part is situated so near the river Thames, that the expense of the carriage of the timber to the dock-yards could not exceed *5s.* the load, which is less than the expense of carriage from any other forest to any of the dock-yards; and it is so near to London, where the office for the general superintendance of the forests must be kept,

that it may be frequently visited by the principal officers, without much loss of time or expense.

"The great size of some of the trees now growing upon it, affords a convincing proof of the peculiar fitness of the soil for the growth of oak. The money necessary for the enclosure and improvement, may be raised by the sale of part of the old trees, which ought to be removed as soon as enclosures shall be made to protect the future growth. There are some thriving trees, which, if preserved from injury, would, at no great distance of time, become useful for the Navy; and the underwood, which must always find a ready sale in London, would yield a larger fund than would be required for the payment of the officers necessary for the care and protection of the property of the Crown*."

"It has been proved of late years to be very possible to raise oaks in this forest, even in its present unenclosed state, by no other exertion whatever than that of preserving the bushes. On those parts where a general devastation of the timber has been prevented, there are ocular proofs remaining of what the land can produce; and the experiment that I have made on about 400 acres, justifies me in the opinion, that it is extraordinary good woodland; the part I allude to, about 14 or 15 years ago bore the most wretched appearance that can be described. It is to be lamented, that a survey of the various rights and soils on the forest of Epping, and the sorts of trees inclined to grow upon it, has not been made an object of peculiar attention, that the public, and the Board of Agriculture, might have been led to have formed

* Fifteenth Report of the Commissioners of Land Revenue.

an opinion, whether this extent of country, the extremities of which border almost on the Thames, and on the river Lea, and approach to within six miles of the metropolis, would be best under the plough or in a state of woodland. As to the enclosure of it, all must wish for such an event, who are witnesses to the evils arising from its present state of barbarism."—*John Conyers, Esq.*

Upon the enclosure of the two Chesterfords, there were about 200 acres of commons broken up; most were pared and burnt, and the success great; but some were dug at the expense of near 5*l.* per acre, as the Rev. W. MACKLIN informed me, for oats, and the crop proved bad. One acre was dug and planted with potatoes, and eaten up by the grubs.

CHAP. XII.

IMPROVEMENTS.

THESE have in few counties been greater than in Essex: if it be true that forests, wastes, and commons, extended nearly over the whole county so late as the reign of JAMES I. the change has been great and rapid indeed; whatever the amount, the great work has been effected by,

1. Draining,
2. Manuring,
3. Embanking,
4. Paring and burning.

SECT. I.—DRAINING.

"THERE is no improvement to which the heavy land husbandry of this county owes so much, as to the fortunate introduction, and continuance of the practice of hollow-draining. The means of melioration, and the consequent sources of fertility thence derived from the soil, over and above what it formerly yielded, are not more important and valuable in the present day, than permanent and precious, as they must prove in their consequences hereafter. The few instances of invincible blindness to the beneficial effects of this excellent practice, go no further than to prove, that where the work is properly executed, it never ceases to fail in producing the desired effect.

"To complete an improvement of this nature, much is necessary to be attended to. If the field proposed to be drained lies greatly upon the descent, every care should be taken to make the drains bear sufficiently horizontal, in the first place to prevent a too precipitant fall of the water, by which the bottoms of the drains would be worn uneven, and a temporary obstruction occasion them to blow; and secondly, because the more perfectly horizontal is the field, so that it lies level free, and affords a sufficient fall for the water, the less occasion will there be for the same number of drains as would be required upon a soil of equal closeness upon the side of a hill: the drains in the field that lies nearly level, drawing equally well upon each side; whereas those on the hang of a hill, drawing only from the higher sides of the drains, and consequently requiring them to be made much nearer or closer together.

"The stratum also through which the drains are to be made,

made, is a point deserving very particular attention; for when it is such as forms a very close and retentive clay, the drains should be made proportionably near to each other, shallow, and filled with straw only; it being totally unnecessary to use wood, or any more durable material upon land, where the sides of the drains are not likely to crumble in; upon a soil like this, the drains should seldom exceed the distance of three or four yards apart, and 20 inches deep, or such a depth as may be the most conveniently obtained, by first opening the drains with the plough, shovelling the bottom of the lowest furrow, and then digging one spit only with the land ditch spade; and which, materials included, will cost about 2*s*. 6*d*. per score rods.

"Drains formed in this manner, through the tough and retentive clays, will be found in a short time after the work is finished, to have formed over the straw with which the drain was filled, an arch of sufficient strength to support the incumbent weight of the soil, and the casual traffic of the field. In 12 or 18 months it may be observed, that the straw being of one uniform substance, is all rotted and carried away, leaving a clear pipe through the land in every drain into which the passage of the water may have been much facilitated, by a due attention to the filling of the drains with the most friable and porous parts of the surface the field might have afforded. From the price above stated to 2*s*. 6*d*. per rod, is the expense at which this most important of all improvements to the wet heavy lands, is conducted in this county*."

"The Rev. H. B. Dudley observes, that hollow-draining

* Vancouver.

in his parish of Bradwell, has not long been practised; but is now becoming general; the ditches are cut a rod asunder, from 20 to 24 inches deep; and well filled with wood and straw, at from 4*s*. to 5*s*. per score rods."

"One of our most beneficial and permanent modes of improving land, not universally known, is, by land-ditching or under-draining. Where this process is intended, it must first be considered, whether the soil is sufficiently porous to receive benefit adequate to the expense of it, as, in very strong ones, this sort of drain is not found to answer. But where the water can readily sink 18 or 20 inches in the land, the farmer draws a furrow from the highest to the lowest part of his field, then digs out a spit, and again with an instrument three inches wide, made for this work, digs fourteen or fifteen inches deeper, and with a bent scoop made for the purpose, takes out all the loose earth, and thus makes a narrow channel along the centre of the furrow, leaving a sufficient shoulder on each side, to support a quantity of wood and straw, which is put upon them, to prevent the earth, which is now replaced, from falling into the narrow passage left for the water. These ditches are made at various distances from each other, from one, to two or three rods, and of depths, from one to two feet, and upwards, according to the necessity there is for them, and the nature of the soil through which the water has to make its way to get at them, and are made to empty themselves into deep ditches at the bottom of the field; or where the field is large, one or more leading land-ditch is made sufficiently large to receive the water from several of the smaller ones, which are then contrived to flow into them; where wood is scarce, small round stones have been successfully substituted for it. To make these ditches of more

more permanent use, they should be cut straight, and the passage for the water made of an equal depth throughout, or it will stop in the lowest parts, and occasion the sides to fall in and choak the drain. Where the soil is adapted to it, this work will last 20 years; but where there are squails, with sand or drift gravel, the passages are apt to choak in a short time. The plough, waggons, &c. go over these drains without doing them the least injury; and, in parks, and old pastures, it is not uncommon to turn the sod over the water channel, without either wood, stones, or straw; and the ditches are seen to work, or *draw*, as we call it, as well, after running 30 years, as they did at first. The better appearance and real improvement of the land are too obvious to be a moment doubted, by those who knew the land before and after this method has been used*."

ESSEX UNDER-DRAINING, BY L. MAJENDIE, ESQ.

" 1. The course of the drains being determined upon (on which the greatest judgment and attention are requisite) *(a)* they are drawn out by a plough with four, and often six horses, a suitable depth *(b)*; the small, or land-ditch spade, is then used, *(c)*, with which the drains are formed, in depth twelve inches, which, added to that first obtained by the plough, is generally quite sufficient.

" 2. The drains, when spitted, are filled with spray wood coveredwith straw *(a)*, and the earth is shovelled, which completes the operation. Some farmers, to decrease expense, use haulm instead of straw, and some ex-

* Messrs. Grigg.

clude

clude the wood altogether, using only straw, or haulm, pressed hard with a spade into the drains; but this last is a very inferior practice. The best and most usual way is, to fill with good spray wood, which is covered with wheaten straw twisted or spun into long bands or ropes, with a simple instrument now in possession; these ropes are expeditiously made, and when duly pressed into the drains, give them a firmness and durability superior to those where the straw or haulm is loosely put in.

" 3. The usual distance between the drains in Essex is one rod, but in very stubborn soils, especially in those where the under stratum is a stiff blue clay *(a)*, I have found it advisable to make the drains at half a rod apart; the increased expense is amply repaid by the superior dryness of the land.

" 4. It is found by experience, that the drains are best when narrow; the small, or land-ditch spade, should there be made gradually tapering from the shoulder to the bottom, and which should not be more than one inch at the most in width *(a)*. The expense in wood and straw are also by this means diminished.

" 5. The fewer outlets from the main or receiving drains into the ditches of the fields, the better; these should also be frequently visited and kept open, or the drains in the field will blow. These general outlets, without such attention, are frequently stopped up by the treading of cattle or other accidents *(a)*.

" 6. It is advisable to fill up the drains with wood, &c. *daily*, as they are dug, to prevent the sides in dry weather from crumbling, and falling to the bottom of the drains. When stones occur in digging the drains, they should be taken out by the pick-axe, or broken with an iron crow, or they will stop the current of the water.

" 7. It frequently happens in digging the drains, that the

the spit of earth arising with the small spade, besides being of a different quality from the upper stratum, is of a nature highly calcareous: in this case it is usual, and reckoned good management, not to fill up with it, but to spread it thinly and evenly over the adjacent surface as a manure, using instead of it for filling up, some of the upper stratum *(a)*.

"8. The spray wood should be of a sufficient age; thus wood felled at eighteen years growth, is found greatly more durable in land-ditching than that of twelve or fourteen years growth.

"9. It is particularly desirable that the farmer should fill up the drains by his own servants, on whom he can rely, and not to let this part of the operation to the ditcher. Much injury has arisen from the neglect of this necessary precaution. The drains have either been improperly filled up, or perhaps only with earth; it has been frequently discovered, that the drains, after being dug, have, in the absence of the employer, been filled up with earth, and the wood taken away in the night.

"The labour of digging these drains has been attended with the following expense to me, viz.

Digging the drains with the small or land-ditch spade, per score rods, ...	20*d.* to 24*d.*
Digging the main drains, which require one full spit before the small spade is used, per score rods, ...	3*s.* to 3*s.* 6*d.*

"In this manner the under-draining one acre (the drains at one rod apart) has, including wood, straw, and all other incidental charges, amounted to an expense of from forty to forty-five shillings *(a)*.

"The advantages of this practice are fully known and acknowledged in Essex; the greatest exertions are made in

in it, and the operation is, I believe, in few counties better or more durably executed."

Upon this detail, Mr. HOWLETT makes the following observations.

"1. *(a)* This is exceedingly just, and I may even further observe, that the nicest eye and most accurate judgment, cannot always determine from a single inspection, and without viewing the land in all seasons of the year, which is the properest direction for the drains. It is necessary attentively to survey it in every variety of weather, wet and dry, after rain and snow, especially upon the melting of the latter. By this various attention, you will not only discover which parts of the field are wettest and which are driest, as well as the general natural course of the water, but also those several swamps and sinkings which are often to be found upon the smoothest and most level surface, and which the judicious farmer will endeavour from time to time to fill up. For if a straight line, drawn upon the surface of the field, be not perfectly parallel with the bottom of the ditch, the depth of the drain will be different in different places, which will perpetually tend to produce obstructions to the free course of the water.

"Supposing the ditches made in the properest direction, should there be a necessity to repeat the operation at any subsequent period, as undoubtedly there will, this best of all directions must be considerably deviated from, as it will be expedient the new ditches should cross the old ones; for this obvious reason, the obstructions generated in the old ditches are not universal, nor formed all at once, but gradually and in particular places; and here it is that they blow up, as they call it; but the new ditches coming across the old ones, readily take off their little remaining stagnant water. To ascertain precisely the

angle

angle at which the cross-cutting should be made, is more difficult than it was to fix upon the properest direction in the first instance. I know a skilful and ingenious farmer, who usually adopts the following mode to facilitate the decision. He places a trough upon the surface of the field, or else exactly parallel to it, and putting in a small quantity of water, he turned it to every necessary point of the compass, nicely observing in what direction the water flows in the properest manner.

" Before I quit this part of the subject, I may make this general observation; that in order to settle the direction of the drains in either of the above cases, the grand object is to fix the due medium between that which will give the most rapid, and that which will give the slowest and most sluggish current to the water; the former will wear the channel too fast, the latter may approach too near to perfect stagnation.

" 1. *(b)* We are not here told what this suitable depth is. This depth is very different in different soils, and according to the different purposes in view. I have sometimes seen it scarcely six inches, and sometimes nearly twelve. The one or the other depends partly on the texture of the land, and partly upon the number of times the plough is made to go in the same drain, and the weight laid upon the beam to force the share and coulter down into the earth. A very common mode of drawing, is this: the direction of the drain being determined, a common foot plough, with four or six horses, draws the furrow; and that the earth may be thrown as far as may be from the breast side of the plough, a strong board is nailed and firmly fixed upon the upper and hinder part of it. At the end of the furrow the plough turns and makes another furrow, in the same manner as the former; but throwing the earth, of course, the contrary way, and leaving, at the

the same time, a baulk between the two furrows of about eight or ten inches wide. The plough, in its next return, splits this baulk, and throws half of it on one side, and in succession throws the remaining half on the opposite side; and now there remains only one drain or furrow. In this the same plough, the side board being taken off from the breast, or another plough somewhat narrower both at foot and breast, and extremely firm and strong, is drawn, loaded with as much weight upon the beam as it will conveniently bear, or the six horses are able to draw along. By these means, that is, by the plough going six times backwards and forwards, a depth is sometimes obtained of ten or twelve inches. But it appears to me indubitable, that with a double-breasted plough of strong and fit construction, and a strong board properly fixed upon each breast, the same might be effected by going only three times instead of six. Regard, however, must certainly be had to the different firmness and tenacity of the soil.

" 1. *(c)* This depends entirely upon the number of spits, or single depths made by the spades after the drain is formed by the plough; sometimes only one spit is taken, sometimes two, and sometimes even three. When there is only one, undoubtedly the land-ditch spade alone is used, after ploughing the drain; if two, the first spade to be used is what is here not uncommonly called a three-quarter spade, being about ten or twelve inches deep, and six inches broad at the bottom; then follows the land-ditch spade, from ten to thirteen inches in depth, and from one to two or two inches and an half at the lower end or point. If three spits are successively dug, the first or upper digging is with the common spade, which is at least eight inches broad at the bottom; next follows the three-quarter spade, as above described. This last mode

mode of ditching was the common one sixty years ago, which was nearly as far back as the commencement of the practice, and is still eagerly contested by some of our farmers; and if they limit their views to particular soils, they are probably right. And indeed the propriety or impropriety of any of the methods above represented, must be determined by the depth and texture of the several strata of earth beneath the surface. If the upper stratum be tolerably loose, and not too much so to the depth of about twelve inches, and the next ten or twelve inches be a strong tenacious clay, fit soon to form a durable pipe or channel, the land-ditch spade alone may be sufficient, the furrow being previously made by the plough as deep as possible. Though even in this case, I am inclined to think that two spits are generally preferable, as for other reasons, so especially because they more effectually prevent the ditches from being broken and cut through by the uncommon trampling of horses in wet weather, and the pressure of waggons heavy laden with corn, timber, &c. Against the latter, even two spits will not always secure them. The most absolute and complete security is obtained by three spits. The bottom of the ditches so made must be about 30 inches from the surface. The expense of this last method is proportionably higher than either of the other two.

"2. *(a)* The necessity of filling up with both spray and straw, depends very much upon the texture and consistency of the soil in the lowest stratum. If that be sandy, gravelly, or of any kind incapable of being formed into a durable and permanent pipe, spray or bushes are certainly necessary; as the passage of the water along the drain is in this case effected by mere filtration through the interstices between the twigs and branches of the spray. In this case likewise, it is best that the straw laid upon it should

should be twis d into ropes, as it will thereby be rendered more durable, and the mould above be the longer prevented from dropping down and mixing with the spray beneath, and of course from obstructing the flow of the water, and of gradually stopping it altogether. But if the lowest stratum be of strong tenacious clay, the spray is quite unnecessary, and the straw or haulm need not be twisted into ropes, because the looser it lies the sooner will it rot, and it cannot rot too soon, provided the pipe or channel of clay be once formed. This being completed, the water no longer finds its way by filtration, but by freely running along the clay pipe as through a pipe of lead. Land-ditches thus filled up with haulm or straw, where the lower stratum is of this most favourable consistence, have been known to last 40 years.

" 3. *(a)* In my conception, the distance of the drains depends not at all upon the quality of the *under-stratum*, but entirely upon the *upper-stratum*, or strata. If these be sufficiently loose to let the water pretty readily sink through them, it soon passes by soaking or filtration sideways into the drain, or pipe, and runs off. And I must observe, that some lands are so stiff, and stubborn, and deep, in these superior strata, that no under-drains, be they ever so near together, can lay the land properly dry; but to accomplish this desirable purpose, open ditches become absolutely necessary. And this satisfactorily evinces the truth of those several instances Mr. VANCOUVER has given of land being again and again under-drained without producing any beneficial effect. At the same time it is readily acknowledged, that soils of an intermediate consistence may be laid dry by under-drains of only half a rod asunder, which could not be rendered so by those of a rod.

4. *(a)* Besides the *land-ditch spade*, there is also the *land-*

ditch

ditch hoe, an implement of nearly as great importance as the spade itself. It is almost of the same shape, and the same length and breadth, excepting that it is of necessity somewhat narrower, that it may the more easily go to the bottom of the drain. Each side is turned up about half an inch, formed into a rather thin feather-edge, and becomes a kind of spoon. The under parts of the two sides are as round and smooth as may be, to facilitate, and give as little obstruction to its movement in the drain as possible. The use of it is to take up the crumbs and loose pieces of the soil, which, after the utmost care and management with the spade, are always left behind. To render it the more commodious for this purpose, a handle is fixed into it in a slanting direction, so as to form an angle with the hoe, as nearly as I can conjecture, never having actually measured it, of from 35 to 45 degrees. With this instrument the ditcher very easily renders the drain exceedingly clean: going backwards either on one side, or astride the top of the ditch, as he finds most handy, and drawing the hoe or spoon after him along the bottom, and throwing out the mould or loose earth on either side, as occasion and convenience require. The drain being thus made properly clean, it is surely of some importance that it become as little less so as possible, by putting in the materials with which the lower part is filled up. And this I apprehend is better effected in some proportion to the *softness* of those materials; and is one reason why I should be inclined, upon a suitable soil, to put in straw of any kind, whether of wheat, pease, beans, barley, in preference to wood, and even to adopt the sentiment of a farmer in this neighbourhood, who assured me, 'that were any one to bring him spray into the field he was land-ditching, and offer it him for nothing, he would not accept it, persuaded that straw lone is much better.'

" However, the most zealous contenders for the superiority of straw alone, readily acknowledge the expediency of a little wood at the nooks or issues of the cross ditches, where they empty themselves into the leading ditches, and likewise in the whole of the leading ditches themselves. And this idea is perfectly consistent with the other. The issues of the cross ditches to about two yards up the descent, is considerably greater than in the higher course of the drain; the water rushes with greater rapidity and force into the leading ditch, where meeting with a body of water of from two to almost 20 times its own size, recoils, and forms a kind of whirlpool: the joint operation of the whole is to wear away the internal soil, to generate obstruction, to choke up the clay pipe, and make it expedient to lay something more strong and firm than mere earth. Accordingly, some of the more thinking and ingenious of our farmers, place at the necks or issues of the cross drains, either a wooden pipe, made by nailing four narrow slips together about four feet long, so as to leave a hollow of from three to four inches square; or which is better still as being more durable and permanent, a brick pipe of nearly the same length, made expressly for the purpose at a brick-kiln. Similar reasoning to what thus shews the propriety of placing something more durable than straw at the issues, and cross ditches, is equally applicable to the whole of the leading ones.

5. *(a)* The whole of this paragraph appears to me extremely judicious; and I have only to remark, that it is a pretty general rule, for a leading drain to receive the cross drains of about two acres. But this must doubtless be subject to variations, according to the different degrees of wetness and consistence of the soil, as well as declivity of the land.

" 6. *(a)* I think this calcareous earth should never be spread

spread upon the surface, and the upper stratum substituted in its place to be laid immediately upon the straw; unless the upper stratum be of a consistence equally firm and tenacious; in that case, the substitution may be highly beneficial.

"7. *(a)* The expense of land-ditching, even when the drains are a rod asunder, will vary, according to difference of soil, and the different modes adopted, from 30*s.* to 3*l.* 10*s.* an acre.

"I forgot to remark in its proper place, that after the straw, or wood and straw, are put into the drain, the earth thrown out is very commonly returned into it, not by the shovel, but by the plough going on each side, with the breast towards the drain, which finishes the work, not only more expeditiously and economically, but, if well and skilfully done, altogether as completely*."

MR. A. TAYLOR'S METHOD.

"Since writing the above I have, in conversation with Mr. ALLEN TAYLOR, a gentleman farmer in the parish of Wimbish, about ten miles from hence, received an account of one of the best and completest modes of land-ditching close heavy clayey soils, I have ever met with. I will endeavour to describe it with as much correctness and accuracy as mere memory, for I took no minutes, will enable me.

"He first marks out the course of the drains, which he does by drawing two furrows by the common foot plough about four or five inches deep, leaving a baulk or solid unploughed slip of earth between them, of about five or six inches broad. He then uses another plough of an uncommon size and strength; the beam I think

* Howlett.

cannot be less than six or seven inches square, and, that its strength may not be diminished, it appears somewhat shorter than the common plough. The coulter is very stout, and sufficiently long to penetrate the solid soil seven or eight inches deep, and the share is proportionably massive. To the upper and hinder part of the breast, not properly a board, but a large solid piece of wood, shaped nearly as the breast itself, is firmly and immoveably fixed. With this addition the upper hind extremity of the plough is upwards of thirty inches in breadth; and the bottom hinder part of the foot is not less than 12. To the plough thus constructed and thus prepared, four heavy powerful horses are put. It goes on one side of the just mentioned baulk, forces down into the soil full seven inches and a half below the surface of the unploughed land; makes its furrow at the bottom clean and clear twelve inches wide, and the additional breast, and consequent prodigious extent of the plough behind throws the whole quantity of earth raised up, baulk and all, on one side, upon the solid ground several inches from the furrow it has made. It returns in the next marked out drain, which it treats exactly in the same manner, and so on till it has completed the whole space intended to be drained.

" After this a third plough is applied to the work. This is about double the height or depth of the former, and exceedingly strong; but is only half as wide at the bottom. It has also, like the other, an additional breast, shaped and fixed in a manner as nearly similar as may be; its extent, however, in width behind, I should think from its appearance is inferior by at least five or six inches. This is drawn by the same horses, at least by the same number of them equally powerful, and goes along the furrow already made by the larger and more extensive implement, but in a contrary direction, and of course throws the

the earth on the contrary side. The left, or ground side of the plough, is set in about three inches from the left extremity of the former furrow; it penetrates, by means of its long coulter and increased depth, seven inches and a half below the bottom of the last made furrow, while the upper part of the plough, with its additionally attached breast, casts the new raised earth several inches upon the solid unmoved ground, and a new furrow is now finally obtained, when added to the former, of fully 15 inches deep, and the bottom of which is clean and clear, exactly six inches wide, leaving on each side a kind of shoulder or edge, of three inches breadth.

" All is now ready for the land-ditch spade. This instrument is fifteen inches deep from its shoulders to its point. At the pitch of these shoulders this spade is about two inches and a half wide, and it goes gradually tapering down to the end, where its breadth is only three-quarters of an inch. With this instrument the ditcher makes a spit fifteen inches deep, and being exactly in the middle of the last made furrow, it leaves a ledge or shoulder of an inch and a half on each side. This is cleared and cleaned from the remaining crumbs of earth by means of the land-ditch hoe before described, perfectly suited to the size and shape of the spade. A depth is now gained of full thirty inches from the level of the surface of the field.

" The next operation is putting in the straw or haulm, without any mixture or portion of wood whatever, which Mr. TAYLOR thinks generally does more harm than good, excepting only at the issues of the cross ditches, and throughout the leading ones (where, however, the smaller the better) which are always made several inches deeper. When he first came to the estate, he found the old land-ditches every where blowing up, and upon further exa-

mination he discovered pieces of unrotted wood, of considerable size, had stopped the current of the water, and rendered the drains worse than useless. This induced him to suppose that wood is generally unnecessary. He accordingly now puts in only straw or haulm, except only as just now excepted. His manner of doing it is this—it is dropt in loose, and gently pressed down with the land-ditch spade, and it is always wished that a vacant space be left of an inch from the bottom, so that the first water which sinks down in the soil above, and filtrates through the straw, may find a free unobstructed channel. The straw thus lightly thrust in merely fills the space effected by the land-ditch spade, and only the soil dug out by it is returned into the drain by a spade, shovel or hoe. The hole remains in this state a few days, till all is tolerably settled; then the loose soil thrown out on both sides by the two large ploughs, is turned upon the top of the remaining open part of the ditch by means of the common plough going successively on each side. Now the work is completed, and may be immediately ploughed over with perfect safety; and the ditches will remain sound and good upwards of twenty years. The ditcher is paid 2*s.* the score rods, cross ditches, their issues and leading ditches all included; which, supposing the drains a rod asunder, amounts to only 16*s.* an acre; and I should think that every other expense of straw, ploughing, &c. could scarcely raise it to more than 30*s.* and, if haulm be used, to not so much. So that this mode of land-ditching upon stiff heavy wet clayey soils, I consider as the cheapest, the best and most complete I have ever met with.

"Mr. Taylor varies the distance of his drains, not only according to the different degrees of looseness or porosity of the soil, but also according to the different degrees of the declivity of the ground from ditch to ditch. If the

ground

ground be level, the water will filtrate both ways, and fall equally into both ditches. In this case he generally makes them a rod apart; but if there be a declivity, the water can soak only into one ditch, and he then finds it requisite to make them nearer together, and in this case he generally draws them about four yards asunder*."

Parochial Facts detailed by Mr. VANCOUVER.

"The heavier parts of the parish of Bullmer have been much improved by hollow-draining, at a rod apart, and at the expense of 50*s.* per acre, ... £. 2 10 0

First cost of eight waggon loads of chalk containing 90 bushels each, at 9*s.* per load, is	3	12	0
To this add filling, carriage, and spreading, and allowance for beer, 8*s.* per load, ...	3	4	0
Per acre ..... £.	9	6	0

an expense which would be continued upon a much larger scale, were it not for the uncertain tenure of the tithes.

"A variety of under-strata, in Henny, Twinstead, Lammarsh, &c. in a great measure forbids a regular and even course of hollow-draining, and has occasioned the use of the land-fall plough, which operates in bringing the field to a more uniform level, by filling up the small hollows with the earth removed from the higher ground: by this means the open drains are cut upon a more evenly inclined plane, and the surface water is carried away with a greater, and more regular certainty: the earth, however, from the want of hollow drains, still retains a considerable quantity of water, which frequently perishes the seed; and by the chill it produces (even in the most favourable seasons) greatly retards the powers of vegetation.

* Howlett.

" Through the parishes of White, and Wake's Colne, the soil is a close, compact clay, extremely retentive of water, and lying upon a red rough clay or tile earth.

" Much of this land has been hollow-drained at a pole apart, costing about a guinea per acre, but with so little effect, as in a great measure to discourage that important practice. The means at present pursued to relieve the land of its surface water, is to use the land-fall plough, and to water-furrow; and though these operations are performed in the best possible manner, the land is still left saturated with water, and is much later in the seed time and harvest than the adjacent parishes.

" At Woodham Mortimer the soil consists of a strong heavy clay upon a tile earth with springs upon a gravel, and which are generally drawn off by hollow drains, at an expense of about 3*l.* per acre. Of this improvement, a gentleman in that neighbourhood has done some hundreds of acres, and very justly conceives it to be the first, and most essential point in the improvement of this kind of land. Chalking the wet heavy lands at an expense of 5*l.* per acre, is very general, and found to answer so well, that with fair cropping, the land will require little or no dung, or other manure for a period of twenty years.

" At Southminster, the land east of the village, and abutting upon the embanked marshes, consists of a light hollow gravelly soil, abounding with springs that are conveyed from off the land at a considerable expense through hollow drains.

" These drains are made three feet deep, and two inches wide at the bottom, filled two feet deep with shingle brought from the sea shore, or sifted gravel—taking labour, and materials, equally into the account, they will cost 2*s.* 6*d.* per rod, and is an expense very generally incurred upon these kind of lands.

" Upon

" Upon land where the sides of the hollow-drains are not liable to crumble or fall in, the drains are made in the usual manner, filling them with wood and straw, at an expense for labour only of 3*s*. 6*d*. per score rods. Westward from the village is a deep white sandy clay; thence northerly, a stiff heavy tough clay, upon a tile earth.

" Towards Rayleigh, the soil is formed of a deep tender loam, upon a brick earth, which has derived very considerable advantages from hollow-drainings; but as the country is a good deal broken, it is still found necessary to grip, or water-furrow, at about two poles distant, upon the sides of the hills, to break the fall of the surface water, which otherwise would grind and wear the land into gullies, by washing the looser soil into the lower grounds.

" At North Weald the outer drain being formed by ditches to give the best possible fall to the water, hollow drains are laid off through the field, at a rod apart from each other, and generally executed at the following expense per acre:

	£.	s.	d.
Opening the hollow drains by ploughing four furrows upon each, at 3*d*. per score rods, every expense included, ...	0	0	3
Digging one spit with the broad spade eight inches, and one spit with the land-ditch spade, 14 inches, allowing two inches extra depths for the drains leading to the outfall, at 3*s*. per score, ...	0	3	0
Value of the straw and expense of twisting it into a rope, in which form it is put into the drains, 1*s*. 9*d*. per score, ...	0	1	9
£.	0	5	0

Eight

Eight score of these drains to the acre, materials included, will cost 40*s*. an expense that is generally and necessarily incurred upon most of the heavier lands in this neighbourhood.

" The closeness and retentive nature of the red tough clay, which generally pervade Buers, Gifford, Pittsey, Vange, Basildon, Langdon Cray, Ramsden Cray, Ramsden Bell-house, Navenden, North and South Bemfleet, and Thundersley, broken into hills, require that the hollow drains should be made within twelve feet of each other. The usual mode of forming them is thus: the drains are first drawn out, or opened six inches deep by ploughing three bouts, or six furrows to each drain, with the common foot plough; one spit of fourteen inches is then dug out with the land-ditch spade, forming the drain 20 inches deep from the surface, and one inch wide at the bottom. This is filled with straw only, and costs, materials included, about 2*s*. 6*d*. per score rods. The drains leading to the outfalls are usually made about eight inches deeper than the lateral ones, filled with elm wood and straw; which materials included, will cost about 4*s*. 6*d*. per score. The whole, upon a fair trial, has been found to answer inimitably well.

" The heavier lands in the neighbourhood of Great Horndon, Ingrave, and Hutton, might be much benefited by hollow-draining; but this material improvement is much neglected.

" Even the highest parts of the lands at Steeple Bumpstead to Hempstead, and thence to Great Sampford, require a constant and unremitting attention to hollow-draining, which at a pole apart, and made thirty inches deep, including materials, will cost about 35*s*. per acre.

" Some of these hollow drains are made only twenty inches

inches deep, and the expense is thereby considerably diminished.

" Proceeding south-easterly from the Roding river, and extending thence through the parishes of Horndon, Kelvedon, Hatch, Doddinghurst, Navestock, Stapleford Abbot, Lambourn, and Havering Bower, the rich mellow soil is in a great measure lost in a strong, upon a chalky and wet rough clay. By hollow-draining, considerable improvement has been made in these lands, a large proportion of which are under grass, and usually depastured by dairy cows.

" At Widdington much attention is paid in the heavy lands to land-ditching, the greatest improvement of which they are yet found capable; land-ditches drawn generally a rod asunder, mostly ploughed out deep with a common plough and three horses; and one spit only dug with the narrow or tongue spade, and then filled up with haulm or straw only, wood being a very scarce and expensive article in an open field country: but these are very liable to be trod in by the horses in ploughing, and consequently frequently blown; this will last in sound land fifteen or sixteen years. Soundest mode to plough and dig two spits, and fill with wood, straw, or haulm; this is done at 2*d.* per rod; depth from surface about twenty inches, and will last from twenty to twenty-five years in sound land.

" At Boreham under-ditching (or as it is here called, land-ditching) is very much practised, and with great success, there being no part of husbandry from which our lands receive greater benefit: indeed it is not uncommon for a farmer to extend the practice over almost the whole of his land. The ditches, when cut, are filled very differently, as the farmer has opportunity of getting materials: sometimes

sometimes they are filled with straw, or haulm only, but oftener with wood and straw: green broom is much sought after for that purpose, and the lops of elm pollards are much esteemed. Straw twisted into a thick kind of rope has been used for the purpose in some parts of this county, and it is said with success*."

Mr. MANSFIELD, near Epping, has drained such parts of his farm of four hundred acres as wanted it; he ploughs first, and then takes two spits, twenty inches deep, the leaders twenty-four: price 2*d.* to 3*d.* per rod; a rod asunder on arable, but ten yards on grass, as he thinks that grass land may be drained too much.

Mr. NASH, of Chesterford, having an allotment of thin wet loam on a blue *gault* bottom, is draining it: he fallowed for barley, sowing part with clover, and he fallows the rest a second time for barley and clover, and draining. Some imperfect trials have been made with the mole-plough, some of which did well by running a hollow drain across the line of the mole.

Mr. BRIDGE, of Buttsbury, has a very large and strong plough for cutting the first spit for hollow drains drawn by six to eight horses, according to the depth and soil. *Plate* XLVI. explains it.

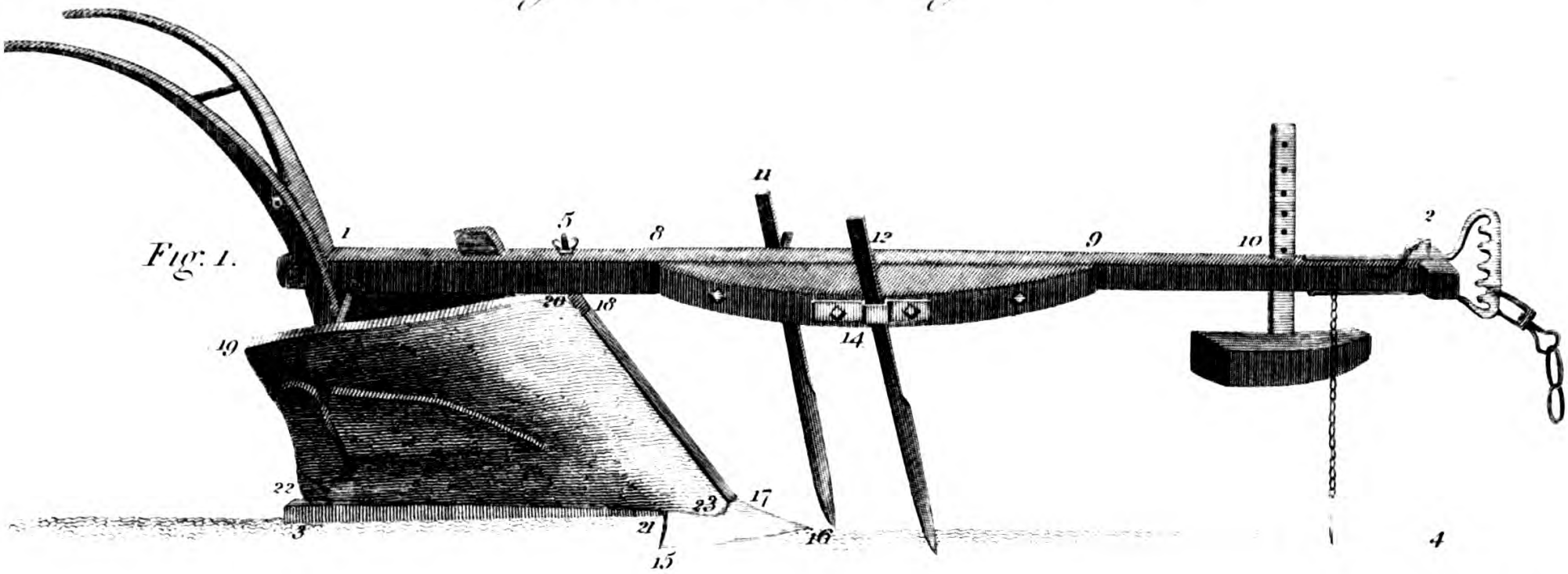
From	1	to	2	9 feet	0 inches.
	1	—	3	2 —	3
	2	—	4	2 —	2
	1	—	6	3 —	4
	6	—	7	3 —	9
	1	—	8	2 —	8
	8	—	9	3 —	6
	2	—	10	1 —	3

* Vancouver.

From

Great Drain Ploughs.

Fig: 1.



Neele sc. Strand.

Great Drain Plough

Fig. 2.

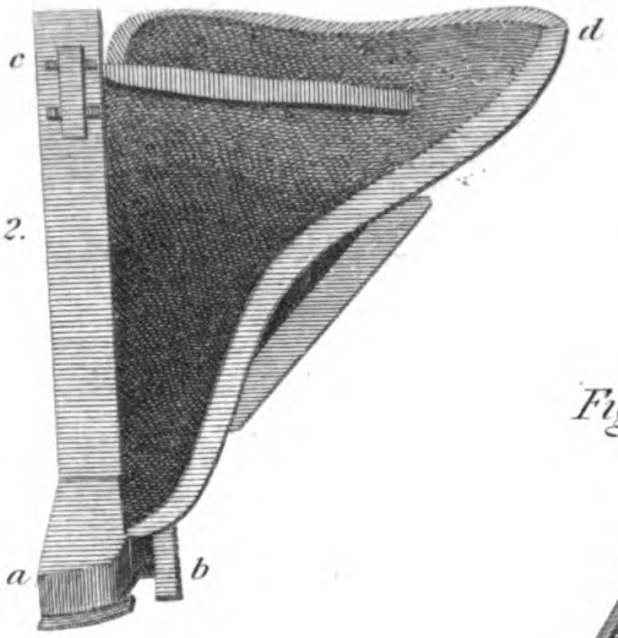
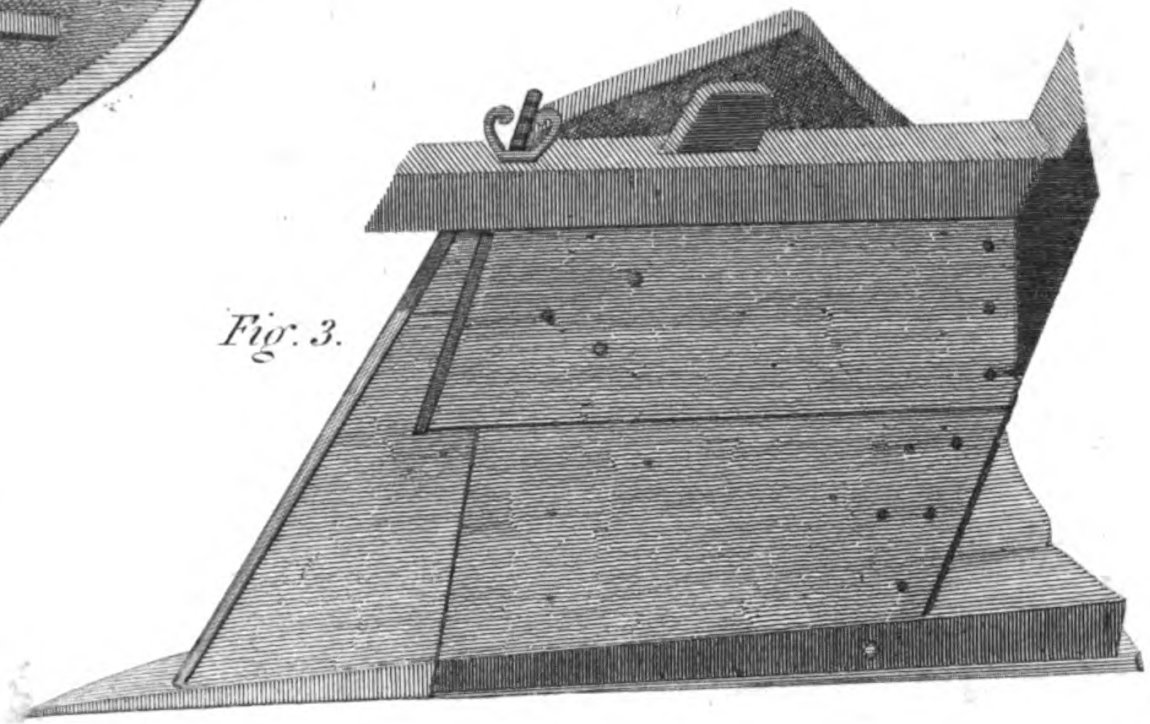


Fig. 3.



Neele sc. Strand.

From	5	to	11	1 feet	8 inches.
	5	—	12	2 —	4
	12	—	13	0 —	10½
	13	—	14	0 —	5
	11	—	15	2 —	3
	15	—	16	1 —	2
	16	—	17	0 —	7
	17	—	18	1 —	9
	18	—	19	2 —	7
	20	—	21	2 —	0
	22	—	23	3 —	7
	20	—	23	2 —	3
	19	—	22	2 —	4
Fig. 2. the heel,	*a*	to	*b*	0 —	6
	a	—	*c*	2 —	3
	c	—	*d*	2 —	4
	b	—	*d*	2 —	5

Fig 3. the land side.

Furrows twelve inches deep have been made with it. I have retained the clumsy addition to the breast, to shew how little that part of a plough is well comprehended even in Essex.

Mr. BRAMSTONE's deer-park at Skreens was made in 1664; and he has reason to know that it was never drained after being made a park till he did it; in which work the men found evident traces of very ancient drains, and pointed them out to him. Hence it is clear, that this practice was known in Essex long before the period to which it is sometimes assigned.

Mr. TWEED, at Sandon, in three years drained 300 acres with hollow drains. He constructed a large strong plough, with which he cut from 10 to 12 inches deep with four to six horses; then dug 15 more at one spit, and laid in

in a rope of twisted straw, which he prefers greatly to wood. They run well after 20 years. *(Plate* XLVII.*)*

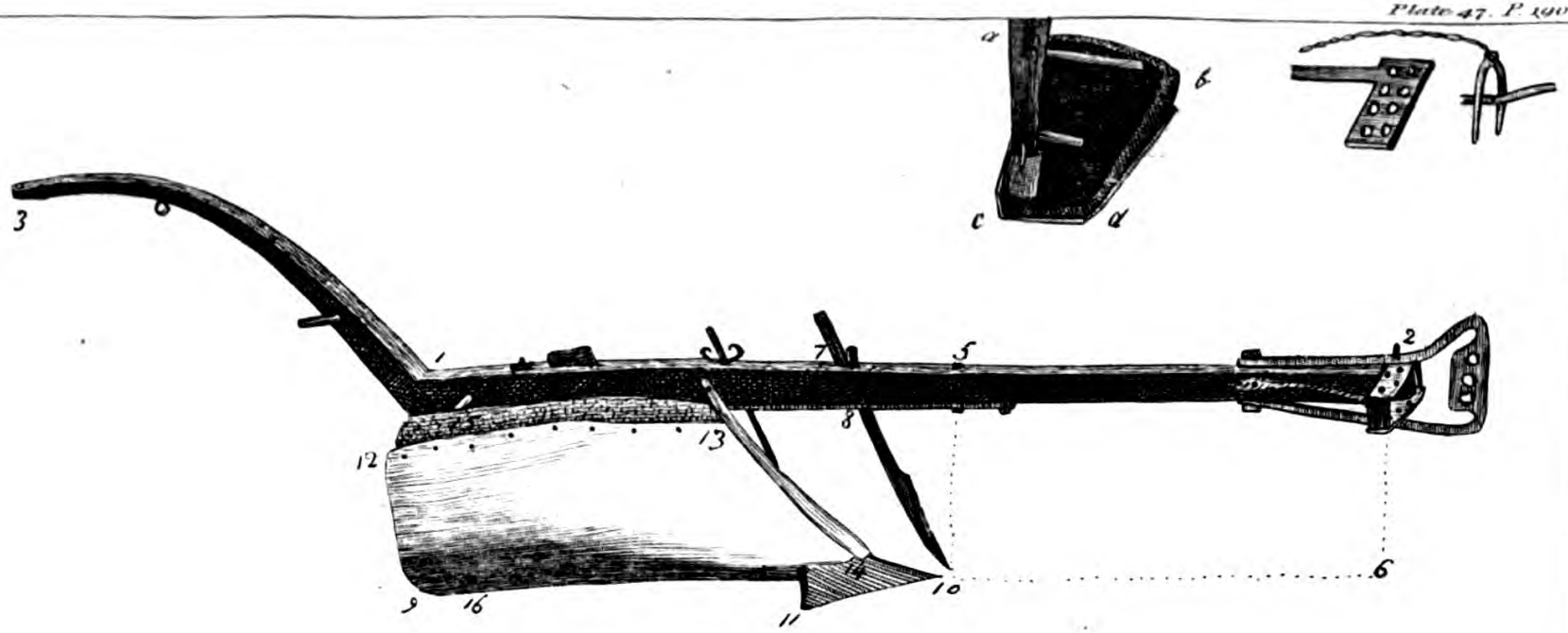
From	1	to 2	7 feet 9 inches.
	3	— 1	3 — 0
	1	— 9	1 — 8
	2	— 6	1 — 8
	1	— 7	3 — 5
	7	— 8	0 — 6
	9	— 10	4 — 0
	11	— 10	1 — 1
	12	— 13	2 — 4
	13	— 14	1 — 6
	15	— 16	1 — 5
	7	— 5	0 — 9
	5	— 10	1 — 8
	a	— *b*	1 — 7
	c	— *d*	0 — 9

I have no where met with hollow-draining of the common Essex method, executed at such an expense as by Mr. HARDY, at Bradfield: he digs 30 inches deep, and fills ten inches with shingle from Landguard Fort: a load of 35 bushels will do eight rods; and 16 loads cost 4*l.* 4*s.* besides carting. The labour only of an acre is 2*l.* 8*s.* and the whole expense 7*l.*

Mr. BAWTREE, at St. Osyth, fills his drains also with shingle; makes them 30 inches deep, at one rod and an half asunder.

Mr. WATKINSON, of Felstead, ploughs deep, and then digs 22 inches, at the expense of 2½*d.* per rod and beer: fills with a small quantity of wood, covered with straw; and does them at one rod and a quarter asunder; they last according to the soil: if flints abound in the clay with sand, &c. they are not durable.

At Dunmow, &c. they make them from three quarters of



Mr. Tweeds draining Plough.

Drawn & Engrd by Quinton.

of a rod asunder to a rod; fill with wood and straw; the expense in labour 4*s*. a score: when well done they last 18 or 20 years: costs in all 3*l*. an acre.

Much land of Rochford hundred demands hollow-draining; the cuts are filled with wood and straw. Major CARR, of Eastwood, has done much at the expense of 6*l*. per acre, reckoning the wood and straw.

Mr. PRENTICE, of Prittlewell, has drained much: digging two spits has cost from 7*s*. to 10*s*. a score: he buys the wood at 18*s*. to 20*s*. the load; four horses, two men and a waggon once a day to bring it. The whole expense 7*l*. per acre.

Mr. HICKS, at Hockley, whose farm is on very strong and tenacious land, has in four years laid out 2000*l*. in draining, chalk and earth. The drains *draw*, but do not stand well; the earth cracks, and lets in sand, which is apt to choke them.

Mr. TABRUM, at Margaretting, has drained his whole farm, and now only cuts them where old ones want renewing: on a white clay bottom they will run well for 20 years. He is of opinion that on some soils it would answer to do them every seven years, cross and cross in different directions. He fills with sallow, elm, blackthorn; and has done it with a twisted straw rope; but in this case, keeps a rod pole under it, and treads down the straw on the pole, drawing it on as the straw is trodden. Twenty years ago two spits deep cost 4*s*. 6*d*. a score; now 6*s*. 6*d*. He has seen the mole used successfully on wet pastures after ploughing four furrows, and when the mole has passed, turning the furrows back for a protection.

Throughout the heavy wet district of the Roodings, the land is all hollow-drained; and they dig very large and deep ditches for carrying the water clean off.

The Earl of St. VINCENT, at Rochetts, has made a con-

considerable improvement by draining: he digs the cuts from 18 to 28 inches deep through the loam into the clay, and fills with wood and straw; he has done 30 acres very effectively. Inquiring if he used the mole-plough, his Lordship said that he had seen it tried on such soils, and the veins of gravel or sand rendered the attempt abortive. What a spectacle! to see this gallant veteran, after carrying the glory of the national flag to so high a pitch, sit down in health and spirits to the amusements of agriculture, and entering with vigour and intelligence into the minutiæ of the art!

The permanent improvements near Spaines-hall are, hollow-draining and claying; the first is universal, and has been of many years standing; some fill with bushes, but in general with straw only; the price 2*s*. per score, or 16*s*. an acre, as one hundred and sixty rods are usually cut in an acre; all expenses 2*l*. 2*s*. The deeper the drains are cut the longer they last; and the shallower, the sooner the land drains; this is the general opinion, founded on the experience of single spit, and double spit work. The drains always shew themselves in the wheat crops to an inch; and it is remarkable, that at this time they are every where visible, by lines of yellow wheat, the rest being of a much deeper green. In conversation on the subject with several excellent farmers, I inquired the reason of this, remarking, that as the draining was an unquestionable improvement, and the present season a remarkably wet one, if the drains were seen at all, it ought to be in the luxuriance of the crop, and not by its yellowness. To this it was replied, that the lines immediately over the drains were drained too much, the water carrying off some of the heart of the land: but this does not seem altogether satisfactory, seeing that the same result is observed in dry years. Mr. RUGGLES thought, that the

the deeper green of these fine crops was, in some measure, a sign of unhealthiness, the indication of a mildew; and that the paler colour of the drained lines was owing to superior health.

The whole of the parish of Toppesfield wants draining, and it has all been done: Mr. ELY has gone nearly over his farm thrice, for he finds that the drains will not last well above twelve years. He ploughs eight or nine inches, and then digs two spits.

Mr. KETCHER, in the higher part of Burnham, has so many quicksands in his soil, that draining was essential to improvement: he dug them twenty-four and thirty-six inches deep, and filled with stone from Woolwich; but finding that this stone had a weed which adhered to it, which stopped his drains, he now does them with picked and skreened stone. Digging the drains costs 6*d.* a rod in labour, and from three to five bushels of stone per rod. Those from Kent cost 6*s.* the load of twenty-four bushels.

Mr. SPURGEON, at Bradwell, has drained much; for many of the uplands in that parish want it. He ploughs deeply first, and then digs one spit at 3*s.* 6*d.* a score rods; fills with shingle, at 3*s.* 6*d.* a load of twenty-four bushels. One load will do ten rods: cuts them regularly over the field; and has done some at the expense of 10*l.* per acre.

Mr. BARRINGTON, near Rochford, and his father, have drained a very large farm wherever necessary; the cuts are filled with wood and straw; expense about 3*l.* an acre: last fifteen years. Water-furrowing the marsh lands costs 4*s.* an acre.

Major CARR, at Eastwood, has drained nearly four hundred acres, at 5*l.* per acre, including wood, straw, and carriage.

Mr. COVERDALE, of Ingatestone, speaking on his fa-

ther's experience as well as his own, has found sallow and willow to be the most durable wood that is commonly used.

They have in some parts of Essex, particularly in the vicinity of Colchester, &c. a method of water-furrowing which merits attention. At Copford, on the farm of Mr. AMBROSE, and at Birchholt, on that of Mr. POWELL, I saw a machine which I supposed to be a levelling one; but found it to be what they call a *falling* one: in the lines where they purpose to make water-furrows across the stitches they use this machine once in six, seven, or eight years, for the purpose of lowering, *(falling)* the surface; first they gather four or six furrows by ploughing; then follows this machine across those furrows, in their loose fresh ploughed state, taking up the moulds, and dropping them on the crown or sides of the stitches, and when finished they plough and scour the water-furrows in the common manner; the invention has merit, as the water certainly takes a freer course. A man, a horse, and a boy, will in a dry time do sixty rods a day. *(Plate* XLVIII.*)*

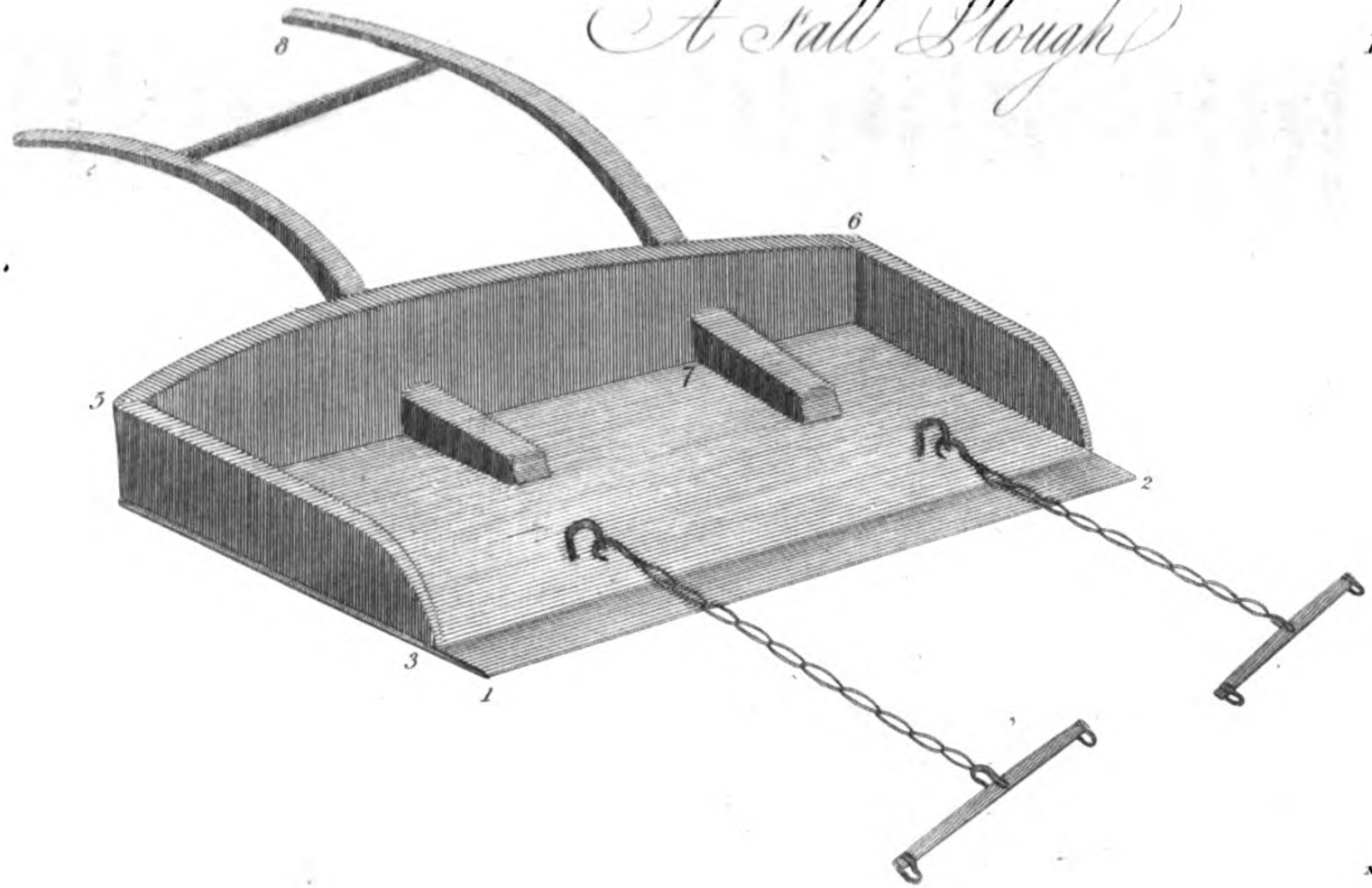
From	1	to	2	4 feet	0 inches.
	1	—	3	0 —	4
	3	—	4	2 —	0
	4	—	5	0 —	7
	5	—	6	4 —	0

MOLE, OR LAND-DITCH PLOUGH.

"A plough of this denomination was invented, and a patent obtained for it, some years ago. Mr. THOMAS KNIGHT, of Thaxtead, thinking he observed that this plough had some capital defects in its operations, and which in a great measure destroyed its utility, determined to

A Tall Plough

Plate 48. Vol. IV.



Neale sc. Strand.

attempt their removal, and it is here very generally thought, that he has fully accomplished his purpose. These defects were, first, it was found extremely difficult to make the plough enter and descend sufficiently deep into the soil for making the intended pipe or drain. Secondly, when the plough was actually got down to its proper depth, it was equally difficult to keep it uniformly at the same distance from the surface throughout each drain. The former defect may indeed be corrected by the spade, after the operations of the plough are finished. That, however, would considerably increase the expense. Mr. KNIGHT's plough prevents this, by, as it were, instantaneously sinking to a proper depth into the soil upon the horses setting forward.

" But the second defect, the difficulty of preserving a uniform depth throughout each drain, is of most essential consequence; because, if a uniform depth be not preserved in the immediate operation of the plough, it can never afterwards be remedied; the pipe being uneven both at top and bottom, it forms obstructions to the free course and flow of the water, and will very soon stop up the drains entirely, and render the whole operation highly pernicious, instead of useful.

" But from this defect, Mr. KNIGHT's improvement it is said, is entirely free. I am inclined to think that this is a well authenticated fact. I have myself seen it at work, and I can safely venture to assert, that immediately upon the horses setting forward, it entered the ground, and descended to the proposed depth, and that it continued its course smoothly, and uniformly, and regularly (that is, at an equal distance from the bottom of the furrow previously drawn by the common plough for it to move in) to the other extremity of the drain.

" The draining of between four and five hundred acres

has been effected by it in this neighbourhood. Of these, some have now been finished three years, and all continue completely to answer their intended purpose, altogether as well, if not better, than those done in the ordinary way with the spade.

This plough is usually drawn by fifteen horses, three abreast, and conducted by six or eight men and boys, one man holding the handles, one sitting on the seat over the beam, to preserve a uniform pressure, and three going on each side to guide the horses, and keep them tight and close to their work.

" I have just received from Mr. KNIGHT, the following statements of the expense of completing ten acres; the drains three-fourths of a rod asunder, with fifteen horses, performed in eight hours.

	£.	s.	d.
Fifteen horses, at 2*s.* 6*d.* each, ...	1	17	6
Six men to conduct the plough and horses, ...	0	9	0
Use of the plough, ...	0	10	6
All the leading ditches and the outlets into the broad ditches done by the spade, and filled up with wood and straw, ...	2	10	0
Total, ...	£. 5	7	0

" Ten acres, the drains being three-quarters of a rod asunder, are more than twelve acres at one rod apart. And this latter is by much the most common; the former being necessary only upon soils peculiarly heavy, stiff, and compressed.

" If the mole-plough be used to make the leaders, and only the outlets into the broad ditches are done with the spade, and filled up with wood and straw, there will be a deduction from the above expense of 1*l.* 10*s.* which will reduce

reduce the total expense of doing ten acres, draining at three-quarters of a rod asunder, or twelve acres at one entire rod, to ..... £. 3 17 0

The same quantity done in the usual way with the spade, may be fairly estimated on an average at 50*s*. per acre, ... } 30 0 0

Difference, ... £. 26 3 0

So that by the use of this mole-plough, there is a saving of expense of more than 700 per cent.

" But even this is by no means all. Nine-tenths at least of the wood and straw used in the common way are spared, articles which, in this neighbourhood, are each of vastly increasing value and importance. Wood for fuel is daily diminishing in quantity, and daily and doubly advancing in price. The demand for straw is continually greater and greater, both for immediate sale, and for raising manure to keep pace with the perpetually enlarging and improving cultivation. It is also to be remembered, that the greater part of the hands heretofore employed in this most distinguished improvement of Essex agriculture, may now be turned to some other useful purpose. Upon the whole, Mr. KNIGHT's plough, in its present highly improved state, if it continue to answer its purpose as well as it has hitherto done (and I at present see no reason why it should not), may justly be considered as one of the most important agricultural implements, and leading to the highest and most various agricultural improvements that have been introduced into this county within the last thirty or forty years.

" I have very lately received the following testimony in favour of this plough, from the Rev. Mr. THURLOW, of Gosfield.

" Mr. KNIGHT's mole-plough is likely to be of great utility. I have made, however, a little alteration in it. Instead of one wheel working under the beam, which used to be continually clogging it with earth, we use two wheels, and the frame of a wheel plough made much stronger than those in common use. I drained above a year ago about twenty acres of arable land, and it has answered my most sanguine expectations. The land is now very dry, and immediately after the heavy rains a few days ago, the drains performed their office extremely well. I have just finished a field of sixteen acres in two days, and feel much satisfaction in the use of this implement. It is, I think, much safer to use it in the summer than in the winter; for if there be much water on the land, it will follow the plough too quickly; and before the water can be carried off by the leading drains made by the spade, will be apt to soften the earth about the drain, and cause it to drop in. In draining the sixteen acres just mentioned, I took the precaution of having leading drains (made in the usual way, filled up with wood and straw), cut as fast as several hands could do it, so as to keep pace with the plough; but this is not always practicable, and therefore I shall in future prefer dry weather for these operations*."

The mole-plough has been in common use for four or five years about Halstead, and with great success. The method in which it is used is, first to draw a furrow with a common plough; and then to apply the mole, drawn by eighteen hores, depth from fourteen to eighteen inches. The reason of so great a strength is for avoiding trampling and poaching, as they never use it when the surface

* Mr. Howlett.

is

is wet; but freely at any time in summer, except after a great drought. Mr. SEWELL, of Maplestead, Mr. VAIZEY, and two others, built one at the expense of above 30*l.* with wheels; they lett it out at about 2*s.* 6*d.* an acre, and a farmer in the neighbourhood contracts to find mole, horses, and labour, at 1*l.* 1*s.* per acre at three yards asunder. There is no doubt entertained here of the great benefit of it; and the drains, after four years, run to the full as well as, and in some cases better, than at first.

Mr. KEMP, of Hedingham, has drained 250 acres with the mole; he uses it with a five-horse whipple tree, working five abreast; fifteen, eighteen, and twenty horses; no trampling, as it is always done in summer. The previous furrow included, the drains are twenty-two inches deep getting into the stiff clay: he thinks it much better than the common spade work to run quicker, and has no doubt of their lasting longer, insomuch that he would not accept the offer of draining his land in the old method at the expense of 1*l.* 11*s.* 6*d.* per acre, though it costs double: all expenses whatever included, the mole at three yards asunder may cost 1*l.* 11*s.* 6*d.* per acre.

Mr. HORNER, of Hempstead, and several of his neighbours, have used it largely on pastures and on arable also; it was done seven or eight years ago, and the pipes run now as well as at first.

The Rev. Mr. THURLOW, at Gosfield, has found it of excellent use. It is worked when the land is dry, and on the two-bout ridge. He drained 13 acres of fallow laid up for barley in two days, and the next two ploughed and sowed them; five horses abreast, and each in a furrow; 21 in all. His drains made five or six years ago run as well as ever. The land for this operation is laid on to the two-bout ridge.

Mr. JOHN VAIZEY, of Halstead, has made considerable

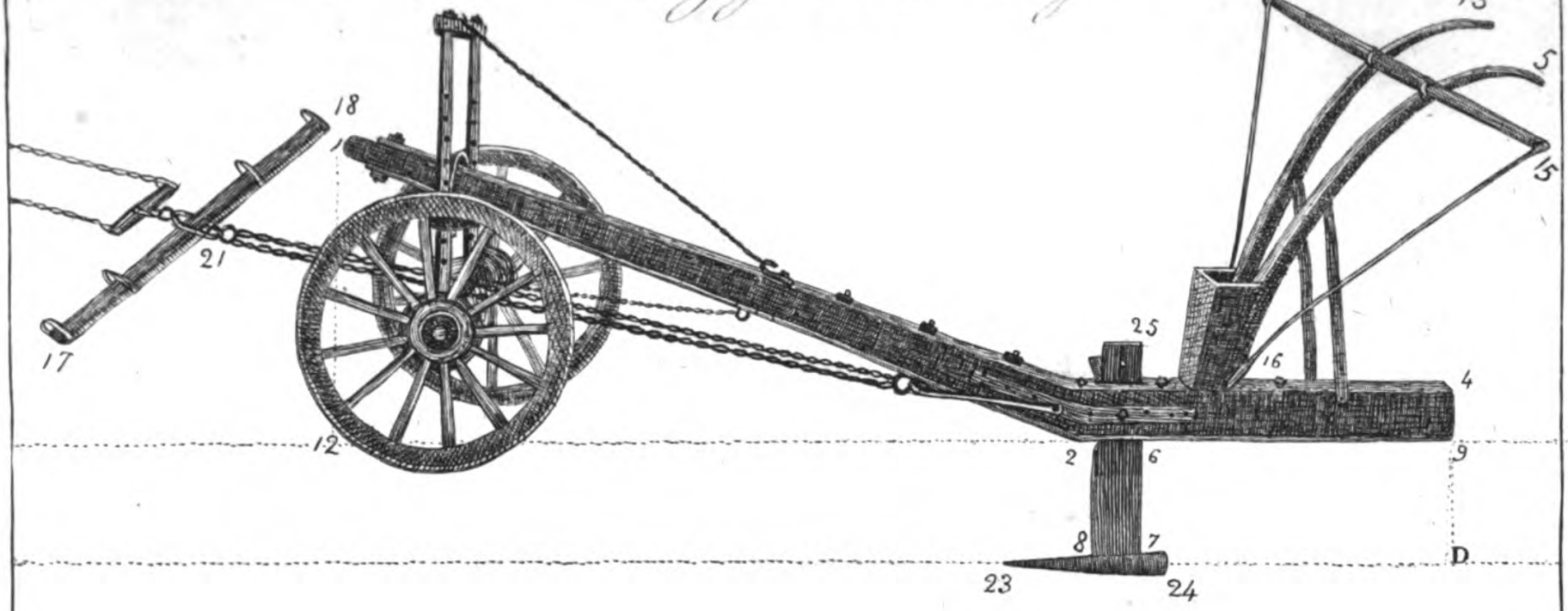
use of this implement. In three years he drained 200 acres with the spade, filling with wood and straw; he has since done 100 acres more with the mole-plough, he thinks far better; insomuch, that he would not thank a man for substituting the common method at the same expense: uses from 15 to 20 horses. He has improved the tool in several points: cost 30*l.* but ought not to be more than 16*l.* or 17*l.* *(Plate* XLIX.*)*

From	1	to 2	8 feet	0 inches.
	2	— 9	4 —	0
	9	— 4	0 —	7
	4	— 5	3 —	0
	5	— 9	3 —	7
	5	— 13	2 —	2
	14	— 15	6 —	6
	15	— 16	4 —	6
	1	— 12	4 —	6
	7	— 6	1 —	2
	7	— 8	0 —	9
	7	— 25	2 —	0
Back	6	— 7	0 —	$0\frac{1}{4}$
	23	— 24	1 —	9
Diameter		24	0 —	$2\frac{1}{2}$
Diameter wheels		.....	3 —	0
		Distance	6 —	0
	2	— 21	9 —	0
	17	— 18	14 —	0
9	2	— 12	horizon.	
D the drain,				
9 *D*			1 —	4

Mr. Pattison, of Maldon, has one of the old mole-ploughs without wheels, which he has used with great success: he makes first a common deep hollow-drain, and

Plate 49 P.200.

Mr. Vaizey's Mole Plough.



Drawn & Engraved by C. Quinton

and fills it; and then crosses it in a diagonal direction, so that it may receive the water from the mole pipes. They have stood well for seven years.

Mr. NEWMAN, of Hornchurch, has used the old common mole-plough with much success. On 30 acres of very wet and heavy land, on a rank clay, the worst field in the parish, and for which he was never offered more rent than 12*s.* an acre, he fallowed and mole-ploughed it with 14 oxen; part of it with eight horses and eight oxen; but 14 oxen did best: he struck the drains half a rod asunder, drilled the field with wheat without any manuring, and laid down with white clover sown among the wheat: the crop will be four quarters an acre certainly; guessed at five; yet the last time it was in wheat it produced after a fallow but three sacks.

In such parts of his farm as have a clay subsoil, the mole answers in this manner, but he has much land in which are stones and sand; there it will not do, and he drains very completely by deep and well sloped ditches, and hollow-drains four feet deep where wanted: the whole farm done and the improvement great.

DRAINING-WHEEL.

"The cast iron draining-wheel is described thus: it weighs about 4 cwt. it is four feet in diameter; the cutting edge or extreme circumference of the wheel is half an inch thick, which increasing in thickness towards the nave or centre, will, at 15 inches deep, scour out or cut a drain half an inch wide at the bottom, and four inches wide at the top. This wheel is so placed in a frame, that it may be loaded at pleasure, and be made to a greater or less depth, according to the resistance made by the ground; which thus scored out in the winter, the wheel tracks are either

either then filled up with straw ropes, and lightly covered over, or left to crack wider and deeper during the ensuing summer. The fissures are then filled with twisted straw or bushes, and covered lightly with some of the porous earth that may be most conveniently at hand, and thus upon the grass or lay-land are hollow-drains made at little or no expense, and which upon trial have been found to answer extremely well*."

"*Observation.*—It is obvious here to remark, that this draining-wheel, upon meadow and lay-land, as well as upon marshy and moory grounds which are perfectly free from stones, may be of great utility; but where stones are found, as will probably happen in nine cases out of ten, especially in this neighbourhood, it must be in a great measure useless. Whether from a conviction of this, or from other causes I cannot tell, the inventor has, I am told, sent it to a gentleman in Huntingdonshire, who probably possesses land suited to its operation†."

Mr. BEDWELL has the merit to think for himself. The most prominent feature of his improvements, is a new method of filling land drains; the common practice is, to tread in loose straw; but Mr. BEDWELL has invented a method of winding it into a hard rope, as large as a man's arm, which he forces to the bottom of the drains, and finds from experience, copied successfully by his neighbours, to convey the water off more readily, and to have much longer duration; at the same time the quantity of straw consumed is not increased, and the operation of filling accelerated.

Straw thus wound, Mr. BEDWELL has applied to mak-

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* Vancouver.

Mr. BEDWELL shewed me this tool, and the work it had performed; he did twelve acres a day with it.—*A. Y.*

† Howlett.

ing

ing fences, by watling it between stakes close together, in which way it makes the warmest of fences for a sheep-pen, &c.

SECT. II.—MANURING.

THIS branch of improvement has been carried on in Essex with much attention; exertions have there been long made, which have contributed as much as any other object, draining alone excepted, to bring the county to its present high state of cultivation.

1. Chalk,
2. Marl and clay,
3. Lime,
4. Yard-dung,
5. Pigeons' dung
6. Rabbits' dung,
7. Night soil,
8. Town manures,
9. Pond-mud,
10. Ashes.
11. Sea-weed,
12. Shells,
13. Green crops.

CHALK.

This manure has been largely used in Essex for time immemorial; but I found it carried in the Hundreds near forty years ago, in much larger quantities than at present.

As

As the country became chalked, less was of course wanted; and of late years a prevalent idea has spread almost every where, that it answers badly when spread a second and a third time. In many districts, it is now only used in composts.

Mr. COKER, at Borely, has tried chalk on his light land, a dry loam on a gravel bottom; but it did not answer.

About Middleton-hall the lands have all been chalked; but Mr. FENN has not perceived that fresh chalking of turnip soils has done any good; though the effect on fresh new ploughed land from old lays is very great. On the heavy stiff land on clay bottoms it is beneficial. He has also laid much whitish clay marl on turnip land without reaping any adequate benefit.

Mr. COOPER, of Langenhoe, the most considerable farmer in all that district, and who has land of his own not chalked before, chalks it readily without any apprehension of future injury; for those fields which have been already chalked he adds it to mixtures of chalk and earth.

Note at Braxtead in 1784—"The circumstance in their husbandry most deserving attention is, the use of chalk as a manure. They bring it all from Maldon, at the distance of six miles, it is brought by sea from Kent, and a waggon-load costs at the quay 10*s*. The method employed is this: the teams of five horses and a waggon and two men, go out about twelve at night, load at Maldon, return, unload, bait;—go again with the same waggon and horses, and return and unload, and all over by one o'clock at noon. This is, I think, the severest work I ever heard of—twenty-four miles with so heavy a load, twice to be loaded and twice unloaded by the same men; yet is it here common. They reckon that every load

costs

costs in the whole 20*s*. They lay from five to eight on an acre, either upon a clover-lay while feeding, or on a summer-fallow: the effect exceeds any thing I have ever met with; a very thin dressing of it is seen immediately to an inch, like rotten dung, and lasts twenty years, fifteen in great heart. Mr. COTT shewed me from his garden, a field of wheat hanging on the side of a hill at the distance of half a mile, one part of which was evidently much inferior to the rest, which was in general laid: that part was the only spot not chalked; the farmer not having time to finish the field. He was present and confirmed the account. The same farmer (Mr. PARKINSON, of Braxtead) having chalked a field, brought some in a cart, as they returned from the field, and spread it thinly upon one spot in a piece of poor dry land; the whole was sown with turnips. During the whole season from their coming up, that spot was to be seen at a great distance, and the roots were far larger than any where else.

"They think their lands will do nothing without chalk, insomuch, that the whole country will, in a few years be chalked. The soil on which it does such wonders is loam; they have very little clay, and no sand. On gravels the effect is but slight; it is the good sound loam in which it answers like the richest dung.

"It is a general opinion among them, that land which has once been chalked, will not take it again; and this opinion seems to prevent the trial; they acknowledge, however, that mixed with earth and dung, it is even then excellent. A very particular circumstance they have observed is, that laying a slight dressing of chalk and earth, or dung, on a field never chalked, will take so much effect, that the same field will not then answer to chalk completely. Another remark they have also made is, that the chalk presently gives the land a red colour, so that a

part

part of a fallow that has been chalked will, from the tinge, be discernible at a distance.

" Upon my asking Mr. PARKINSON, if they ever laid chalk upon meadows? he replied, they did not require it; besides, they supposed it would do harm, as they observe that it is a strong enemy to grazing; that is, to the ground covering itself with good grass. A field which before chalking will run of itself to a fine head of white clover, does it no longer after chalking: this is very remarkable, forone would suppose what is manure for corn would be so to grass.

" The chalk is not soft, but rather hard; the sharpest frosts leave very many lumps unbroken: so that they break them with pick-axes; and the hard bits that break to a clear white, they say come from the bottom of the pit, and are esteemed better than the pieces which crumble between the fingers. I tried some pieces at Mr. COTT's in vinegar and water; the effervescence with the former is pretty considerable, though not near equal to what I have seen, but in water it falls very slowly, if at all.

" Some farmers have tried lime, and with great success, upon the soils proper for chalk. This is a fresh instance, that the excellence of these manures much depends on the soil whereon they are laid: on good loams they take full effect, but on poor lands they find nothing to work on. About Enfield, the same chalk does wonders, which at North Mimms has very little effect; the one is a rich loam, the other a poor gravel."

Considerable quantities of chalk are brought from Kent by sea to Maldon, and the farmers take it some miles by land; but chiefly by the inland navigation: it is brought to Hatfield, but more to Tolesbury: they mix it with earth and dung.

All

All Great Wigborough has been chalked; the very stiff and tenacious clays of the vicinity will not work without it; and I every where observed chalk composts with earth and dung.

A part of Mr. ROBERT TABER's farm at Beerchurch, near Colchester (which in general was dry sand or gravelly soil), was poorer, and of a stiffer texture; on this part he found chalk of some benefit, but on the sounder and dryer soil it did not answer.

Mr. HARDY, at Bradfield, has chalked most of his farm; all that was not chalked before, and much of the strong hills that will not plough without it, twice, finding that it answers well. In other cases it is only used on fresh land, and they consider it as lasting, what is called, for ever. It is brought from Gravesend to Mistley; he lays 30 tons per acre, at 3*s*. 6*d*. per ton price at the quay, with many other expenses, to the amount in all of 8*l*. or 9*l*. per acre. The whole country has been chalked.

Mr. SALMON, of Beaumont-hall, chalks at the expense of 8*l*. per acre; and reckons that the straw is made much stiffer by this application, and not so apt to be laid.

All the country round by the coast, from Mistley by St. Osyth's, has been chalked long ago; and probably almost every acre in all Tendring hundred.

Mr. BAWTREE, at St. Osyth, in common with all the principal farmers of Tendring hundred, has used considerable quantities of chalk. It cannot be done effectively at less expense than 10*l*. per acre.

Mr. BUXTON, of Layer de la Haye, has trench-ploughed land, to bring up the chalk that has sunk; and it has answered well on soils that are deep enough for the operation.

The larger part, perhaps the whole of Mersea Island, has been chalked; at present, what is carried is chiefly

on

on to the heavy land. Mr. BENNET HAWES has clean chalked land a second time, and it answered well.

There is a circumstance relative to this manure, which should convince us that our fathers had more knowledge in matters of husbandry than we are sometimes ready to admit. It was a very old saying, that *chalk is good for the father but bad for the son*, and that there is some truth in the maxim, is strongly felt in Essex. Mr. WESTERN, in describing the husbandry around Kelvedon, used this expression relative to the opinion of farmers on this manure, *they hate old chalked lands; such are worn out.*

At St. Lawrence, in Dengey hundred, the fact came still nearer to ascertainment. Mr. PATTISON assured me, that the strong soils on a stiff clay upon their hills, would lett readily at 20*s.* but if old chalked land, at only 15*s.* nor is there, he said, any question of this fact. He has expended some hundreds of pounds in manuring with earth, and dung, and chalk, and he is clear that he never received the smallest benefit, further than what resulted from the earth and dung.

In passing through a large part of the county, I had often heard of Mr. STRUTT prohibiting his tenants the use of chalk; and when I arrived at Terling, I asked him whether the report was accurate? It was so, on those estates he possesses, such as Woodham Ferrars, Snorum, &c. on a strong heavy land; but he makes no objection to the use of this manure on any lighter soil. He has observed from long experience, the difficulty of bringing old chalked lands to be productive. His father made the same remark, so that he is well convinced, that, however great the temporary advantage may be to a tenant, it is a lasting injury to the land: and he has known many farmers who have admitted the fact. Mr. STRUTT much doubts the accounts received of the benefit of a second

chalking,

chalking, and especially if done by mixtures of earth and dung: remarking the difficulty of their discriminating in the result the effect due to maiden earth and dung (both certainly good manures), and that which might fairly be attributed to the chalk. Upon this principle it was, that when he was informed a tenant was going to establish a pot-ash work at a considerable expense for the mere benefit of the ashes, he advised him first to try the effect of the ashes *alone*, and not to trust to the effect of adding them to composts of dung,

Mr. BEAUVOIR's father at Downham, who died in 1757, disapproved very much of his tenants chalking their lands; and discouraged it all he could, without an absolute prohibition. He had seen many cases in which the first chalking had great effects for one lease, and after that the land was sure to be considerably the worse for it, and would not at that time of day lett so well as land that had not been chalked, though the liberty to chalk were precluded. When done, and exhausted in consequence, which was the usual event, it required many years to recover.

Kentish chalk the great improvement at Latchingdon. It costs without carriage 7*l.* 7*s.* per acre, and, if at any distance, every expense added, will make it 10*l.* per acre.

In other parts of Dengey hundred chalking costs about 6*l.* to 7*l.* per acre, that is, fifteen or sixteen Gravesend cart-loads. Mr. LEE, of Maldon, thinks that if the land is fairly farmed after it, it will last beyond a man's experience. The effect is exceedingly great. A second chalking must be in larger quantity than at first; contrary to the practice with Norfolk marl. Most of the arable of Dengey hundred has been chalked.

Mr. WAKEFIELD has chalked at Burnham three hundred acres, that cost him near 3000*l.*; it had not been

chalked before, and answered well, but other lands which had been done before paid him very badly; he had some doubt whether it had any effect at all. He chalked a piece of old pasture, with no other apparent effect than stock seeming to like feeding there better than before.

Chalking has been done in Foulness Island; but Mr. POTTON observes, that it is not a favourite manure, nor does he think that it does much service: when the salt in the land turns it yellow, they observe that it will neither dissolve nor work. This wants more explanation than Mr. POTTON was able to give.

Mr. KETCHER, of Burnham, has lands that were chalked thirty years ago, and which ten years ago were chalked again, except one acre, and he can now see the benefit of the second chalking to an inch. It was on a *roselly* soil at Tillingham; but he never saw an instance in which a second or third chalking did no good.

Chalk being every where supposed to do best *on* and *with* fresh earth, Mr. BAWTREE, of Southminster, made great exertions in manuring with it: in one summer he carried 7500 loads of earth. All his land has been chalked; and most of it the second time mixed with earth. Of late it has been done at the expense of 8*l.* 2*s.* an acre, reckoning a waggon, five horses and two men at 30*s.* a day. He has known chalk clear the land of charlock and warlock. The quantity he lays on is six waggon loads on light land, and eight on heavy.

Most of the lands at Bradwell have been chalked; and the effect of the first manuring wonderful on these rich loams; but a second clean chalking, Mr. SPURGEON assured me, has been found to do little or no good. The best method now of applying it, is by composts; mixing earth and chalk for three or four years, and then adding dung;

dung; of such Mr. SPURGEON has laid large quantities, but he thinks thirty loads an acre enough, if repeated. The common method when they do chalk is to lay it on a fallow; but they admit, that to spread it on a pasture some time before breaking up is far better.

Mr. KEYS, at Assingdon, finds that chalk in composts does good, though most of the land has been chalked before: he has now 1000 loads of earth and chalk mixed. The best application is, to lay down for some years, and spread it on the lay.

It costs 10*l.* besides carriage; thirty years ago he did it for 5*l.*

Mr. BARRINGTON, near Rochford, including the quantity done by his father, has chalked 1000 acres, at 40 cart-loads per acre.

The country about Rochford, including the Hall farm Mr. WRIGHT informed me, has generally been chalked, and a repetition is usually by mixtures with earth and with dung. Those who have long leases, or occupy their own lands, and intend clean chalking anew, lay down the land to grass for a few years, and chalk on that for exposition for some time before breaking up, which is for pease.

Mr. PRENTICE, of Prittlewell, rarely puts clean chalk on land that has been chalked before: those that have done it, have seen very little good from it; but mixed with earth, he has found it beneficial.

Mr. KNAPPING has chalked at Shoebury, where it had not been done before, yet it did little or no good, the soil being, as he conceives, too light for it.

Major CARR, at Eastwood, has clean chalked eighty acres at the expense of 11*l.* an acre, carriage being heavy: all the rest of the farm having been done before, he chalked in a compost of earth, dung, and chalk.

Mr. Hicks, at Hockley, has in four years laid out 2000*l.* in draining and manuring; last year he carried 4000 loads of earth, &c.: he laid 1000 loads of chalk and earth on eleven acres. Nine horses can chalk an acre and an half per diem, from the barge to his fields near to it.

Mr. Vassal, from much experience, is of opinion that clean chalk should be spread on a lay, and left some time before ploughing. He has chalked a second time; but earth with dung did as much good. He has ploughed a foot deep, and got old chalk again by it.

"In various parishes in the vicinity of the Ramsdens, Langdon, Pitsey, &c. the length of carriage has in a great measure precluded the use of chalk, and lime has there been substituted in its place, mixed with earth, and farm-yard dung, in the following proportions per acre:

	£.	s.	d.
Seventy-five bushels of shell lime, the first cost of which at the kiln is 7*s.* per hundred of twenty five bushels, ...	1	1	0
Carriage of ditto, ...	1	1	0
Stubbing or digging 200 bushels of road or hedge greens, ...	0	3	0
Twice turning and mixing the same, with as much farm-yard and stable dung as, when rotten, will make a bulk of ten tumbril loads, or four hundred bushels, ...	0	3	0
Filling and spreading ditto, at 4*s.* per score loads, ...	0	2	0
Carting ditto upon the field from the heap, 6*d.* per load, ...	0	5	0
Driver half a day's work, at 1*s.* 6*d.* per day,	0	0	9
Allowance for beer, at 2*d.* in the shilling upon 8*s.* 9*d.* being the value of all the above labour, ...	0	1	5½
Total, ...	£. 2	17	2½

"N. B. No

"N. B. No allowance is made for the value of the dung, or the expense of carting it from the yard to the earth heap, as the one is the natural produce, and the other the ordinary business of the farm.

" A considerable expense is annually incurred through the neighbourhood of Southminster in chalking the stiff heavy lands, and of which the following account may be taken as the average per annum.

	£.	s.	d.
Eight waggons of ninety bushels each, costing at the wharf, or landing place 11*s.* per load,	4	8	0
Carting, filling, and spreading the same at 10*s.* 6*d.* per load, ...	4	4	0
£.	8	12	0

Which dressing is supposed to act with an almost unabating force for the first twenty years, following a lapse of three years (which time is allowed for the chalk to melt down and incorporate with the soil) from the time that it was first applied or spread upon the ground. The same expense frequently occurs in chalking the marshes; but its effects there are neither so observable, or so permanent, as upon the stronger higher lands.

" The soil of Great Totham consists of a deep hazel earth upon a brown clay, and a light gravelly soil upon a sand and gravel. The deep loamy soil has been much improved by clean chalking, at the following expense per acre:

	£.	s.	d.
Six waggon loads of chalk, 90 bushels each, at 12*s.* per load at the wharf, ...	3	12	0
Carriage, filling and spreading ditto at 8*s.* per load, ...	2	8	0
£.	6	0	0

Which dressing is supposed to last 20 years; nor is it allowed by the advocates for this practice, that with fair farming the land can ever be so completely impoverished as it seemed to be before the chalk was applied. In many parts of this neighbourhood a second chalking has been tried, but with so little effect, as entirely to discourage its repetition.

"After teasel the land is commonly sown with wheat, and then chalked at the following expense per acre:

	£.	s.	d.
Eight waggon loads of chalk, 90 bushels each, at 11*s.* 6*d.* per load at the wharf, or landing-place,	4	12	0
Carriage and spreading, three turns per day, at 7*s.* per load,	2	16	0
	£.7	8	0

This expense occurring upon fresh lands, or where it has not been chalked before, will, with good husbandry, be quite sufficient, without any intermediate mending for 20 years.

"Part of the embanked marshes at South Fambridge, Camden, &c. are under the plough, and are usually chalked with 35 Gravesend cart-loads, of 30 bushels each, per acre: delivered at the wharf or landing-place at 3*s.* 7*d.* per load, ... £. 6 5 5

This will make about 26 tumbril loads of 40 bushels each; the carting of which upon the marshes, including the driver, equals about 6*d.* per load,	0	13	6
Filling, spreading, and allowance of beer upon the same, at 2*d.* per load	0	4	4
	£. 7	3	3

The land should be well cleaned before the chalk is applied,

plied, and which, at all events, should be laid upon the lay or grass ground for a few years, in preference to that which is ploughed or broken.

"In many of the lands in the Islands of Foulness, Wallasea, Potton, Haven Gar, New England and Canvey, it is much to be regretted, that there is so great an indifference to restore to the soil, in the form of manure, the useless and putrid remains of its former produce.

"Pakelsham, a deep rich hazel coloured soil, extending to and bounded by the embanked marshes. In this neighbourhood a great deal of clover seed is sown, for sheep feed, or mown and carried to the fattening cattle, to which it is given in the yard, or in the stalls mixed with hay, the dung produced in this way is esteemed particularly strong and good.

"Chalk rubbish (says the Rev. H. B. DUDLEY, of Bradwell) brought in vessels from the Kentish cliffs has been the principal manure, or rather *alterative*, to the ploughed lands here time immemorial. Horse, and other dung, till within a few years, were esteemed of no value, and therefore not carted on the land. Eight waggon loads of chalk, value 11*s.* a load, without cartage, are a good dressing per acre, which in fair husbandry will be productive 20 years*."

MARL.

Essex has followed the example of Norfolk, in giving the term of *clay* to earths that are unquestionably marls, from the great quantity of calcareous earth they contain. Mr. VANCOUVER, who is a Norfolk man, encouraged this misnomer: his expression so often occurring of *chalky clays*,

* Vancouver.

may alone give the reader a suspicion that the earth described is really marl.

Claying is not equally general; but Mr. ABBOT, of Spaines-hall, Mr. RUGGLES's principal tenant, has made great exertions; I viewed one pit from which above 3000 loads had been taken; he spreads 60 loads per acre, at 3*s.* a score for digging, filling, and spreading, costing in the whole about 40*s.* an acre. It is an imperfect clayey marl, and marly clay; but attended with considerable benefit. Mr. ABBOT reckons chalk much more improving, and values his clay in proportion to its whiteness, from a mixture of chalk. It has been remarked, that this manure will be of considerable benefit on all soils in which there is a depth of three feet to the marl.

I viewed a clover field of Mr. DICKSON, of Wethersfield, so full of white clover, that I could hardly believe it had not been sown. He assured me that it was owing merely to the land having been manured with blue clay full of chalk stones.

Mr. WRIGHT, of Hatfield, marled a field the soil of which was a gravel: he laid 50 to 60 loads per acre of whitish clay marl, but in four years has seen no benefit.

Mr. TWEED, at Sandon, has marled 300 acres with whitish clay marl, at the rate of 40 loads an acre 50 bushels per load; some of it done 25 years ago, and answered greatly. Shewed itself in two years. Little or no chalk used in this vicinity: it would cost 12*l.* per acre, and seven miles carriage: lime answers, but marl better.

Mr. SAVILLE, at Great Waltham, has marled a field of strong loam on a clay bottom with white clay marl: the notion of the country is, that it will do no good; in this I apprehend they are mistaken: I make the minute, that the result may be inquired for hereafter.

In the clay hills at Buttsbury, are some old and large

marl

marl pits, the soil all around strong, wet and heavy; Mr. BRIDGE has tried the use, but found no benefit from it now.

Mr. MANSFIELD, near Epping, has marled on a very considerable scale: his soil in the fields marled is a loose spungy wet loam on a clay bottom, which to the eye appears too frothy, and such as would give more straw from dunging than corn; good marl consolidates such soils, and always works a great improvement: Mr. MANSFIELD's marl is blue, and very good, and bringing 80 loads an acre a mile, the cost is very little under 5*l.* an acre. He has done many fields; and I never saw marl better spread, but cannot approve of his laying it on fallows. The duration of marl depends much on its being spread upon a *layer*, and kept on the surface some time before ploughing. Mr. MANSFIELD says, it is well known here that land will not *take* marl a second time in less than 50 years; but it will take lime.

About Terling, the farmers have used great quantities of clay marl, and especially on the lighter land, but the effect, Mr. STRUTT informed me, on the heavy red loam, is not equal; they used to lay on from 80 to 100 loads per acre; now not more than 60. It is a very old husbandry in this country, for old pits are spread about the whole of it. The common practice is to lay it on fallows, but Mr. STRUTT prefers spreading it on some sort of layer, to keep it a time on the surface before ploughing in.

" 'Through the Rayne, Black and White Notley, and Falkbourn parishes, the land is very much intermixed and broken, the higher parts consisting of clay, and the hollows and sides of the hills of gravel and moor. Great benefit has resulted in this neighbourhood from claying the light lands, and correcting the natural defects of the several

several soils, by mixing the opposites of each other together.

" The beneficial effects of loam as a manure when applied on the light lands, at the rate of 60 loads (40 bushels each) and at an expense of 4*l.* per acre, is supposed, in this neighbourhood, to last 20 years.

" The soil at Copford forms a deep tractable hazel coloured loam, upon a brown tender clay, with a small intermixture of gravel. A vein of blue chalky clay has been worked in this parish, and is applied in the following proportions and expense per acre, viz.

	£.	s.	d.
Stubbing, filling and spreading 50 loads, at 3*d.* per load, ...	0	12	6
Four horses, and two tumbrils, two days and an half, at 12*s.* per day, ...	1	10	0
Driver two days and a half, at 1*s.* 6*d.* per day, ..	0	3	0
Allowance of beer upon stubbing, filling, spreading, and the drivers wages 15*s.* 6*d.* at 2*d.* in the shilling, ...	0	2	7
	£. 2	8	1

Which dressing is supposed to remain in force for twenty years.

" The soil through Shalford and Great Bardfield, consists of a loamy sand and gravel upon a white and yellow sand, and a wet heavy loam upon a brown clay, or brick earth; below which at 18 or 20 inches, is found a blue and a white chalky clay, which is applied with very good effect, in strengthening the light soils, in a proportion of 160 bushels per rod, or 6400 bushels to the acre. The white and yellow sand, is successfully applied in the same quantities to the wet heavy soils.

" At Rivenhall, Chepping-hill, Kelvedon, &c. the soil

soil is found chiefly to consist of a light friable loam, upon a tender brown clay, containing a vein of rich marley clay. This has been applied with an equally good effect, as well upon the wet heavy, as on the more dry and lighter lands, in the following proportion and expense per acre:

	£.	s.	d.
Stubbing, filling, and spreading fifty loads of forty bushels each, at 7*s.* per score, ...	0	17	6
Five horses, two days and an half, at 2*s.* per day each, ...	1	5	0
Wear and tear of two tumbrils, at 1*s.* per day each, ...	0	5	0
Driver two days and an half, at 1*s.* 6*d.* per day,	0	4	0
Allowance for beer upon the men's labour, at 2*d.* in the shilling, 21*s.* 6*d.*	0	3	7
	£. 2	15	1

An expense which would be incurred more frequently, but from the dip and direction of the vein, which will only admit the parish to be partially benefited.

" The blue and white clay in the parish of Sandon, has been applied with the most sensible effect upon those lands which have a brown tender bottom, rather than such as are gravelly, or possess a tough tile earth; the proportions and expense per acre, are as follows:

	£.	s.	d.
Stubbing, filling, and spreading forty loads, of forty bushels each, at 7*s.* per score, including an allowance for beer, ...	0	14	0
Three days for a team of four horses and a driver, including the wear and tear of two tumbrils, and allowance of beer to the driver, the whole at 15*s.* per day, ...	2	5	0
	£. 2	19	0

Where

Where no clay is to be had (which through this neighbourhood is extremely scarce) lime is mixed with earth and dung, and applied at an expense of 5*l.* per acre. The clay however is esteemed by far the most preferable, being thought equal in its operation, and far more durable; not only increasing the quantity, but greatly improving the quality of the wheat, and other grain with which the land may be afterwards cultivated.

" A chalkey clay has been applied very successfully upon the gravelly soils in Widford, thirty loads of forty bushels each to the acre.

	£.	s.	d.
Stubbing, filling, and spreading the same, at 6*s.* per score, ...	0	9	0
Four horses, two tumbrils, and a driver, five days, at 15*s.* per day, ...	3	15	0
Allowance for beer upon stubbing, filling and spreading, ...	0	1	6
Ditto for the driver, ...	0	1	3
	£. 4	6	9

" At Boreham, to the poorest light lands, nothing is so great an improvement as clay or marl, which is generally laid on at the rate of about sixty loads to an acre; but on land particularly light, and where this business is intended to be done very effectually, eighty loads per acre is frequently laid, which is a dressing of fifteen bushels to every square rod, supposing our dung carts to hold thirty bushels. The clay is dug, the carts filled, and the clay spread on the land, at about six shillings for every twenty loads: this, as well as being an effectual and cheap improvement, is also a lasting one, as the good effects of it are experienced twelve, fifteen, and sometimes almost twenty years afterwards*."

* Vancouver.

GRAVEL.

Mr. SPERLING, of Dynes-hall, in Great Maplestead, has greatly improved some pieces of spungy sand, loose hollow sandy loam, by laying from sixty to eighty loads per acre of gravel on it: and on a moory hop-ground, the produce of which was very uncertain, and the hops always mouldy, he laid one hundred loads an acre of whitish clay marl; it was over done, but afterwards came about, and is at present the best he has; on some land clay is better than chalk; but if the sand in the soil be what he calls *waxey*, then chalk is a better improvement. Wherever he lays either clay or chalk he avoids ploughing for some time, working well in the surface only with a nidget and the harrows; and when ploughed, is attentive to have a very shallow furrow.

LIME.

The operation of this manure is generally so little understood, that cases cannot be too much multiplied; if they became very numerous, it would be much easier to establish their principles on a scientific basis.

Mr. LONG, of Belchamp, forms a compost of lime and yard-dung, and spreads it in the spring for barley which succeeds barley; he thinks it answers: forty bushels an acre, at *5d.* at the kiln; *7d.* at home.

Mr. NEWMAN, of Belchamp, spread one hundred and sixty bushels per acre on a light sandy and gravelly soil, and it was a visible improvement for seven years.

Mr. RICHARD PRAT tried it on strong land, and he thought it beneficial.

Mr. BUXTON, at Layer de la Haye, has tried it on strong clay: two hundred and forty bushels per acre, and could

could never see that it did the least good, except in a small degree checking the black grass; but on a mixed soil, turnip loam, it did good; besides being a specific for the anbury in turnips: till land is limed or chalked it is subject to this distemper, but not afterwards.

Mr. KETCHER, of Burnham, has limed at the rate of one bushel and an half per rod, and laid it hot from the kiln on a fallow, and it was of great service, particularly in forcing weeds which the tillage destroyed.

Mr. HARWICH, at Rayleigh, is bringing his farm into very capital order by draining, ditching, fallowing and ample manuring. Lime enters largely into his composts, which are spread on fallows for wheat or oats: he lays five quarters per acre. His bailiff assured me that the effect of lime is very considerable.

At Avely, lime is chiefly used, but they have a notion that old chalked land will not take it well. Sir THOMAS LEONARD informed me of a circumstance rather singular, that fern will not grow, nor can be produced on chalked land; he has tried every means to raise it in his park, but never with any success, though it once produced it plentifully, and the horses when littered with it were always in remarkably fine order. Lime is carried from Mr. WHITBREAD'S kilns at Purfleet above twenty miles, as manure, as Sir T. LEONARD informed me.

Mr. NEWMAN, of Hornchurch, lays two waggon loads of four horses per acre, on fallows, at 28*s.* per load: a bushel to a rod, making it a rule to plough it backwards and forwards, but not too deep: he mixes it also with dung and earth for clover, spreading on the barley stubble, and nothing answers better; lasting seven, eight, and even ten years.

Lord PETRE, at Thorndon, spreads clean lime on fresh land the first year of fallowing, eight hundreds per acre,

or

or a bushel to a rod: the *hundred* is twenty-five bushels, and costs 7*s*. 6*d*.; carriage 1*l*. 1*s*. for four hundred. There can be no doubt of the benefit; Mr. MILES, the uncommonly intelligent bailiff, has limed part of a field and left part unlimed, and the superiority was great. The soil a strong tenacious loam, but good, on a faint reddish clay bottom; but much of it yellow and very stiff. The benefit lasts seven years. Much such land has been limed in this country again and again; and in this case the land will not *take clean lime;* but then lime and earth are mixed, and some dung added, and in this way it answers: I need not remark how difficult it is to ascertain an exact result when mixtures are spread.

It is the only prevalent manure around Billericay, where the farmers are apt to think that they can get nothing without it: in Dunton, Mr. HAND informed me that it is sometimes laid on clover land for wheat, but the ordinary practice is every where to spread it on fallows. Clean lime not often spread. It is reckoned to cost 9*d*. per bushel by the time they get it here from Grays.

It is common husbandry all around Ingatestone; they go nineteen miles to Stifford for it: Mr. BRIDGE, of Buttsbury, *hardly thinks it pays*. He lays on, whatever the mixture, to the amount of a waggon load per acre, which costs on the land 3*l*. 3*s*. Mr. COVERDALE mixes dung and earth, and afterwards adds lime. If you will have composts contrary to common sense, surely it is better to mix lime and earth till the lime is become chalk again, and then add the dung.

Mr. TABRUM, of Margaretting, has many doubts respecting lime: he sees every day the benefit which results from composts of maiden good earth and dung and lime; but he knows that the earth and dung are both very serviceable when laid on alone, but whether the merit is increased

creased by adding lime proportionably to the expense, is with him a great question: still however he is in the practice.

Mr. BRAMSTONE, at Skreens, has tried lime with attention on his strong land, and is not convinced that the least benefit ever attended it. The farmers do not use it.

Mr. MANSFIELD, near Epping, uses lime at the expense of 11*s.* 6*d.* the hundred, and 5*s.* carriage, and he lays eight hundreds per acre, mixed with earth and some dung; more or less. He has laid 9*l.* worth of lime on thirteen acres. The effect on land that has not had it before on these heavy strong soils is very great: it is seen to an inch. But afterwards it will do only in composts of earth and dung.

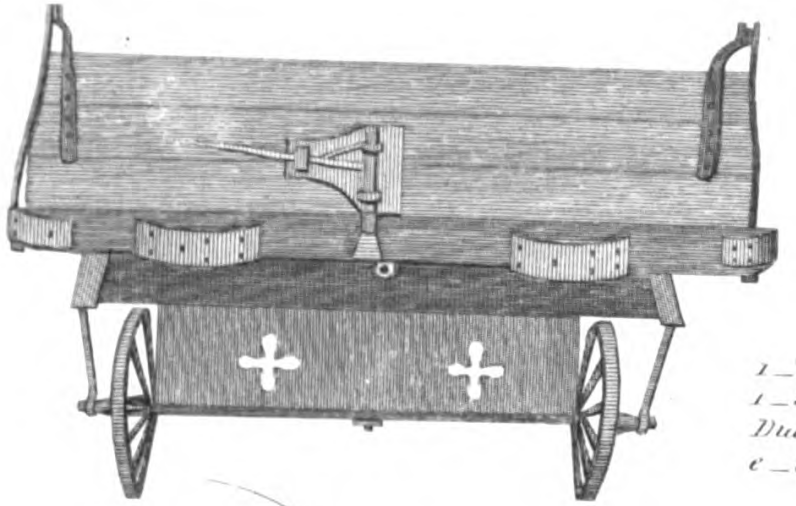
Mr. JOCELYN's looker at Pitsey informed me, that lime was the best manure on their strong soils, as the whole country had been chalked before. They plough up a road side or a border, and lay dung on it, and then add the lime two waggon loads an acre; sometimes only one and an half, and then they mix the whole together for spreading on the fallows. Price of the lime 7*s.* 6*d.* per *hundred*, which is twenty five bushels; it lasts very good for four years. Mr. JOCELYN has laid out 100*l.* a year for four years in lime, on a farm of 150 acres.

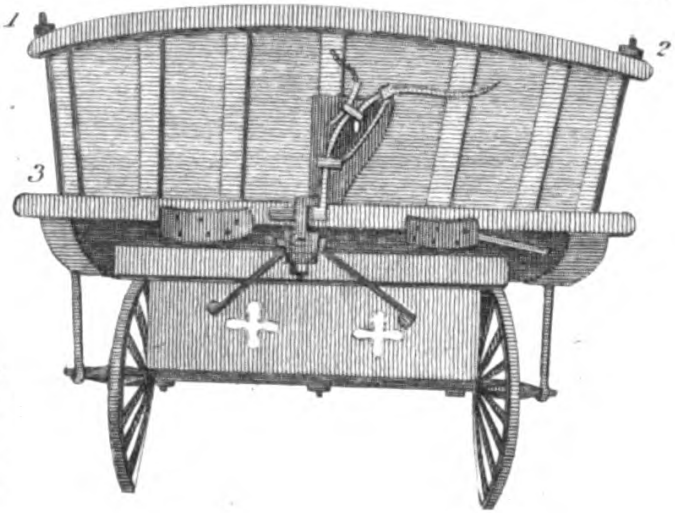
The lime-kiln establishment of Mr. WHITBREAD at Purfleet, is one of the most interesting that is to be found in Essex: upon that gentleman's estate there is a bold cliff of chalk covered by many feet of surface loam: from the magnitude of the excavation it has probably been wrought for many years; but the present possessor gave a new appearance to the place, and a fresh vigour to the works, by laying down iron rail-ways, for every purport of carting: 25 horses were constantly employed: since these ways have been made four do the work, and 21 have been dismissed,

which

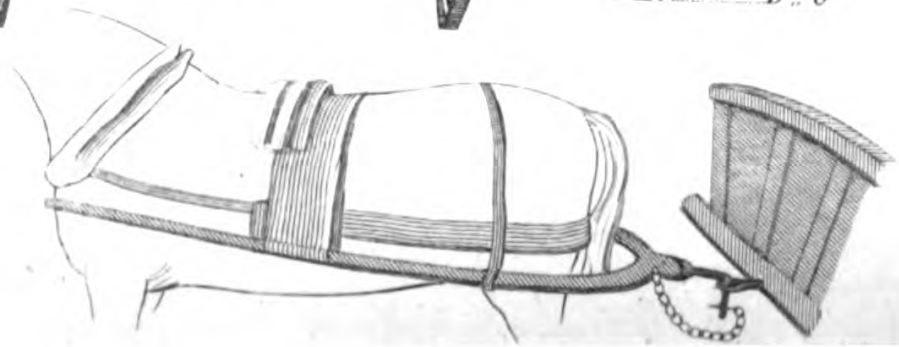
Purfleet Waggon ends.

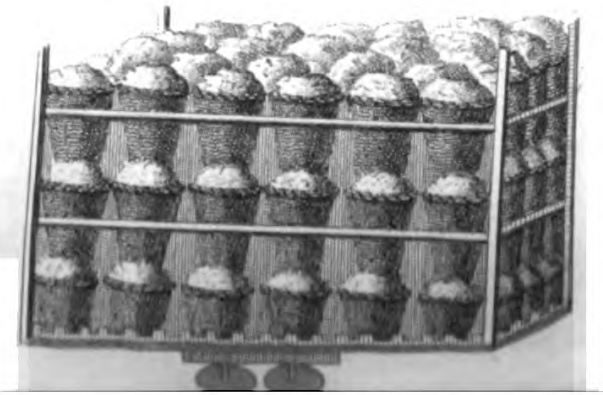
Plate 52. P. 225.





	F.	I
1 – 2	5	6
1 – 3	1	6
Dia. wheel	1	10
c – c	3	6





which ate each half a bushel of oats per diem the year round. The loam which covers the chalk is sold to shipping for ballast at 1*s*. 1*d*. per cart-load of one ton and a quarter: chalk is delivered into the barges at 2*s*. 6*d*. flints the load (one ton and a half) at 14*s*. and lime at 19*s*. 6*d*. One horse draws five or six waggons loaded. The disposition of the rail-ways is complete—they lead to the bottom of the cliff to receive loam, which is shovelled down to large wooden hoppers, which pour it at once into the carts, by means of the skeleton chalk rock being left in forms that conduct it. Ways lead hence also for delivering the broken chalk directly to the kilns, which for this purpose are built in a deeper excavation; and coals are also distributed by other *ways*. From the kilns distinct iron roads lead also to shipping for delivery of the lime: the waggons are backed to the ship or barge side, and unloaded at once by tilting them up. The annexed plates will give a better idea of the whole. (*Plates* L. LI. LII.).

" The length of carriage through the northern parts of the district of Buers Gifford, Pitsey, Vange, Basildon, Langdon-cray, Ramsden-cray, Ramsden Bell-house, Nevenden, North and South Bemfleet, and Thundersley, has in a great measure precluded the use of chalk, and lime has there been substituted in its place, mixed with earth, and farm-yard dung, in the following proportions per acre:

	£.	s.	d.
Seventy-five bushels of shell lime, the first cost of which at the kiln is 7*s*. per hundred of 25 bushels,	1	1	0
Carriage of ditto,	1	1	0
Carry forward,	£. 2	2	0

	£.	s.	d.
Brought forward, ...	2	2	0
Stubbing or digging 200 bushels of road or hedge-greens, ...	0	3	0
Twice turning and mixing the same, with as much farm-yard and stable dung as, when rotten, will make a bulk of ten tumbril loads or 400 bushels, ...	0	3	0
Filling and spreading ditto at 4*s.* per score loads, ...	0	2	0
Carting ditto upon the field from the heap 6*d.* per load, ...	0	5	0
Driver half a day's work at 1*s.* 6*d.* per day, ...	0	0	9
Allowance for beer at 2*d.* in the shilling upon 8*s.* 9*d.* being the value of all the above labour, ...	0	1	5½
Total, ...	£.2	17	2½

"N. B. No allowance is made for the value of the dung, or the expense of carting it from the yard to the earth heap, as the one is the natural produce, and the other the ordinary business of the farm*."

YARD-DUNG.

Mr. LONG, of Belchamp Walter, lays his yard-dung on for turnips; some for second crop barley with lime, and some for beans.

Mr. RAYMOND passing through a field lately hollow-drained, and observing a labourer spreading some straw that was left after the drains were filled, inquired for what purpose; and was told it was not worth waiting for a cart

* Vancouver.

to

to come for it, and therefore it was to be ploughed in. He had afterwards the curiosity to observe the effect in the following crop, and was surprized to find that it had made a very observable improvement; and afterwards repeating the observation, found that the effect lasted several (I think he said two or three) crops more.

Mr. R. TABER, at Beerchurch, near Colchester, spread all his manure for turnips; a necessary application, as the soil would give none without it. He carted it (with a considerable quantity from the town) on to hedge-greens for a compost, and turned for mixing. This is the general system of the Colchester district of dry turnip land; the composts are seen in every direction in all the roads and waste spots, and kept till quite rotten; some of them till *black butter* becomes *black snuff*.

From entering Essex, to returning to Colchester from coasting Tendring hundred, the same system is universally prevalent—they cart the yard-dung on to heaps, and turn over once or twice, perhaps thrice, mixed with chalk, or London dung, or that from some country town.

The same at Layer de la Haye: turn it two or three times, adding Colchester dung to assist the fermentation. Some have mixed lime from Cornard, near Sudbury.

Mr. COOPER, at Langenhoe, likes best to spread his dung on the young clovers in frosts: the dung having been clamped and turned over twice or thrice, till quite rotten; but upon the light land at Fingeringhoe, he does not mind how long and fresh the dung is.

Mr. HARDY mucks for his clover land wheat six loads an acre; for turnips eight loads an acre of forty-five bushels: very seldom lays any on for beans.

Mr. BUXTON, at Layer de la Haye, in common with abundance of others I had noted, lays his dung on to the barley stubble for the young clover.

The general management in Mersea resembles that of the rest of the county: they clamp their dung, and turn once, twice, or thrice, spread it on the young clovers; some on fallows. Last year Mr. BENNET HAWES carried some long dung at once from a butcher's yard for wheat, and the crop ran so to straw, as to be almost spoiled by it: the straw gave four waggon loads an acre. He has very successfully manured clover land for beans; which is better than laying it on clover for wheat.

Mr. SPURGEON, of Bradwell, on the oat stubble for the young clover lays rotten dung; generally a compost of earth and chalk mixed for three or four years, and then dung added.

Mr. BRIDGE, of Buttsbury, prefers spreading his composts on the young clovers.

Mr. BLYTHE, of Kirby, carts his yard-dung on to heaps, and if the carts are driven on to such heaps, then he turns them twice, beginning as soon as the heat is over. The general practice wherever I have been is, to cart the dung from the yard to heaps, and to turn once, twice, or thrice; the oftener, it is esteemed the better; many on to hedge-greens for mixing with earth; and others for different composts.

Mr. PORTER, of Little Leighs, has taken one step towards improvement: when he has formed the heaps in the clover lays intended for wheat, he leaves them untouched till they are carted on to the land. The motive from this variation sprung from having carried some long fresh dung on to a layer for wheat, in order to finish a field where the clamped dung did not hold out; and that part giving much the best corn, induced him to turn over no more, as the more turned the more rotten: he has no doubt that all moving is mischievous, but cannot bring himself to leave it in the yard.

Mr.

Mr. LEE, of Maldon, has remarked, that when dung has been turned once, the fresher it is used the better.

Mr. SMITH, who occupied the farm at Wickham mills for many years, manured for his turnips on that sandy loam with long fresh dung, and by that means got the best turnips.

Mr. WRIGHT, of Hatfield, did it himself last year, and it answered greatly.

Mr. WAKEFIELD, of Burnham, has carted fresh dung for turnips without stirring, and it answered as well as rotten.

Mr. KETCHER, of the same place, has tried long dung on fallow and on pasture, and has a good opinion of it; but his common practice is clamping.

Mr. SPURGEON, of Bradwell, once carried long dung from the yard for turnips, and had women and boys with rakes to lay it in the furrows; and it did very well.

Mr. PATTISON, on the strong clay hills of St. Lawrence, has carried out dung from the yard without stiring, and it answered the purpose well. On three acres of one field he manured a fallow with long fresh dung, but the oats were not so good by two quarters per acre; then clover, which was as good as the rest; the wheat which followed was worse; but since that it has been the best part of the field.

Mr. NEWMAN, of Hornchurch, in general prefers rotten dung; but for potatoes uses it so long, that it may be called wet straw.

Mr. TABRUM, of Margaretting, once saw on the farm of Mr. BINKS, at North Weald, part of a fallow on strong land manured with long fresh dung, and it did not answer at all. On inquiring further, he remarked that it ploughed horridly bad, and choaked the next earth that was given: no skim coulter was used. It is obvious that if long straw dung be not turned down accurately, and

deep enough for successive tillage to be shallow above it, that it is more exposed to the atmosphere than if it was in a clamp. This cannot answer, for the very purport of the husbandry is defeated in the management. Mr. TABRUM's objection to using long dung seemed to turn much on the inconvenience of leaving it longer in the yards than necessary, and on the power they have in any weather, of carting to a clamp, though the land may be too wet to go upon it. I cannot admit this reasoning. Yards are cleared in May, and that is a time when it can be carted directly to the fallows for turnip or cole, and ploughed in.

The Earl of St. VINCENT, who pays the same attention to manuring which he does to every other branch of the art, mixes lime with bank and ditch earth, to destroy all weeds; and when this is effected, adds some dung, and turns it again.

Lord PETRE carts his yard-dung to a heap, and turns it, and I questioned Mr. MILES the bailiff, on the point of long and short dung; but he is decidedly in favour of its being rotten; the more so the better. He has tried it fresh out of the yard on fallows for wheat, and it did not well; it bred weeds; and was as bad on meadows. Fifteen acres of beans were this year manured, six with horse dung, and nine with dung from the cow-yard; and the difference hardly credible—the six acres produced far more than the nine.

Mr. WOOD, of Ingatestone, has spread long dung immediately after the scythe, and in the same field rotten dung in the winter; and in the third year after, on comparison, the long dung proved much the better. After the scythe, he is convinced, is the best time for dunging grass.

Many years ago Mr. LACON, of the Black Boy, Chelmsford,

ford, manured his hops with long fresh dung; and he was ridiculed by all his neighbours, as having ruined his hops at least for one season: but the result proved their mistake, for his crop was uncommonly large.

Mr. BRAMSTONE, at Skreens, clamps and turns.

Mr. DYER, of Ongar, does not clamp his dung, nor does he approve of mixtures: he lays on dung by itself, and earth by itself, which saves him considerably in labour: but the common method is to make composts of earth, and lime, and dung. They go twenty miles for the lime, and Mr. DYER thinks it does not answer.

Mr. WILLIAMS, of Ongar, clamps and turns, and carries it on for turnips or pasture; he has dunged one hundred acres of grass in a year. Has tried dung so long, that much was raked up and brought back again for litter, and it did very well for one crop. He has often spread long dung for turnips, and had men attending the ploughs to lay it into the furrow, and it answered well.

But I apprehend the experiments of the two preceding cultivators to have arisen from the systematic practice of Mr. NICHOLS, of the same place, who travelling about five years ago into a distant county, observed the husbandry of long dung to be attended with such remarkable success, that he determined to try it on his return home. He had always been in the common clamp system: in the first trial of the new method, he laid the same number of loads on to grass land which he had been used to do of rotten dung, and the success was better. He went on, and has continued it since uniformly to his entire satisfaction. He finds that the fresher it is, the better, even to taking it directly from the stables to the field: it is load for load to the full as good as rotten dung; yet he finds that it takes four loads of long to make one rotten; consequently the advantage is quadruple. He approves much of dunging

in autumn, as the worms draw it in, and it keeps the grass warm, and cherishes a very early growth; he remarks also, that sheep are fond of feeding among it. Such as remains above and dry, he rakes up and brings it to the yard, but the quantity inconsiderable. He carries it on at any time that suits; and is upon the whole perfectly convinced, that the system is by far superior to the common practice, and ought to be generally adopted.

Mr. MANSFIELD, of Ongar-park, has been in his farm but a few years, and as his first object was to improve and increase his grass land, he has hitherto laid all his dung upon his grass land, and manured his arable with marl and lime: but now his grass is in order, he shall spread dung on his young clovers, in composts of lime and earth; he digs the border earth, lays dung on it, and then lime on the dung, mixing well by drawing over with mattocks. He clears his yards twice a year, before Christmas and in May, forming clamps, also laying ashes from London on it, brought twenty-one miles: thirty-six bushels in the field cost 15*s*. that is, 7*s*. ashes and 8*s*. carriage, and mixes with the dung.

At Shearing and Hatfield, in the Roodings, they clamp and turn: Mr. LORD informed me, that dung when laid upon the fallows for wheat, was apt to give a coarse sample; much the greater part therefore goes on to fallows for barley. They have no notion of using long dung; and Mr. LORD is of opinion, that when four loads by rotting are reduced to one, that one is better than four long.

Mr. CHAMBERLAIN, of Rise, near Hallingbury, whose farming knowledge is in highestimation, remarked that long dung, in the opinion of that vicinity (the Rooding district), retains water, and is therefore bad for their heavy land: they clear the yards twice a year, and clamp with

with earth; turn over twice or thrice, the oftener the better: and on grass land also the more rotten the better. The best way for arable is to plough it in autumn on fallows for barley; but they have not time, and therefore are forced to carry it on in frosts.

At and about Chesterford the farmers lay on long dung for their barley; that is, such as has been thrown up in heaps for a month to get into a strong fermentation, and in that state carry it on, and plough it in.

Mr. NASH thinks that it should remain thrown up long enough to kill the seeds of weeds, and no longer, as this is the main object of making it ferment. Carries on for turnips, and when that is over, on clover lays for wheat.

The Rev. W. MACKLIN, of the same place, forms heaps, and turns them to become rotten; the method he had been accustomed to before he came to this country.

The intelligent bailiff of Lord BRAYBROOK, Mr. NOCKOLD, has seen long and rotten dung laid on the same pasture in autumn, and the difference was considerably in favour of the former, though it was so long that some was forced to be raked up and taken away again.—The general management is to clamp, or lay on earth and turn.

Mr. STRUTT, at Terling, clamps his dung and turns over.

Mr. SPERLING, at Maplestead, lays his dung on for turnips directly after barley sowing, from heaps thrown up in the yards; but no turning, and in a long state: it is ploughed in, and left so for six weeks; then two earths directly after each other, without waiting for any interval of time between them: then leave it for a fortnight, and plough twice more for the seed. Sows and harrows directly after the plough, beginning at four o'clock in the morning and finishing at eleven.

Mr. EATON, at Yeldham, mucks his fallows in autumn for

for barley: his expression was—*I like to get it into the land: I don't like to see it too long in heaps, for I think it is often turned to loss.*

At Toppesfield they clamp and turn two or three times till it is rotten; the more rotten Mr. ELY thinks the better.

At Birdbrook the farmers generally clamp and turn; but Mr. BURNEL has tried long fresh dung, and it answered as well as rotten, load for load.

Mr. COKER, at Borely, mixes his dung with earth, and turns twice to rot it: but, which is very extraordinary, never lays it on for turnips, but for the barley which follows them generally ploughs but once to turn it in; but sometimes turns it back by a second earth, and in again by a third. He is clear that if the muck was spread for the turnips the crop of barley would be less by two sacks, perhaps three, per acre; he has experienced this. On strong land lays it on for wheat.

In Foulness Island they are in the clamping system and turn; and often lay it on banks and hills and mix. But of all the countries I have seen, this is the worst provided for making dung; in many miles I did not see one farm-yard in the Island, or any thing like an enclosure for confining cattle: the appearance was that of barns opening to the waste, with straw at the doors, and the cattle free to wander where they pleased. The great fertility of the soil takes off all anxiety upon this subject; and within the memory of man, dung was not thought worth carting on to the land. Mr. KNAPPING, of Shoebury, however, afterwards informed me that his farm-yard had a haulm wall made around it.

Mr. WRIGHT, of Rochford-hall, spreads his yard-dung on the fallows for turnips and cole. If he wants to use it soon, he turns it up in the yard, and thence to the field; but

but if not, he clamps, and turns it over in two months, wishing to have it rotten. His father's practice was to lay it on the young clovers. He once carted a dunghill which was by no means rotten enough, on to a pasture in a frost in February, and could not see any benefit from it. Last winter he made 1200 loads of dung. He has 300 acres arable and 300 of grass; one-third of the former is fallow and clover, or at least does not yield straw; he has 200 acres therefore of straw; this proportion is therefore an acre of straw making (stubble included) six tumbril loads of dung. He carted this year 300 loads from the yard on to a dunghill which was turned once, and he conceives that there is now about 200 loads in this heap.

Mr. PRENTICE, of Prittlewell, spreads his dung on the fallows for turnips and cole. Has done it on the young clovers. He carts from the yard to a heap, and turns once, not more: he has seen raw dung from the yard used, and it did not do so well.

Mr. PARSONS, of Shoebury, spreads his yard-dung for turnips, and he thinks that for turnips the longer the dung is the better; it cannot be too long, provided it can be turned in; he uses it so long, that he bushes the harrows to prevent their drawing it out again: all he does to it is to throw it up in the yard, and not touch it again till carting. Mr. PARSONS is an elderly man, and of great experience.

Mr. KNAPPING, of Shoebury, in general carts his dung on to heaps, and turns over once, but never lets the carts go on to the heap. He has, however, often taken it fresh from the yard without stirring, and carried it directly to the land for turnips or cole, and found it as good as the other, and with more moisture in it. He lays on much of his dung for beans.

Mr.

Mr. VASSAL, of Eastwood, spreads much on clover lays for wheat, and as rotten as he can get it.

One of the most interesting articles of intelligence I have met with, was from Mr. POLLEY, bailiff for above 30 years to Mr. FENN, at Middleton-hall: in speaking of dunging for wheat being a good practice, he remarked that *it should be long fresh dung*. Many years ago he discovered the superiority of such dung to what the farmers so generally prefer, that which has been moved and stirred over till rotten: his own expression was, one load of long is worth six a year old and rotten; and that with such dung he is always sure of a crop of wheat. Of this doctrine I asked him if he was clear in the opinion, and certain of his facts? *Decidedly so.* Mr. FENN had before told me, that this was his system; and I wished to know how far his experienced bailiff, with a very intelligent understanding, coincided with the opinion.

All around Belchamp Walter, and the vicinity, hedge-rows turned up and dung in them in August; or heaps about the fields with earth, an indication of spreading them for wheat. The farmers there seem to have no notion of the sun extracting any thing valuable from dung.

About Hedingham, and to Finchingfield, all in hedge-rows and heaps.

Mr. VAIZEY, of Halstead, having a clean Windsor bean stubble intended for oats, and one part of the field being of a much poorer soil than the rest, he carted thither a dressing of long fresh stable dung that had not been stirred at all. The crop of oats there were so large (I viewed the stubble), that it made him think it appeared a greater crop than he would have had, if it had been manured in the common manner. I perceived the fact was working in his mind; and I have no doubt but that so very sensible

and

and clear a head will make in future a good use of the obvious conclusion.

Mr KEMP's system is to cart it to hedge-greens, &c. as long as any such remain on the farm; after that to throw up in heaps, and turn over once. He is, however, attentive never to leave stable dung to heat, but takes it away.

Mr. SEWELL, of Maplestead, mentioned to me a farmer of his acquaintance, who dunged a grass field with such long strawy muck, and it laid so above ground, that he thought he had done no good to the field; but it turned out very well, and answered greatly.

Mr. THURLOW, at Gosfield, about four years ago carried out some long dung from the yard without any turning, and spread it on grass land, and it did as well as any.

The dung is applied about Castle Hedingham for turnips; by some before the seed earth on fallows for barley; by others on the barley stubble for the young clovers.

Mr. SAVILLE, of Bocking, in discourse on this subject, remarked that he had seen a very good effect result from spreading very long fresh dung on young clover.

Mr. SAVILLE, jun. of Great Waltham, last year (1804) spread long fresh dung for barley; but it was not turned in clean; the barley was not great, but the clover very fine.

Mr. LEE, of Maldon, is in the common practice: however, he has taken one step towards a better system: he made some observations which gave him reason to suspect that dung was not used fresh enough, and therefore turned in heaps but once.

Mr. ROGERS has carried both long and short dung on for turnips and potatoes, and found the long best, and the experience has induced him to have much fewer muck

hills

hills than he formerly had; he carries so much directly to the land, that he has not one hill on his farm to ten that he has had formerly.

I remarked that the borders of his fields were dug away and sloped to the ditches. He carries this earth in great quantities on to the land alone, and finds that it answers well. He does not approve of the common practice of laying dung and chalk in order to mix with these borders. By carrying the earth alone after an autumnal ploughing, and before the spring tillage of a fallow, the earth gets sweet by exposition. In the common way the earth is mixed with dung without being previously sweetened.

He has bought two hundred loads of dung in a year from Colchester, but it did not answer.

He makes his straw into muck by short horned beasts fed on oil-cake, and by many hogs. All last winter he had above fifty hogs confined to the yards that were littered, and they converted much to good dung.

The preceding minutes, especially those on the use of dung in a long or in a rotten state, are interesting. Upon the whole, they add some decisive cases in favour of long fresh dung, to those already before the public; and in others not so determinate there is an approximation to the same discovery. Local information relative to dung does not often contain much variety: the usual practice of a district pervades it, and it is only by varied inquiries that novel ideas are to be discovered. In the practice of clamping or hedge-rowing their dung, with keeping, turning, mixing, and rotting, the Essex farmers have for an age moved like horses in a team—following each other without doubt, question, or experiment. But the observations here detailed in their own county, without taking to the account the great variety of cases I have elsewhere published,

published, are sufficient, I hope, to make them think a little before they go on in a system, for no better reason than its being the custom of their fathers. I hope they will not longer persist in *so high a veneration for their ancestors.*

It is here necessary to remark, that this is not a point in which every man may follow his own plan and all be right from difference of soil: the present practice is a complete answer to such an idea, because speaking very generally, ALL (whatever their soil) are in the same system. They all do whatever will most speedily rot, I should say, *consume* the dung; and they all think the more they rot it, the better; hence is is plain, they do not appropriate their conduct to their soil. There aré in Essex a million of acres; suppose only that one sixth part is dunged every year, it makes 166,666 acres; if dung in its long fresh state were carried it would be four times as much, or 666,664 acres; at three times as much it would be 499,998; and if only twice as much, it would be 333,332: hence then it must be clear, that the dung now made would manure from 167,000 to 500,000 acres of land more than is manured with it at present: and if the manuring be reckoned at only 3*l.* per acre, here is evidently a MILLION STERLING PER ANNUM lost in this one article, in this one county: that is to say, as much as the rent of it! Surely this is an object deserving some thought and consideration.

I do not add the reasons for fresh dung being better than rotten, though numerous and powerful; because I have entered into that question in the *Essay on Manures*, for which the Bath Agricutural Society honoured me with their Bedfordean Medal; and which is printed in the volume of their Transactions now in the press: but surely the

the men who turn and mix for the sake of rotting, should remember that they reduce four loads to one*, and it is worth their reflecting, that this deduction is not a concentration of bulk, leaving the essence of the whole in the reduced quantity, but a real dissipation of the substance blown by the west wind for manuring the ocean. If they waited long enough the whole would be gone, except a portion of remaining earth, not convertible by atmospheric influences into gases, though easily (for the most part) so by chemical operations.

The effect of fermentation on dunghills is visible only in the diminution of bulk; but the nose partly detects what is going on; and farmers should inform themselves of the convertibility of animal and vegetable substances into elastic fluids which are dissipated in the atmosphere. If they had been acquainted with facts which so nearly concern their business and interests, they would have set themselves to think long ago; this would have led to experiments, and they would gradually have changed their system. But better late than never: and if this report shall instigate to these experiments, Essex will not suffer from the Board of Agriculture directing it to be made.

PIGEONS' DUNG.

Major CARR, of Eastwood, near Rochford, manured for cole which was seeded, part of the field with fourteen loads per acre of yard-dung, and part of it with eight bushels an acre of pigeons' dung: the bulk of the crop was greatest after the yard-dung, but most seed from the pigeons' dung.

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* Accounts vary from three to six.

NIGHT SOIL.

Mr. NEWMAN, of Hornchurch, has found that this manure for pasture is, of all other sorts, the most capital; two waggon loads an acre, at 7*s.* besides carriage, are beyond every thing, and secure a carpet of herbage. On corn land, he thinks it forces straw too much.

TOWN DUNG.

At Colchester it is 5*s.* to 7*s.* a waggon load. Mr. TABER a year ago bought 200 tumbril loads of dung, at 2*s.* 6*d.* more than half a waggon load. It is now 3*s.* 6*d.* and 6*s.* and 6*s.* 6*d.* the waggon. At Bradfield much London muck is brought from Mistley and Maningtree. Mr. HARDY uses to the amount of one waggon load to every acre of summer-fallow, at the expense (for the price of the dung only) of one guinea a load: it is mixed with his own yard-dung in heaps for the purpose of exciting fermentation, from the notion that it has this effect, and, that having it, the benefit is proportioned.

Scarcely any London dung or other manure is brought to Brentwood, &c. at the distance of 18 miles. Before the building of barracks, much hay went to London, and a good deal now.

"In the neighbourhood of Lawford, Bradfield, Wrabness, Mistley, Ramsey, Dover-court, and Harwich, the usual mode of manuring per acre, is one waggon load of London muck with about five times the quantity of fresh soil collected from the road and hedge-greens. The cost of the London muck at the wharf, is 15*s.* per waggon load; the carriage of this, and mixing it with the earth

heap, will cost 4*s*. 6*d*. per load of 40 bushels each, twelve of which applied to the acre, equals ..... £. 2 14 0

Carting from the heaps into the fields 6*d*. per load, ... 0 6 0

Filling and spreading, at 1½*d*. per load, ... 0 1 6

Driver half a day, including allowance for beer 10½*d*. allowance for beer upon filling and spreading, at 2*d*. in the shilling, 3*d*. in all 0 1 1½

£. 3 2 7½

Which expense in mending, is supposed to be annually incurred on about one-sixth part of the land that comes in turn for manuring; together with occasional light top-dressings of soot, ashes, &c. upon the wheat and young clover.

"In the maritime part of Tendring hundred the following is the expense per acre at which manure is generally applied through this district, when the land to be improved, lies tolerably convenient to the wharfs, or landing-places:

	£.	*s*.	*d*.
One waggon load, containing 90 bushels of London muck, delivered at the wharf, for	0	15	0
One ditto of chalk ditto, ...	0	10	0
Carriage of both ditto to the earth heap, at 7*s*. per load, ...	0	14	0
Digging or stubbing about 220 bushels of road or hedge-greens, ...	0	3	0
Twice turning and mixing the same, two days work for one man, at 1*s*. 6*d*. per day, ...	0	3	0
Filling and spreading at 4*s*. per score loads, ...	0	2	0
Carry forward, ... £.	2	7	0

Brought

	£.	s.	d.
Brought forward, ...	2	7	0
Carting upon the field, at 6*d.* per load, ...	0	5	0
Half a day's work for the driver 9*d.* and allowance of beer upon stubbing, mixing, filling, spreading and driving, in all 8*s.* 9*d.* at 2*d* in the shilling, ...	0	1	$5\frac{1}{2}$
Total, ...	£.2	13	$5\frac{1}{2}$

Which expense is supposed to accrue annually, upon about one-fourth part of the shift of arable land, which comes regularly in course for manuring; and which the home-made manure, or that produced from the farm, is not sufficient to afford to that proportion of the farms a proper dressing. This calculation is stated on a supposition that the wharf where the foreign manure is delivered, is within distance of making three turns in a day, with a waggon and five horses; where the team makes but two turns in the day, and where indeed one load is a complete day's work, the above expense must be proportionably augmented*."

POND MUD.

" I beg leave to lay before you three experiments with mud upon an upland, laid down with grasses about eight years, the mud from a moat, the bottom of which is a white marly clay.

" In September 1790, I cast the moat, one end of which adjoins the farm-yard, and had received the draining from it 18 or 19 years; this part, I was advised (con-

* Vancouver.

trary to my own opinion of its being proper) to cart immediately upon the land, and spread it as soon as it was dry enough: I did so, and the effect was, infinite injury to the succeeding crop of grass; it caked down so very firm, that the rain and frost, that season, with the assistance of a great deal of labour, did not pulverize it sufficient for the grass to get through. The loss I sustained was very considerable, there being less hay than on any other part of the field. The following year I was much inclined to have harrowed it, with a heavy pair of harrows, and sow it again with seeds: I did not, yet am convinced the crop would have been more productive if I had; for it was very light, and not equal to the crop before the mud was carried on.

"The third year, being a wet season, it began to work, and produced me a tolerable burthen, but not sufficient to repay the loss of the two former; yet the benefit was very visible, for the spot where it was laid might be traced to great exactness.

"The mud from the other parts of the moat was thrown upon the banks and left to drain; this I wished to have let remain there a year, to have stirred it over, and then carried it upon the pasture, but was again prevailed upon to carry on two parts out of three as soon as it was dry enough to cart; being told it would save a considerable expense, and be equally beneficial, in both of which I was disappointed: the extra expense of bush harrowing, and beating the clods to pieces, was more than the stirring would have been; for, like the former, it caked down, and injured instead of benefiting the succeeding crop of grass, but not in so great a degree—for I thought some advantage was derived from it the second year.

"As

" As the two methods above were quite contrary to my ideas and opinion, I was determined with the mud that remained to adopt the following plan of my own, which probably may not be new in many other places, although it is in this parish. Instead of carting the mud when dry, I turned it over with a spade, except about one rod at the end, which, from some cause or other, was neglected till March; I then dug it and planted potatoes. The other part, from having had the winter's frost and rains, was very full of mould, and I imagined would do exceedingly well for carrots; it was sown with carrots; but whether the dryness of the season, badness of seed, or the soil not being proper (the latter I believe), my crop was a very bad one; but the potatoes exceeded my expectation; had the whole been planted with them, the produce would have doubly paid me the expense of digging and planting; and the mud received great benefit, by being stirred over when they were taken up.

" When the crops were cleared, I carted the mud upon the poorest part of the pasture, and was agreeably surprized to find it produced a very fine crop of grass the June following, superior to many parts of the field that had been well manured at the same time. The luxuriance of the crop was so conspicuous, as to attract the attention of the neighbouring farmers.

" Therefore, having met with such great success from the latter experiment, I shall in future empty my ponds between hay-time and harvest, let the mud lie till it is dry enough to dig, then stir it over, and in March dibble in potatoes; being convinced, if it is not the best method to adopt, it is a profitable one, where the mud is taken from a clay bottom*."

* Mr. Walford.

Mr. VAIZEY, of Halstead, tried the mud from a pond which received no more than the wash of a small field, spreading it on grass land fresh, and it was decidedly beneficial; but on arable land he has not observed any benefit from it.

COAL-ASHES.

At Chesterford, many coal-ashes are brought from Cambridge, at the distance of eleven miles, for clover, sainfoin and grass. The price 2*d.* a bushel, besides carriage. The Rev. W. MACKLIN uses a waggon load per acre.

Lord BRAYBROOK, at Audley-end, manures largely with these ashes: 38 acres of sainfoin in one year, 60 bushels per acre; costing, carriage included, near 6*d.* per bushel.

His tenant and steward, Mr. NOCKOLD, manures ten acres of sainfoin with them every year,

Another very spirited tenant and improver, Mr. CLAYDEN, laid down 50 acres to sainfoin, and in three months he brought from Cambridge 6200 bushels of these ashes! and in the same year dunged all his meadows besides. Such exertions are truly meritorious. He farms 400*l.* a year under Lord BRAYBROOK.

SOAP-ASHES.

Mr. MANSFIELD, near Epping, had a grass field, the grass of which was sour, and of a sort that would not mow, nor would stock eat it; he laid four waggon loads of soap-ashes per acre, and the change effected was total: the improvement very great indeed: the soil strong, wet and heavy.

POT-ASH.

Mr. TWEED, at Sandon, has a pot-ash fabric on his farm: the value of the ashes 6*d.* per bushel; spreads on his grass lands one hundred and sixty per acre, once in five years. It more than doubles the produce.

Mr. VAIZEY, of Halstead, has manufactured it largely: when he uses the ashes alone, spreads one hundred and sixty bushels an acre; but prefers mixing them with his yard-dung.

Mr. PORTER, of Little Leighs, has remarked, that these ashes sink *like quicksilver:* as readily as clay: shallow tillage therefore good after them.

SEA-WEED.

This manure has been carried by several persons to some enclosures near Tiptree-heath; and it is said with good success.

SHELLS.

I found many masses of shells (chiefly cockle) on the shore of Burnham marshes; and Mr. WAKEFIELD informed me, that to the north of these, at Tillingham, &c. they extend for some miles, and that Mr. BAWTREE of that place has used them successfully as a manure.

GREEN CROPS.

Mr. HARDY, of Bradfield, had a field of clover, part of which was mown twice; and part but once, the second growth being kept till it was in blossom before feeding, when hogs, &c. were turned in, who trampled out five times as much as they ate, which was ploughed in for

wheat; and where this latter management took place gave by far the stouter wheat: and it should be remarked, that through all the parts of Tendring hundred, this husbandry of trampling second crop clover apparently to waste, is very general, and the opinion entertained of its merit is high.

Lord BRAYBROOK sows cole for ploughing in, in November, and his bailiff Mr. NOCKOLD, assured me he could see to an inch in the barley where this management takes place. If the crop be high he mows it first, but this is for want of a skim-coulter, which would do it better standing.

Mr. CLAYDEN, a very spirited tenant on the Audley-end estate, is in the same husbandry.

On the Application of Manures, by Mr. VANCOUVER.*

" The first consideration which most naturally occurs to an active, intelligent, and improving farmer upon this subject, is that of preparing and fitting his soil for the reception of such animal and vegetable matter, as in the course of his lease he may be able to collect for improving, and annually recruiting his exhausting lands: previously hollow-draining the wet heavy parts of his farm, and afterwards applying the alteratives of chalk, clay, marl, sand, or gravel, which though at the highest expense stated in the journal) will not discourage him, seeing in consequence thereof the land becomes more tractable and fruitful, and which with proper management, he knows it will be found to retain for a great length of time.

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* My respect for the author induces me to retain his remarks wherever possible: though I cannot entirely agree with him.—*A. Y.*

" The

" The blue and white chalky clay, which is applied successfully, under such different circumstances through this county, should (in order to prepare it for an immediate and intimate union with the soil) be stubbed and left exposed to the action of the air, some time before it is carried out, and spread upon the land.

" In the application of sand, gravel, or any silicious mixture to the heavy wet lands, care should be taken to apply it in quantities sufficient to divide, and completely to overcome the natural adhesion of the soil; for if there is too small a quantity used, a directly opposite effect will follow, and the land (on the principle of mortar) will acquire a disposition to run and cement together; thus instead of the tough clayey soils being brought to a more gentle temperament, their natural tendency will be increased to run together, and to crust upon the surface after rain, and every fresh ploughing.

" In applying the clay, marl, or any apparently unctuous or soapy matter, to soils containing a superabundance of sand or gravel, the same caution is by no means necessary, as under the most convenient and favourable opportunities of procuring those materials; there would be but little danger of such a quantity being carried upon the land as would contribute, even in the smallest degree, towards producing a similar effect.

" In every soil, be its nature what it may, occasional dressings of lime are indispensably necessary to act upon the undissolved animal and vegetable bodies, thereby producing fermentation and vapour, or giving to them that degree of solubility, without which it is impossible they can afford any direct nourishment to plants. The well known property in caustic lime, which so rapidly dissolves the texture and organization of all bodies, whether animal or vegetable, should be an object of the most serious

serious study and consideration, to the improving farmer, who ought to be well advised of the fact, and to have it ascertained with the utmost certainty, whether there is, or not, from the peculiar circumstances of his soil, a direct and positive demand for such a dressing. If on examination it should be found to contain a considerable portion of animal or vegetable matter (and which a very simple chemical analysis would readily determine) there can be no question but lime would be of service, and which upon all, and every occasion, should be applied by itself, unmixed with any other matter, immediately slightly covered, and in its freshest, hottest, and most caustic state.

" In this view, we are chiefly to regard its operation in the earth, and whether in its disorganizing process, it converts the whole, or a part only of the animal and vegetable substances with which it is in contact into the immediate pabulum or food of plants; and that the remainder, by subsequent union with other bodies, becomes locked up as it were in an insoluble state, but capable of being dissolved again, and converted into vegetable food, by the application of acids or alkali, is a question of too much importance to the agriculture of these kingdoms, to be carelessly overlooked by the chemical agriculturist; as thereby a supply of vegetable food may be discovered, which if satisfactorily explained, and placed in a point of view, so as to enable the occupiers of old, and apparently exhausted, chalked, and lime lands, to restore and bring into action that quantity of vegetable food, which may have lain dormant for ages in their respective farms, would be a discovery indeed! The person who by superior talents, and unwearied labour, shall be so fortunate to develop this mysterious suggestion to mankind, will assuredly rank higher in the estimation of man in general, and the inhabitants

habitants of these kingdoms in particular, than any of the most justly celebrated characters of ancient or modern times.

" It has just been observed, that such a discovery would apply as well to the relief of the old chalked, as to that of the old limed lands. From the present mode of applying lime, by the time that it reaches the field, it becomes quite effete, and differs very little from its raw state, in that of chalk, saving that in its more completely perfect, and impalpable pulverization, its causticity is lost and expended in the dung heap, and the gas or vapour there generated and thrown off, and which in its proper situation, would have materially aided a growing crop, is improvidently lost, as a benefit to the farmer, and dissipated by the winds.

" Where the length of carriage has not forbid the use of chalk, it has indubitably produced for a time upon the tough heavy clays in this county, very beneficial consequences; the practice however, begins to be much deplored, and that by very observing and able persons, on a supposition, that the old chalked lands, at this day, are equally obstinate, and far more sterile than they otherwise would have been, if chalk had never been applied.

" With chalk, as with lime, and all other calcareous earth, in a proper state, animal and vegetable matter, will to a certain degree combine, and in that combination produce fermentation and vapour, or form something that shall be soluble in water; in either case, there is evidently a chemical action, the effects of which contribute very largely to the powers of vegetation.

" So long also as the chalk remains in an imperfectly dissolved state in the soil, it acts as it were mechanically, and renders the tough strong clays and tile earths more tract-

tractable. But the whole of the chalk is capable of being carried downwards, by its specific gravitation or solution in water; an effect which, after a few years, and in every soil that must necessarily take place, and the land will then be completely washed, and freed from the calcareous earth; here the mechanical action of the chalk must cease, nor may it be advisable to renew it, quoad its beneficial effects mechanically, as it is presumed, and not without good reason, that in like manner with lime, it has a tendency to lock up a large portion of vegetable food in an insoluble state, but capable of being dissolved with some acid or alkali, to which the insoluble matter may have a greater affinity than to that of calcareous earth; an opinion which is strongly supported by the preference generally given to soapers waste lees, and ashlip upon old chalked ground, rather than to attempt a renovation of the land by a new chalking.

"The good effects of what the farmers generally term a fresh tickling with chalk, is certainly to be ascribed to its mechanical operation in the first place, but more generally to the richness and quantity of vegetable food contained in the virgin mould, and with which the chalk is always mixed.

"The application of manure upon the surface, or what is generally called top-dressing, ought chiefly to be regulated by the following considerations:

"1st, Whether the soil is of such a nature as to require any correction in its temperament, to render it more or less tender, open, or friable.

"2d, Whether the manure proposed to be applied, is capable of operating to that end.

"3d, Whether such manure is incapable of affording nourishment to vegetables, unless it is brought into close

close and immediate contact, with some other power or latent principle, containing vegetable food in the soil.

"4th, Whether the plant proposed to be fed by such manure, draws its nourishment principally from the ground.

"In the affirmative of all these cases, it is but plain the manure should be covered, or lightly ploughed under.

"But when the manure is of such a nature, as to apply but lightly to such considerations; when it is capable of being dissolved on the surface, and conveyed by water downwards to the roots of the plants, or by conversion into vapour, to be absorbed by their stems or leaves, and that the plant is equally prone to receive its nourishment in both ways; the economy and effective operation of top-dressings, is unquestionably the most highly beneficial, and greatly to be preferred."

SECT. III.—EMBANKING.

THE whole coast of Essex to the ocean and the Thames, is embanked: I saw no exceptions but at Harwich, South End, and Purfleet; and these not extensive. These embankments are most of them old, with several new ones of saltings, contiguous to older intakes proportionably to the degree in which the sea retires; but on the South Coast of Tendring hundred no new acquisitions are thus made; and they have apprehensions that the sea has a strong disposition at present to resume some of its former grants.

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The sea gains on all the coast of Tendring hundred; and it is the opinion of many very able men, that the expensive embankments which at present are the security of a large extent of marshes, will be carried away: thirteen years ago, they broke at St. Osyth, and the mischief done was very great. Mr. BAWTREE thinks that they have not yet recovered it. Holland-haven is under the controul of Commissioners, but they meet with great difficulties in their operations.

At the head of modern embankers was the Rev. H. B. DUDLEY, who at Bradwell and at Tillingham took in large tracts in a more perfect and masterly manner than had been known before. The account has been published in the Transactions of the Society of Arts, who voted him their gold medal.

As a guard to a sea wall, much exposed and newly repaired by Mr. DUDLEY, he attempted to give a new direction to a shifting bank of shells, to convert it into a defence and security to his wall; for this purpose he made a faggot hedge in the sea ooze, to retain the shell sand; and finding it to take effect, he made a second. The bank shifts, though slowly, to his will, and he has the rational expectation of availing himself of it, to strengthen his wall, at no other expense than that of thinking. Opportunities of this sort often occur, but are lost.

Every branch of husbandry and of improvements, that could possibly be applied to the great tracts of land in the hands of this distinguished cultivator, were executed with an intelligence and a vigour that merit the highest applause.

Mr. LEE, of Maldon, embanked thirty acres from the saltings at Goldhanger on the Blackwater, which cost him 300*l.* and for which he had the honorary medal of the Society

Society of Arts. It became good land directly with chalking and tillage.

Mr. SPURGEON, of Bradwell, has embanked ten acres of saltings, two years ago, which cost him 150*l.*

A very considerable work of this description has been executed four years ago on the Earl of WINCHILSEA's estate in Foulness Island: three hundred and thirty acres were taken in, by his Lordship's encouragement, by two of his tenants, Messrs. JOHN KNAPPING, of Shoebury, and BANNISTER; the bank cost between 16 and 1700*l.* None of it has yet been ploughed: I examined the herbage, and found it greatly advanced, and very good; with white clover coming apace, and a scattering of dwarf poa, and spotted trefoil, with many other grasses that promise to do well. They have it rent-free for twenty-one years. It was begun in April 1801, and finished in September. Mr. KNAPPING's share was two hundred and thirty-four rods, and Mr. BANNISTER's one hundred and ninety; the whole at 58*s.* They were excluded from ploughing it. They have been ever since making ditches for dividing it into proper fields. There is no fresh water on it, and they are therefore obliged to drive the cattle to what are called the uplands in the Island.

SECT. IV.—PARING AND BURNING.

"THE following account of this practice was sent me by an ingenious spirited young farmer in the parish of Haverill.

'The piece of land upon which I have made an experiment of paring, was an old pasture never before under the plough; the staple from four to eight inches, and the greater

greater part of the field had a stratum of loam (or woodcock soil) below, of nine to twelve inches before you came to a tender white clay. The field was very backward, and wet in the extreme, with its declivity to the north-east. Prior to the paring, I took care to remove all hills, bushes, &c. rolled it with a pasture roll; at the same time I kept off all heavy cattle and carts; for where ever any impressions were made, it escaped the paring-knife. The rolling prevented also in other places the flag (or turf) being cut of too great a thickness. From the pasture being so exceedingly wet, I did not begin till the last week in May: with three men and favourable weather, the 11 acres, of which the field consisted, were finished by the 5th of July, 1790. The quantity of ashes per acre left from the burning was 80 dung cart-loads, a small portion of which I removed from the bottom of the field, and found it excellent manure for my pasture grounds.

'THE EXPENSE PER ACRE.

	£.	s.	d.
Burning and paring,	1	11	6
Allowance for beer,	0	5	0
Spreading the ashes,	0	2	6
Making of kid faggots for fuel,	0	1	6
Straw for ditto,	0	5	0
Carting, faggots and straw,	0	2	6
Total expense per acre,	£. 2	8	0

'The weather being very favourable, it did not require so much fuel to light the heaps as might otherwise have been requisite, as many of them were kindled merely by the embers of others.

'It is highly necessary that the men should pay, at the time of burning, particular attention to their fires; for

for if the wind be strong and the weather dry, they will burn so rapidly as to make the inner part one solid mass, or like brick rubbish, whereas the ashes should be soft. But this is easily prevented by opening the heap with a dung prong, admitting air, and turning in the sides.

'After the burning was finished I immediately ploughed and harrowed it; then land-drained, and gave it four clean tilths in the season, with harrowing, so as to have it in fine order. I was very careful not to have the land ploughed deep, lest I should lose my ashes. The draining it before winter had set in, was the most efficacious means of preventing the wet from exhausting the ashes. The distance of the drains five yards and a half.

'Four crops of barley in immediate succession in the years 1791, 1792, 1793, 1794. One ditto of the early Charlton white pease in 1795; one ditto of red chaff revet wheat in 1796. In November 1797, very clean, and intended for fallow.

'The first crop of barley, year 1791, was sown in February. Its growth was so luxuriant, that at the end of May I was under the necessity of mowing it close to the ground, and carting it off, two cart-loads an acre; part of which I gave to the cattle, horses, cows and sheep; and part I laid on to some early tilths, which I found excellent manure when ploughed in before the sun had dried it up. At the time of mowing the ear was not formed, yet notwithstanding the height was from two and a half to three feet.

'The produce of this first crop was something more than six quarters an acre, and the quality was such that I malted it. The season was dry.

'Immediately after it was harvested, the land was ploughed, and had four clean earths, or tilths; one of which was transverse, with repeated harrowings.

'The next crop, 1792, was sown as early as the season would admit, three bushels of seed per acre, as there were also for the preceding and subsequent crops; and was succeeded by the same kind of tillage preparatory to the seasons, for the crops of 1793 and 1794, always taking care in ploughing, as observed before, not to plough too deep.

'The average produce of the years 1792, 1793, and 1794, was five quarters and a half per acre.

'After the barley in 1794 the land was ploughed as before, with one additional ploughing. It was in very fine tillage, and early in the spring 1795 was sown with early Charlton pease, the land having been first ploughed in small furrows transverse. The pease grew luxuriantly, and promised from five to six quarters an acre. This crop cost 10*s.* 6*d.* an acre hoeing and handing the rows. But from the great quantity of wet this season, which began late in May, continued through June, and the greater part of July, the weeds and the wet turned out the hoe and the night frost. This crop, though great in bulk, was very unproductive. The eleven acres yielded only 17 quarters, and five bushels and a half had been sown.

'The land appeared very foul after this crop; yet from the early ending of the pease before I had cut any wheat, the weeds had not arrived at any maturity, and I was able by two transverse ploughings, with three others, and with the usual precautions and harrowings, to get it ready for wheat, with which it was sown at Michaelmas 1795, two bushels and a half to the acre. Early in the spring 1796, costing 9*s.* per acre, it was rolled with a ridge roll in March. The land was remarkably clean, and the crop nine coombs per acre; and were the land my own*, I would now set it with beans.

* "It has passed into the occupation of other hands, I believe."—Yes: it was high time.—*A. Y.*

'The

'The value of the land when pasture, was 10*s.* 6*d.* an acre, and now, for a term, it is worth 18*s.* and if occupied by the proprietor 20*s.*

'I need not mention the expense of the draining and tillage, with the loss of a year's produce of the pasture, these being easily estimated from customary usage. Nor is it necessary to observe, that the experiment has been advantageous to myself, when I inform you, that the average annual value of the produce of the six crops has been 7*l.* 12*s.* 8*d.* per acre. Another advantage it also gave me was, that it enabled me to fallow off twenty acres out of ninety-six of the old arable lands.

'Many people pare early, and immediately sow their lands; but unless it meets with a very favourable season it is attended with great hazard, both as to crop, ashes and time. Where the occupier is at a certainty, he will find it more to his advantage, to take the early part of the summer to get his land dry and give it a good tillage; for then, if in time, it may be of coleseed, or, if the ground is good, of turnips. But few will wait for so long a process.—*Stephen Piper.*

'N. B. No fresh manure has, since the paring and burning, been wanted on the field.'

"*Paring and Burning in the Parish of Toppesfield, by Mr. Edward Piper, on a Farm called Bradfields.*

"1792. A field containing three acres and a half was pared and burnt at an expense of 1*l.* 10*s.* 6*d.* for the paring and burning only, and the other articles specified by Mr. Stephen Piper of Haverill, I suppose, at nearly the same charge each respectively. It was an old lay, extremely wet and heavy. The staple, or upper stratum, was from four to seven or eight inches approaching to a

loam in quality; the lower stratum a stiff clay. The operation was performed towards the latter end of March. When this was completely finished, it was sown with oats, and the crop was better than six quarters per acre.

" The autumn following it was land-ditched after the common mode of the neighbourhood, eight score rods to the acre; it was then ploughed, and prepared for barley; and in the spring

" 1793, It was accordingly sown with that grain, and the produce was again upwards of six quarters an acre.

" 1794. It was planted with beans; the straw of which was sufficiently luxuriant; but in the course of the summer they were surfeited and almost spoiled by a disease here called the *collier*, I suppose from the black and sooty appearance it soon gives to the beans; it is occasioned by a small green insect, very much like to that which sometimes proves so pernicious and destructive to hops. The crop was scarcely a quarter per acre.

" 1795. It was sown with oats, and produced five quarters an acre.

" 1796. Half an acre was sown with carrot seed; and this half acre gave three hundred bushels of carrots, which were sold for 1*s*. the bushel. Here are 15*l*. as the value of the half acre.

" Not quite a rood was planted with carrots, and yielded four cwt. of carrot seed; and I believe the price was about two guineas a hundred; which was at the rate of more than 32 guineas an acre.

" An acre was planted with potatoes, the produce of which was three hundred bushels, and they were sold for 1*s*. the bushel.

" The remainder of the field, that is, one acre and about three roods, was with barley, producing at the rate of four quarters per acre; price about 30*s*. the quarter.

" The

" The average produce per acre of this fifth crop was upwards of 13*l.*

" The gardened part is now in fine culture, and thoroughly fit for a spring crop; and that which was with barley might by proper management, have been so too. But the old tenant quitted the farm last Michaelmas, and the new one seems to have paid very little attention to its condition.

" Before paring and burning, the poor wet pasture was scarcely worth 7*s.* 6*d.* an acre; but now, after the detail, it is unnecessary to add that it is really worth more than double that sum.

" No fresh manure has yet been wanted, and it is not unworthy observation, that the spots where the heaps of turf were burnt, although the ashes were entirely cleared away from such spots, at least as much as possible, were peculiarly rich and fertile, and their produce of distinguished luxuriance; a circumstance which affords strong presumptive evidence that not only does the paring and burning the *turf* yield a rich and fertilizing manure, but that the burning the soil itself imparts to it a singular richness and fertility.

" *Paring and Burning in the Parish of Takely, by Mr.* MUMFORD.

" Of this I cannot give so full and minute a detail as in the former instances; but Mr. MUMFORD's general account may be esteemed very little less satisfactory. In the first place, Mr. MUMFORD occupies his own estate, and can therefore have had no inducement to exhaust the land for a temporary emolument, to raise an abundant produce for a few successive years, then to quit it totally impoverished, and look out for another farm to treat in

the same manner, as mere tenants are sometimes said to do. His only rational object was the permanent and increasing benefit of his estate; and this he thought he could not more probably accomplish than by land-ditching, and breaking up with paring and burning, his cold coarse wet pastures, which produced but small quantities of very indifferent grass, and that not till late in the season. He has accordingly pared and burnt thirty acres, all which have answered in the most satisfactory manner, even exceeding his most sanguine hopes and expectations. For the four or five first years after the operation, they have been constantly cropped, and the produce, from the fertilizing quality of the ashes, has always been copious and abundant, far beyond the rest of the farm, as well as much cleaner and freer from weeds. After that period it has commonly been treated like his other lands, two crops and a fallow, with the occasional intervention of clover, &c. both for fodder and seed; and has never been inferior to the best of his old cultivated fields; nor have they needed any manure for nine to twelve years after the ashes. When I saw Mr. MUMFORD he was himself, the latter end of last March, ploughing a field for barley, which was pared and burnt eleven years ago this spring. It was extremely clean and mouldy, and in most excellent order for the reception of the seed; but had never received any fresh manure till the present year, since the paring and burning; and every thing appeared in the most promising condition that could be desired.

" I asked him whether, with the land-ditching and mere breaking up, without paring and burning, the turf might not have been equally advantageous? By no means, he said, and for these obvious reasons: in the first place, it would have required two, three, or perhaps four years, before the turf could have been entirely rotten, and the land

land got into tolerably clean and good condition; that completely to effect this, the several additional ploughings would have been nearly, if not quite, as expensive as paring and burning. In the mean time the successive crops would have been greatly injured by the many remaining knots and quantities of grass, as well as numerous weeds; to keep both these under must have occasioned great expense, and what was still worse, the prodigious number of worms, bugs, and insects of every kind remaining in the old turf, would most probably have destroyed a fourth, a third, sometimes more than half the plant of the growing corn, by biting and eating its roots. In the course of these three or four years, what with the corn, grass and weeds, the soil would have been as much exhausted as if pared and burnt; whereas by that single operation of thoroughly paring and burning, the grass, and weeds, and insects, were entirely destroyed, and all at once converted into rich manure; the land was, as it were, instantaneously in a perfect state of tillage, and more permanently fertile than without such process.

"Mr. MUMFORD informed me, that in several parishes eight or ten miles to the north-west of him, such as Langley, &c. the practice of paring and burning had been introduced at least thirty years ago; that it had universally answered, and given high satisfaction; the crops continuing to be considerably greater than those of the best of the old cultivated lands, and the profits finally resulting much larger than before, even in the proportion of two, or even three to one, and of course the real value of the land advanced in a similar ratio.

"Upon the whole, from the several instances now given, the utility of paring and burning upon soils of the above description, seems to be clearly and fully established. But

as in situations and circumstances totally different, its propriety has been often denied, I asked Mr. MUMFORD what he thought of the practice where the turf-soil was exceedingly thin, and the under-stratum sandy, chalky, or rocky? He answered, that there possibly might be cases in which the breaking up land in any mode might be highly improper; but that wherever it was proper to be done at all, he could not but think that it was best it should be done by paring and burning: that immediate fertility was thereby secured, nor was the thin soil at all more exhausted than by any other method: that a renewal, or increase and improvement of the soil was sometimes attainable in various ways; by folding, by purchased manure, by frequently repeated green crops, which would feed an increased number of cattle, which would raise a proportionably augmented fertility of dung, and effect a great amelioration of the land.

"The grand objection to paring and burning seems to have been, that the fire occasions too great a waste and dissipation of the rich nutritious parts of the soil. But may not this idea be fallacious? May not the evaporation be principally of the mere watery particles? And is not the evaporation by fire pretty much the same as that occasioned by the heat of the sun? And may not both be equally compensated by the nourishing dews and fructifying showers? But this is submitted to the consideration and decision of better judges than myself*."

This husbandry is but little known in Essex; I found it in the north-west corner of the county, from Saffron Walden to Chesterford. Walden supplied many of the hands that pared and burnt Newmarket-heath, in this vicinity. Mr. NOCKOLD, the very sensible bailiff of Lord

* Howlett.

BRAY-

BRAYBROOK, who manages his Lordship's large farm with much attention, has burnt some old lay ground, sowing turnips or cole for sheep food, then taken barley, and laid down with seeds; never permitting two crops of white corn in succession; but sensible that there is a great treasure in the ashes, is careful to preserve it. With him the husbandry has been excellent; but it makes or mars land, entirely as it is cropped.

SECT. V.—IRRIGATION.

"OUR meadows, or low grounds (say Messrs. GRIGGS), are seldom watered by art; nor is it thought possible that any considerable part of the county should have this advantage without greater expense than prudence will justify. No capacious caverns or receptacles for large quantities of water, formed by barren mountains, are to be seen in this part of England; nor are our streams so plentifully supplied, that, by damming them up for a few hours, a country could be inundated at pleasure."

An Annotator remarks upon this,—"that spirit, attempt, and ingenuity seem more wanting in much of Essex, than water."

"I confess myself entirely of the same opinion. Scarcely do I know a river in the county, but, with very little contrivance, might be made with the utmost facility at any time of the year, so far to overflow its banks as to water the greater part of the adjacent meadows; nay, scarcely is there a brook or rivulet so small and inconsiderable, but might be so forced and trained as to accomplish the same purpose during the months of March, April and May. Thus, in both cases, upon the occurrence of dry parching summers, might fertility and luxuriance of crops

be

be imparted to soils which otherwise would be scorched and barren, hardly producing grass sufficient to pay the expense of cutting, and making into very unsavouring pitiful kind if hay. I perfectly remember a farm in Kent, on a spot as flat and unpromising as most in this county, upon which was no inconsiderable proportion of pasture and meadow, not worth 10*s.* an acre. The farmer, an ingenious spirited man, was determined to try whether he could not manage to overflow these meadows and pastures when the season proved unfavourably dry; and on the other hand, to prevent inundation when the weather happened to be sufficiently wet and rainy for proper and full vegetation. Both purposes he soon accomplished, at some little expense indeed, but which was amply compensated by the vast augmentation of his crops of hay, and the abundant luxuriance of his after-grass for feeding his cows and fattening his oxen. The land which before sometimes barely produced ten hundred of hay an acre, now not unfrequently yielded two or three tons; and instead of being dear at an annual rent of 10*s.* would have been cheap at 40*s.* Hundreds of situations, in the county of Essex, by similar treatment, and under the direction of similar skill and ingenuity, I have little doubt might be rendered equally advantageous; at present, however, we appear to have little conception of this species of improvement *."

* Howlett.

SECT.

SECT. VI.—GENERAL IMPROVEMENT.

BESIDES the particular objects of the preceding sections, I made inquiry into the improvement which Agriculture in general had experienced in the county, and especially in the last 20 or 30 years.

The country about the Belchamps, Borely, Gestingthorp, Bulmer, &c. very much improved in 20 years.—In hollow-draining; in the use of chalk; in converting to tillage all waste scraps of land; and in throwing many little enclosures, crowded with pollards together in open airy fields.

Agriculture certainly improved about Maplestead in 20 years: more corn raised; and the lands cleaner and in better heart.

Mr. FISHER UNWIN has known the husbandry about Coggeshall 40 years; and is clear that it is much improved in the last 20; especially in sowing many more tares, which he considers as a capital improvement.

Mr. BAWTREE, who remembers Southminster almost a wilderness, says that improvements in 40 years are very great; and that in 20 they have been considerable.

Mr. STRUTT, at Terling, has paid attention to the state of Agriculture for above 50 years, and is clear that it has been upon the whole gradually improving; and more still in the last five-and-twenty years.

Mr. COOPER, at Langenhoe, is of opinion that the husbandry of that vicinity is very much improved in 20 or 30 years: the single article of changing wheat on fallows (which used to be eaten up with black grass) to barley, is a very great object in his estimation.

Mr. MAJENDIE has some doubts whether the improvement of the husbandry of Essex, and particularly about

Hoding-

Hedingham, has been great in 20 years. The management has always been good; and upon the whole, so much better than in many counties, that there was not an equal field for it. In some circumstances, it is without doubt better.

In 1770 I found the town dung, &c. of Colchester selling at from 5*s*. to 6*s*. a load: I was much surprised to find now (1805) that the common price was from 5*s*. to 7*s*.

In the former period I noted that all the wheat in the country was very carefully hand-hoed; the practice is common at present, but the expressions make me suspect that it is not equally universal now: *we could not get hands*.

That the quantity of chalk from Kent used at present is not equal to what it was then, I have not the least doubt; but on this head they may fairly urge as they do, that the land has been so generally manured with it, that the same benefit no longer results from the application.

The products at that time noted, were wheat three quarters and a half; barley six; oats eight. At present, wheat three quarters and a half; barley five quarters; oats five quarters; and the reason of the equality assigned is, that much barley is sown on fallow; and many oats on a wheat *etch*.

Mr. SAVILLE, of Bocking, has no doubt of the fact, that more live stock is kept by the farmers than there was twenty years ago; and therefore the husbandry improved.

Mr. BRAMSTONE inherited his estate forty one years ago, and he is very much of opinion that many farms in that vicinity are not at all improved in that period: land-ditching is the chief article at present, and so it was then.

Mr. HARDY, at Bradfield, who has farmed there near forty years, is clearly of opinion that the husbandry of that neighbourhood for many miles is greatly improved; but chiefly in the last twenty years; broad hedge-rows

are

are reduced, others removed; more draining done; tares introduced, and in general a more careful and attentive cultivation.

Mr. POWELL, of Birch-holt, thinks that husbandry is improved in the last twenty years—*Yes; I should think that it is improved.* But the tone of voice indicated some small doubt.

To these slight remarks I shall add one general observation: I have known parts of the county of Essex forty years; and most of it above twenty years; and I am of opinion that in the two great points of hollow-draining and manuring, no change has taken place that merits much attention: the county, as Mr. MAJENDIE well observes, was always among the best cultivated in England. But in more general objects, I take it improvements have been, if not active, at least moving. The single article of changing the system of fallowing from wheat to barley, has been very important: and most of the general operations of the farm have been better executed in the last twenty years than in the preceding twenty.

CHAP. XII.

LIVE STOCK.

ESSEX was never famous for its live stock: it had no *breed* of its own of any kind, and was deluged with every species of cattle, sheep, and horses, that the most motley fairs could afford. It is however awakened to this object; the introduction of South Down sheep and Devon cattle has made them *think*; and this always produces its effect.

SECT. I.—CATTLE.

THE object which generally pervades Essex, is the keeping cows for suckling calves:—next, grazing in the marshes. The dairy district is not considerable.

COWS.

Dairy farms at Bumpstead and Hempstead, with much more grass than arable: a note of some years past.

1805. The face of these parishes much changed; a great deal of grass land is converted to arable, and the dairies consequently lessened. Radwinter and the two Sampfords, and some other parishes, had also many dairies twenty years ago. The number of cows now greatly

greatly lessened; and many of them applied in suckling calves; some few graziers who fatten bullocks. Twenty-five cows now reckoned a large dairy.

Mr. HORNER, of Hempstead, has the most noted dairy, and was so obliging as to give me some information on this head. The breed most general here is the long horned Derby. There have been some Suffolks at Bumpstead; his own are Derbys. He makes two meal cheese; that is, the night's milk skimmed and mixed with the morning's fresh: he sells at 7*d.* to 8*d.* per lb.; but 6*d.* a more general price. I ate some of his cheese at Mr. RUGGLES's table, and found it excellent. A wey (256lb.) per cow reckoned a common produce. They are bought in at three years old, at from 13*l.* to 17*l.* per cow; are attentive not to keep them so long as to lessen much their value as fatting stock; and the Derbys, when turned out from the dairy, or sold, fatten well: better they think than the Suffolks. Not much straw is eaten after Christmas, when they have hay given, of which a cow will eat two loads if permitted. They have no turnips, as the country is too heavy: straw does well while the rouens last. In summer they consume the produce of two acres each. The account per cow may thus be stated:

	£.	s.	d.
Two loads of hay,	6	0	0
Two acres summer food; rent, tithe, and rates,	3	0	0
Two months at straw,	0	8	0
Expenses of dairy, maid, &c.	1	0	0
Decline of value,	0	15	0
Losses, hazard,	0	15	0
	£. 11	18	0

Produce.

Produce.

	£.	s.	d.
A wey of cheese,	6	10	0
Seven dozen of butter,	4	4	0
Calf,	2	0	0
Pigs,	1	0	0
	13	14	0
	11	18	0
Profit,	£. 1	16	0

To this must be added, the profits which result from hay, reckoned at 3*l.* a ton at home. If the two loads are the produce of one acre and a half at 30*s.* the rent is 45*s.* and if mowing, making, stacking, &c. be 10*s.* it makes 55*s.*; to which add sundry other expenses 20*s.*; in all 75*s.*; and deduct this from 120*s.* there remains 45*s.* profit, provided nothing be reckoned for manure; added to 34*s.* gives profit per cow 4*l.* 1*s.* and on three acres and a half is 23*s.* per acre, which, every thing considered, is not too high. But if any of the land receives manure the deduction will be considerable: the general idea is, that the plough pays better than grass: a notion, however, the truth of which must depend on the price of corn; for the soil is strong and tenacious, and expenses consequently high.

Mr. WILTSHIRE, of Wethersfield, keeps Welch cows for suckling, which he prefers to Suffolks. They pay him, their own calf included (which he sells young) 10*l.* per head.

Mr. PORTER, of Little Leighs, keeps Suffolks for suckling, and they pay him far better than any others he has tried: they give much milk; hold it long; and in point of

of food, *shift fairly*; however, he never pinches, whatever the breed.

Mr. KETCHER, of Burnham, suckles, and prefers Suffolk cows for that use.

Mr. WAKEFIELD once suckled seventy cows; and the Derbyshires answered so much better than others, that if he was to go into that branch of business again, he would have no others.

Mr. BAWTREE, of Southminster, has suckled Welch, Derby, Suffolk and Scotch cows, and has found that the Anglesea Welch pay best.

Suckling the common system at Bradwell: great losses by hoving; Mr. SPURGEON has thus suffered severely.

This gentleman's calf-house attracting my notice, I found the floor of brick, laid with such spaces, and without mortar, that the calves were sure always to lie dry. Wood rots so quickly in such a situation, that this improvement is valuable. (*Plate* LIII.)

Sir THOMAS LEONARD, at Avely, keeps twenty-three cows for suckling: has tried several breeds, but finds Suffolks far better than any other.

Mr. NEWMAN, of Hornchurch, keeps a dairy of ten cows, from which he has made 1400lb. of butter since January, besides supplying a pailful of new milk from the cow all summer through daily, to animals not quite so useful as the cow that feeds them—fox hounds. The cows all Suffolks, and Mr. NEWMAN assured me they were better for the dairy than any other.

Sir RICHARD NEAVE, at Dagnam-park, has nine cows and a bull of the North Devon breed, which do so well with him as to establish his opinion of their superiority; has had several other breeds, but these excel. He has

two Suffolks, and although they are great milkers, yet for sale or fatting they are inferior. The bailiff's expression was, that he would not wish for better than Devons, either for suckling or milking; and they keep themselves always in good order, never getting poor, which is the case with other breeds. Sir RICHARD's other stock are small Scots, which pay him best.

The Earl of St. VINCENT, at Rochetts, keeps twenty-eight cows of the long-horned breed, and a bull from Mr. HORTON, of Cotton, by Trent. They are chiefly for suckling, in which they answer remarkably well; has sold calves at ten and twelve weeks old, for 7*l.* 8*l.* and 9*l.*

Lord PETRE, at Thorndon, keeps a dairy of twenty-two cows, Holderness, Suffolk, and Devons, and the Suffolks are best in his own estimation as well as in that of Mr. MILES the bailiff: he is not, however, a judge yet of the Devons, as they are new here.

About Billericay many cows are kept for suckling, and the long-horned Derby preferred, but many Suffolks among them. In passing through this country, I remarked a strange jumble and mixture of breeds, as if the farmers had no settled notion of what was best, but bought whatever they could pick up cheapest at fairs, and bred equally from all. I was told that Mr. FINCH had a good stock, but he was absent. Every Tuesday there is a great calf market here; they are brought from the London cow-keepers, and bought up for suckling.

Mr. COVERDALE, of Ingatestone, has suckled with several sorts of cow, and has found the Welch and Suffolk to answer his purpose best. He buys North Wales heifers two years old off for 5*l.* and they have calves before they are four years old.

Mr. BRIDGE, of Buttsbury, suckles, and prefers what he calls the dwarf short horns of Yorkshire.

Mr. TABRUM suckles, and prefers Welch to all others.

Cows

Cows for suckling are the common stock in the vicinity of Skreens; and the Derby the favourite breed.

There is much valuable pasture and meadow about Ongar applied to the dairy, to suckling, and to grazing. Mr. DYER dairies above twenty cows, and he thinks it by far the most profitable application of the grass: next suckling, and lastly grazing. He sells calves at two weeks old for 3*l.*

Dairying much at Stanfield Rivers, and all the way to Epping: there are most long-horned cows kept, but many Welch. Mr. MANSFIELD prefers the long-horned for good land; but on poor cold soils the Welch. He is in the grazing system, and chiefly North Wales beasts.

In the extensive district around Epping, where large tracks of good grass are applied to cows for the dairy and for suckling, the favourite breed is the long-horned Derby; next the Welch.

At Chesterford the cows kept are in general suckled; and Derby the favourite breed. The Rev. W. MACKLIN keeps Suffolks, and dairies them with success; seven, three of them almost dry, and selling only three calves, as one died, and three cows went barren produced in cash 57*l.*; the number can hardly be reckoned more than four and a half or five in estimation, and consequently the produce is ample, as a family of nine or ten were supplied with butter-milk and cream, and much cheese. The skim-milk sold to the poor, to their great comfort and satisfaction in this suckling county, where none other is to be had. Mr. SHEPHERD is also getting into the same breed.

Lord BRAYBROOK, at Audley-end, has a very fine dairy of polled Yorkshire cows and two bulls; and gives much attention to continue the breed pure, and improving by a due selection of calves for stock, and feeding them for the first two years on the best of every thing: his

yearlings and two and three years old are of such a size, and in such *case*, as mark the care which has been taken of them. Mr. NOCKOLD assured me that they are excellent milkers, some of them giving in the height of the season three gallons at a meal. He has a three year old spayed heifer that promises to be an exceedingly fat beast: his Lordship's other cattle stock consist chiefly of spayed Welch heifers, bought in at Harlow-bush fair. These are first turned into sainfoin rouen; then are taken into the yards to coarse hay; after that to sainfoin hay for two months before turning to grass, and sells or kills before harvest.

Mr. MONTAGUE BURGOYNE suckles twenty cows; but intends to change for dairying: he has Devons and Suffolks. The former best for quality of milk, the latter for quantity.

Mr. HICKS, at Hockley, who came from Suffolk, found a dairy of Suffolks here, but they all died of some wasting distemper, he knew not what; but they died of scouring, caused as he thought by drinking salt-water. He keeps only Welch cows now.

Mr. WESTERN, at Felix-hall, has for some time been convinced of the superiority of the Devon breed of cows; he has compared them with the Suffolks, and the short-horned breed, and found them more advantageous than either, especially in point of hardiness: if these breeds are together in a straw-yard, there will be no comparison in their condition.

Mr. WESTERN estimates the produce of his dairy of twenty cows, Devons, Suffolks, and short horns, thus per cow:

	£.	s.	d.
Calf fatted,	3	3	0
Two hundred lb. of cheese,	5	0	0
Butter 45lb. best; besides wey ditto,	2	10	0
Pigs,	1	0	0
£.	11	13	0

Besides milk and cream for a large family.

1784. Suckled at Braxstead, and paid 4*l.* 10*s.* a head.

"The farmers in the neighbourhood of Ongar, buy pigs at four and five months old, at 18*s.* each; keep them on skimmed-milk for about a month, and sell them at 1*l.* 4*s.* Thirty-three per cent. made on the refuse of a dairy is no bad profit. The general proportion is one for every three cows in milk: as our cows, in general, stand to the pail for nine months, this will make three pigs fatted from the skimmed-milk of each. The average quantity of butter made by each cow per week, is four pounds of sixteen ounces, and the whole, therefore, of each cow, is 156lb. which, at

	£.	s.	d.
The average price 10*d.*	6	10	0
Calf upon an average,	0	18	0
Small pork,	0	18	0
£.	8	6	0

Though last Saturday, sucklers of a week old, sold at Ongar market for 40*s.* each; but this was an extraordinary thing.

"Our cows in general are the broad horned Derbyshire sort, and now cost 10*l.* 10*s.*

"The farmers in the neighbourhood of Epping, are not so particular either in the age or sort of cows they

keep as one might suppose they would be; the general sort is the Derbyshire broad horn, or Welch cows.

" In the dairy farms the calves are generally sold at a week old, to the suckling farmer; if they are reared (and many good farmers are getting into the practice, from the great prices asked by the cow jobbers), they are taken from the dam at a week old, about Christmas, and have flet (skimmed) milk given them, about the warmth of new milk; after a little time, a lock of sweet hay is put before them, in the calves coop; when they begin to munch this hay, the flet milk is mixed with water, and about May they are turned to grass. The age of the animal, when of most use, is allowed by the best farmers in this neighbourhood to be during the second, third, and fourth calf; and yet strongly impressed as they are with this idea, it is not an uncommon thing to see, in the best dairies, cows of thirteen and fourteen years old.

" The keep on the old plan, before potatoes and other novel foods were introduced, was the best grass in summer, and the best hay in winter; now their winter food is as various as can be; grains, which they fetch at a great expense from town, turnips, potatoes, malt-dust, pollard; but with all these, the best and sweetest hay; indeed some farmers will not allow even their dry beasts to eat straw in the winter.

" Our dairy management is good in the extreme; but I believe it never entered into the head of any of my farming neighbours, to calculate the proportion of butter to milk; this they have observed, that when the hay is a large productive crop upon the ground, the cows eat more, and their milk is not so rich as when the quantity on the ground is less; and this, I should suppose, may be very naturally accounted for.

" The churns in common use, are barrel horizontal ones,

ones, the size in proportion to the dairy: there is one thing peculiar to our dairy-women, which is, that there must be a certain proportion of sour in the cream, either natural or artificial, or they cannot ensure a good churning of butter: some keep a little of the old cream for that purpose; others use a little rennet, and some a little lemon-juice. When the butter is come, as they call it, the dairy-woman throws it first into clear water, and then on to a board, and with her hand in each situation, squeezes the butter-milk out, and when on the board sprinkles a little salt over the whole mass (for one of the properties of Epping butter is, to have a little salt in it); the lump is then divided into pounds, and they, as they are weighed, are again squeezed, and rolled on the board with the hand, till they are about fourteen inches long. This is the whole process. I need not add, that cleanliness at all times in the dairy is an essential article. The butter thus made, is either carried to Epping Friday market, or Waltham Tuesday market, or delivered to higglers, who have appointed places in the neighbourhood. The large dairy farmers generally agree with some Clare-market butter-man for the whole produce of the dairy; at two different prices from November to May, and *vice versa*, and they pay the higgler one farthing per pound for carrying it to town. Some farmers, most of them small ones, sell to the higglers who attend the market*."

WEANING CALVES.

The farmers on the Burnham and Southminster marshes, &c. are in a system which has increased much since the dearness of lean stock: it is that of buying young

* Abdy.—Some years past.

calves and weaning them; some prefer bull calves for castration, and which they keep till they are fat bullocks for Smithfield; others cow calves of the true short-horned breed to sell at two years or two years and a half old, to the cow-keepers Mr. WAKEFIELD is in the latter system. From Barnet fair through the autumn he has them collected. Those from the London cow-keepers will not do, as they keep small cheap Derbyshire, or any sort of bull that get calves, which will not answer the purpose; he procures all he can from Yorkshire of the true breed, as these sell readily to the cow-keepers. He puts them first to skim-milk, and tempts them to eat something else as early as possible—bran, oats, oil-cake, the sweetest hay, turnips, cole; and finds that nothing does better for them than Swedish turnip cut small. They are kept with the utmost attention to cleanliness. This is continued, being in sheds at night and out by day till spring, when ray-grass is ready for sheep, and then they go out gradually, according to weather: after ray-grass to the best marshes; in the autumn to coleseed feeding off for wheat, and after that to turnips; but he makes it a rule to feed them through the whole period of keeping as well as possible. The heifers go off at two and a half or two years and three quarters old, at from 15*l.* to 25*l.* a head. This year and the last they have been bought in at 3*l.* 10*s.* to 4*l.*; but bull calves at 2*l.* 10*s.* He very lately gave 60*l.* for sixteen cow calves. He has a man who does no other work in autumn, winter, and spring, than attend them. Some farmers, when they are turned out, make them followers of fatting stock, but Mr. WAKEFIELD conceives that if they will not pay for good keeping they will not for bad. He remarks, however, that the system is hazardous; he once lost one-fifth of his number, and some graziers many more.

Mr.

Mr. BAWTREE, of Southminster, is also in this system: I saw many on his farm. He buys both cow and bull calves, the latter for raising a succession of steers for grazing. He does not appear to think it necessary that they should have any great preference in feeding.

CALVES SCOURING.

Mr. KETCHER, of Burnham, has found the following receipt almost infallible. Two tea spoonfuls of rhubarb and a table spoonful of peppermint-water, kneaded well: if one dose does not stop it, a second is given with a little red wine added. One of Mr. ROBINSON'S calves was dying as they conceived, and this medicine recovered it.

"Many calves are fatted and sent from hence to London; but you have sufficient accounts of their method of treatment, and indeed I have little to observe upon it. In general, I believe the principal points are, to keep them clean and dry, and their pens so formed that they can move but little, and not get at dirt of any kind, and particularly to give them the mother at the same hour precisely night and morning; they otherwise become very uneasy, and fret themselves. Some farmers give barley meal in their troughs with the chalk, and I am told it answers very well. Bleeding to make them white, is very rarely, I might almost say, never practised, unless it is done by the butchers when they get them home. I find the Devon calves the best, most distinctly, I ever fatted, as well in regard to disposition to get fat, as quality and colour of meat; and the cows bear hard living in the winter better than any other sort I ever saw. I have put them out to straw at one shilling, and eighteen pence a week, and upon this experiment, as well as observations in my own yards, I found this opinion*."

* Western.

SOILING.

Soiling horses with tares is common in many parts of this county; but I met with one farmer, and him a very excellent manager, who goes a step farther, and when ever he has litter, soils all sorts of cattle in the yards on the same food: he approves the practice highly.

DAIRY.

"The business of butter-making has been in a great measure relinquished in the parish of Sandon, from the want of good spring water, and a smoaky taste, which is communicated to the butter when the cows feed upon some particular pastures, or when foddered with the hay which is mown from them. This has hitherto baffled every means of cure or prevention. When the cows are fed upon tares, other grass, or hay, very good butter is readily obtained; and even when fed upon turnips, cabbages, or that they gather up the fallen leaf, by proper care and attention, the disagreable flavour in the butter is prevented.

"These obstacles to the making of good butter have led to the more general practice of suckling, which business seems to be very well understood in this parish. For this purpose the breed of cows from South Wales are generally preferred; though the calves which they produce are often found weak and unhealthy, and seldom fatten so kindly, or pay so well, as those bought in from dairies. To promote the torpor, and quick-feeding of the calf, a ball weighing about two ounces, composed of the powder of fennugreek, wheat-meal, and a small quantity of powdered chalk, blended together with mild ale, is given morning and evening just before sucking; this lulls and disposes the calves to sleep, thereby advancing their fattening,

tening, which is generally accomplished in about 12 weeks, paying 4*s*. 6*d*. per calf per week, during the whole time: this nutritive opiate is also supposed to have a very good effect in whitening the veal.

" In the neighbourhood of Billericay the cows are particularly liable to slip calf, which is generally ascribed to an infectious effluvia proceeding from the first false birth, the ill effects of which is supposed to be in a great measure prevented from spreading, by immediately burying the abortion, burning straw directly over the place, and smearing the hind parts of the cow with tar; but above all, keeping her separate, and as far apart as possible from the other cows, ought never to be neglected; various reasons are assigned as the cause of this accident, but none that appear conclusive, or satisfactorily explained.

" In the neighbourhood of Rettenden the accident of slipping calf, which some years ago was very prevalent, is now thought to be very much checked by the practice of bleeding the cows when they are about one-third of their time gone with calf.

" Our largest dairy farms are at, or in the neighbourhood of Epping, so deservedly famous for the richness of its cream and butter*. The farmer even here confines himself to no particular sort of cows, but keeps up a stock of promiscuous cattle, bought in as opportunities offer, though indeed the more provident of them say, where the land is particularly good, the Derby and Leicestershires have a preference. These in the summer are fed with the natural and artificial grasses, and in the winter

* " Much of the supposed Epping butter comes from the fine dairies in Northamptonshire, and those parts: at Bumpstead, near Haverhill, in Essex, are some fine old pastures, and dairy farms, that make very good family cheese."—*Messrs. Griggs.*

with

with hay (which is in general of the best quality) and grains. The best dairies are built on the north side of the farm-houses, calculated to be always cool; and are furnished with square troughs, lined with lead, sufficient to hold nine or ten gallons of milk, which is seldom suffered to be more than five or six inches deep; this, in winter, is skimmed four, and, in summer, two or three times; the cream, after being kept three or four days, is churned into butter; and the milk, after it will afford no more cream, is given to the hogs, which it fattens to most delicious pork.

"The great variety of soil in this county, and the consequent difference of herbage in a very small space, has doubtless contributed very largely to that intermixture of breeds among the sheep and cow cattle, with which the primest of the grass lands through the county are generally depastured: but though this observation applies to the county at large, it does not extend locally, and through those particular districts where the herbage, from time immemorial to the present period, has neither degenerated or improved, and where, without question, the pastures employed for particular purposes, would favour the breed of one species of stock, rather than that of another.

"That these matters have hitherto been too much disregarded is plain, for in the richest and most luxuriant pastures, are too frequently found an assemblage of the refuse stock, and cullings of the adjacent, the northern, and western counties of the kingdom.

"The stock of cow cattle in most parts of the kingdom (if we except the breeding counties) is chiefly appropriated to two purposes, viz. the dairy, and for grazing: in this county, a third may be added, that of suckling, or feeding calves for the London market. The rank which these different modes of appropriation holds in the estimation

mation of the Essex farmer is, first, the dairy; second, suckling, and third, grazing*.

"With regard to the dairy, so much depends upon the unwearied exertions of the msitress, both early and late, that unless the farmer's wife is able and willing to encounter such fatigue, little profit can accrue to the farmer therefrom.

"In the country about Epping and Ongar, this business is carried on extensively, but where in general there seems to be no particular choice or preference as to breed, or the stock of cows best suited to the purpose. The Norfolk, Suffolk, Derby, Lincoln, Leicester, Craven, Holderness, North and South Wales, and Galloway breeds, are indiscriminately mixed together, and constitute the principal dairies throughout that neighbourhood.

"In a few instances a preference was observed to be given to the Holderness, Leicester, and Derby, the milk of which cows (as well as that of the other dairies) after standing 24 hours, is fleeted; and the skimmed-milk is drawn off from the leads, into vessels (not lined with lead but) of an increased depth; this is called doubling: here it remains for 12 or 24 hours, during which time, as the cream rises, it is fleeted two or three times. It is then threbled or put into tubs, or still deeper vessels, where it is occasionally skimmed, and kept so long as any appearance

* "This order of estimation may be just, though the last, from being attended with the least trouble, is every day becoming more and more common. But although this is undoubtedly the case in this county, it is clear it cannot be so throughout the kingdom at large, as the advanced price of beef and veal, butter and cheese, is nearly the same. It may be further observed, that dairying, suckling, and grazing, will naturally very soon produce their level; so that which of the three is most profitable now, will perhaps be the reverse seven years hence. Something of this kind, indeed, has already taken place. Grazing, marked above as the least profitable, this year, 1796, when stock had been tolerably well bought in, has turned out the most advantageous of any. But the equilibrium will in due time be restored, and the balance continue then to vibrate as usual.—*Howlet.*

of

of cream or richer milk is found to form upon the surface. The butter which is made from the after-fleetings of the milk, is of a paler colour, and of an inferior quality to that made from the cream, which rises the first 24 hours: it is generally churned apart, and sold at a lower price.

"The skimmed milk is usually applied to the purposes of feeding porkers, or small pigs, for the London market; these are always kept very clean, and warmly lodged, particularly in winter, during which season, as well as in the summer months, the milk is always sour before it reaches the troughs, but on that account there does not appear to lie the least possible objection; as the pigs are always found to thrive extremely well, and their fat, from repeated trials of comparison, is firmer, and vastly superior to that of hogs fattened upon pease or meal.

"To account for this, however paradoxical it may at first appear, and certainly against the more generally received opinion, is by no means difficult; nor will it seem at all extraordinary or strange, when it is considered, that the milk with which the pigs are fed, contains all the rich gluten, or that component part which would constitute cheese; and no one (it is presumed) will deny the nutritive qualities of that important article, in the list of those necessaries which compose one of the principal in the support of human life.

"About two acres of the prime pastures are usually allowed for the consumption of a milch cow, which at 23*s*. per acre (agreeably to the genera laverage table) is 46*s*.; to this tithes may be added 3*s*. 6*d*. per acre; and poor's and other parish rates 4*s*. in the pound. A loss of 50*s*. is generally sustained upon the sale of the old cows, and an allowance of ten per cent. upon the years produce, ought in reason to be made for risk, accidents of slipping calf, cow doctor, &c. &c. The account will then stand upon a dairy of twenty cows as follows.

The

The Dairy Dr.	£.	s.	d.
The interest upon the cost of 20 cows, at 10*l.* each, 200*l.* at 5*l.* per cent. per ann.	10	0	0
To ditto upon the first cost of a bull 10*l.* at 5 per cent. - - -	0	10	0
To 40 acres of pasture land at 23*s.* per acre,	46	0	0
Tithe upon ditto 3*s.* 6*d.* per acre, - - -	7	0	0
Poor's and other parish rates at 4*s.* in the pound rent, - - -	9	4	0
Annual reduction in the value of the cows from the time they are purchased till sold out or dried to be fattened, say 7 years, at 7*s.* 6*d.* per cow,	7	10	0
Dairy maid's wages, -	5	0	0
Labour incidental to the business of the dairy, including hay-making, foddering, and all other attendance, - - - - - -	25	0	0
Fuel, - - - - - -	15	0	0
Interest accruing upon the first cost and wear and tear of the dairy utensils, - - - -	4	10	0
Allowance of 10 per cent. upon the amount of the year's produce for accidents, loss of calves, cow-doctor, &c. - - - -	26	8	0
	156	2	0
Balance in favour of the dairy, - - -	108	0	8
£.	264	2	8

Per contra it is Cr.	£.	s.	d.
By 6lbs. of butter a week per cow for 26 weeks, -	156		
By 4lb. ditto, for 14 ditto, - -	56		
	212		
which applied to 20 cows, equals 4240 lbs. 11*d.* per lb. - - -	194	6	8
By the net profit upon 8 pigs per month, for six months, 48 pigs, at 14*s.* each, - -	33	12	0
By ditto upon 4 pigs per month, for four months, 16 pigs, at 14*s.* each, - - -	11	4	0
By 20 calves at 25*s.* each*. - - - -	25	0	0
£.	264	2	8

* Since the above was written, the price of calves has been prodigiously advanced. Calves about ten weeks old, suckled in the parish of Dunmow during the present month, February 1802, have been sold for eight guineas a piece.—*Howlett.*

which

which leaves a clear profit of about 5*l.* 8*s.* 0½*d.* upon each cow.

" Thus much however is to be observed, that the calculation stands upon a supposition, and according to the generality of cows throughout the neighbourhood; that the dairy in question is of the most uniform and prime quality, and that it is also under the most skilful and attentive management.

" Where almost every breed of cows in the kingdom compose the dairy, and where a less attention is paid to the feeding and management of them, the farmers are extremely unwilling to allow that the average produce of their cows in butter exceeds 4lbs. per week during the 40 weeks they are in milk, or 160lbs. per annum for each cow. To this diminution of profit in the article of butter, from the smaller quantity of milk, is further to be added a loss that is necessarily sustained in the feeding of a less number of pigs, and which upon the whole will be found to reduce the net profit to about 3*l.* per cow; but even on this view of the subject, and which is surely considering it at the very lowest ebb, the dairy business will prove far more beneficial than that of the common mode of suckling, a truth clearly illustrated by the following example.

A Suckling

A Suckling Herd of 20 Cows. *Dr.*	£.	s.	d.
To annual interest accruing upon the first cost of 20 cows, at 9*l.* per cow, 180*l.* at 5 per cent. -	9	0	0
To ditto on the first cost of a bull 9*l.* at 5 per cent. -	0	9	0
To 40 acres of pasture land at 20*s.* per acre	40	0	0
Tithe upon ditto 3*s.* 6*d.* per acre -	7	0	0
To poor's and other parish rates, at 4*s.* in the pound rent -	8	0	0
Annual reduction in the value of the cows from the time that they are bought in till they are sold or dried for fattening, say 7 years, at 6*s.* per cow - -	6	0	0
Thirty calves bought in at 25*s.*	37	10	0
Market charges upon 50 calves, at 2*s.* 6*d.* per calf - -	6	10	0
Labour incidental to the herd, including haymaking, fodderring, and all other necessary attendance, per ann. -	20	0	0
To allowance of 10 per cent. upon 187*l.* 10*s.* the gross produce of the year for accidents, cow-doctor, &c. - -	18	15	0
	153	4	0
Balance in favour of the herd - -	34	6	0
£.	187	10	0

Per Contra they are *Cr.*	£.	s.	d.
By the sale of 50 calves fattened by the 20 cows in the course of the year, and selling at Smithfield on an average at 3*l.* 15*s.* each -	187	10	0
£.	187	10	0

Which is equal to a clear profit of about 1*l.* 14*s.* 3*d.* upon each cow.

" This, however, is by no means proportioned to what the profit would be, if the cows used for this purpose were of a proper and uniform breed.

" In support of this assertion, it is particularly convenient in this place to recur to the management of a gentleman in the neighbourhood of Epping, whose attention to this, and to every other branch of rural economics, is as highly deserving the emulation of, as it is truly beneficial to, the surrounding country.

" In addition to other regulations and improvements, Mr. CONYERS has lately introduced a breed of cows from Devonshire, which seem to unite all the requisites for the dairy, the draft, for suckling, and for grazing. Their milk is confessedly richer, and in every respect superior to that of the Holderness, Leicester, or Derby; though from the size of the animal, it must necessarily follow, that the quantity must be less; and which, in comparison with the Holderness cow, is allowed to be by one fourth part, though greatly superior in its quality. One acre and an half of the prime pasture lands in the county, is allowed to be equal to the full and complete maintenance of one of these cows for a twelvemonth; in the course of which time, every two cows will fatten five calves. The first cost of these cows, expense of driving, and every thing included, is 7*l.* 10*s.* per head. The suckling account then, of a herd, consisting of twenty cows, will, upon the preceding principles, and the most clearly established data, stand thus:

A Suckling Herd of 20 *Cows, of the Devonshire breed.* Dr.	£.	s.	d.
To interest annually accruing upon the first cost of 20 cows, at 7*l.* 10*s.* per cow, at 150*l.* at 5 per cent.	7	10	0
To ditto upon the first cost of a bull, 7*l.* 10*s.* at 5 per cent.	0	7	6
To 30 acres of prime pasture land, at 28*s.* per acre	84	15	0
Tithes upon ditto, 9*s.* 6*d.* per acre	5	5	0
To poor's and other parish rates, at 4*s.* in the pound rent	6	19	0
To 30 calves bought in at 1*l.* 2*s.* 4*d.* each	33	10	0
To labour incidental to the herd, including haymaking, foddering, and all other necessary attendance, at 18*l.* per ann.	18	0	0
To market charges upon 50 calves, at 2*s.* 6*d.* each	6	10	0
To allowance of 10 per cent. upon the gross produce of the year, 196*l.* 5*s.*	19	12	6
	132	9	0
Balance in favour of the herd	63	16	0
£.	196	5	0

Per Contra they are Cr.	£.	s.	d.
By the sale of 50 calves fattened upon the milk of the 20 cows within the year, and sold at Smithfield market at 3*l.* 18*s.* 6*d.* each, equals	196	5	0
£.	196	5	0

Which

Which is equal to about 3*l.* 3*s.* 9½*d.* nett profit annually per cow; and although there is evidently a want of coincidence between this and the preceding account, in the price of the lean, and also of the fat calves, still that statement is expressly correct, being derived (with much other of the most material information) from the books of Mr. CONYERS, Mr. SMITH, of Sutton, the Rev. Mr. ABDY, and other gentlemen, to whom much is due from the public, for their candid communications, and individually from myself, for their politeness and hospitality.

" In this last statement it may be objected, that no discount is allowed against the cows for their decreasing value. This is answered by long experience in their native country (and a very important fact it is), that when from age or accident, this breed is no longer proper for the purposes of milk, their hardiness and peculiar conformation enable them to retain for the purposes of grazing, all the condition and value of their first cost, as hazardable heifers.

" A decided superiority therefore attaches upon this breed of cows, not only for the dairy and suckling, but in their disposition, to keep in good order during the term of their milk, and in their great aptitude to feed, or to fatten afterwards: thus uniting at once all those qualities, which are supposed to exist individually in other breeds, and thus in one species, concentrating all those excellencies so long and so earnestly sought for in the most perfect of these animals: such, for a short instance, as the Wales cows doing much better with a less quantity and inferior quality of food, than the Derby or Leicester; their thin blue milk being more applicable to the purposes of suckling, than the richer milk of the Derby and Leicester; the advantages of the latter for grazing over the Wales breed in cases of accidental loss of milk, or

when

when old and unfit for the dairy, with many other requisites and objections, partly founded in speculation, and partly founded in fact; all conspire to be admirably qualified in the native cow of a particular district in Devonshire.

" The most distinguishing features of this breed are, a fine white horn (not chalky) streaked with red: the eye, full, round, bright, lively, and clear; the external circle of the pupil, tinged with a deep yellow; around the eye is a gold coloured circle, which colour, in all cases, will be found to prevail on the inside skin of the ears; the chop mealy; the countenance cheerful, and equally free from any thing of a black cast, or the smallest spot of white; the permanent colour of the breed is a bright blood red; the points on the back, and hind quarters, equal to the most highly finished of the improved Bakewell breed; and the shoulder less weighty, but with more roundness and beauty than is generally to be seen; flat clear head, jaws free from gum, and throat free from dewlap.

" At attention to all these matters are indispensable in the purchase or breeding of these animals, particularly in the choice of, or in the perfections of, the bull.

" The accidents and diseases to which all cows are liable, are so well known, that it may not be necessary to state any thing further than a few suggestions, applying to those cases which are but too frequent, and fatally experienced in this county. Bleeding when the cows are from one-third to half gone with calf, is earnestly recommended as a preventive against premature calving, and when the accident does happen, to bury the abortion immediately, and to keep the cow as widely apart as possible from the herd. To be particularly careful that she does not receive the bull which herds with the other cows, at

least not till after such a lapse of time, as with good reason she may be thought completely recovered, and free from the possibility of communicating the smallest infection. For the disease called the red-water, bleeding, and change of food in many parts of the county, particularly in the islands, and upon the embanked marshes, have been found effectually to answer. When the teat cracks, and the bag becomes indurated and inflamed, it is often the consequence of high feeding, and these are the uniform indications of approaching garget in the dug; in this case the cow should be immediately blooded, her bag should be well washed, and anointed with hog's-lard or sweet oil. The teats should be dressed with goose grease, and the cow kept as cool and quiet as possible. In a few days the bag will become soft, the inflammation subside, and the milk gradually return to its usual purity and colour*."

Particulars concerning Mr. CONYERS's *Dairy, communicated to the Board.*

Breed.—The North Devonshire; having found by experience their superiority in every respect over all the others that I have tried. I might prefer the Herefordshire, if my land was firm enough to bear them; but mine, like the land in most dairy countries, is of a tenacious nature, and suffers by the treading of heavy cattle in wet weather.

Summer Food.—If extraordinary good, one acre will suffice; if moderate, one and a half.

Winter Food.—If in milk, one ton of hay; and are best kept in houses while any fodder is given.

* Vancouver.

Taking

Taking Bull—At three years old.

Drying.—I have observed in this, and most other dairy countries, the practice is to continue milking or suckling a cow till her constitution is so exhausted, that no power of fattening is left, and her flesh is then no better than carrion. In the vicinity of London, I am told, the Jew butchers purchase the cows that have been so worn out, at very low prices, to make sausages of. It is difficult to say precisely at what age a cow should be dried, as it must depend in some measure on the constitution of the animal; but on an average, I think, between the ages of seven and nine.

Weaning.—From the time of their birth; those only that are calved early in winter, skim milk and warm water, in which an infusion of hay.

Produce.—Upon an average, ten cows give five dozen pound of butter per week in the summer, and two dozen in the winter. A good North Devon cow fats two calves a year. My thirty North Devon cows have this year, upon an average, produced thirteen pounds fourteen shillings per cow.

Skim-milk.—Either to the fattening of porkers, or to the disposing of it at the rate of three-pence per gallon to the lower classes of the people, or to the taking of pigs to keep at the rate of from three shillings and sixpence to four and sixpence per week. I have known a hog fatted to the weight of sixty-six stone, without the offal, at eight pounds to the stone, fed only upon skim-milk.

Salt.—One pint per week for ten cows.

Another Note relative to the same Dairy.

	£.	s.	d.
Forty-seven calves sold in 1798, ...	239	18	10
Milk, at 6*d.* a gallon, ...	144	10	0
	384	8	10
Paid for 28 sucklers, ...	40	17	0
£.	343	11	10

Expense.

Thirty-five acres grass, thirty cows, ...	52	10	0
Tithe 3*s.*	5	5	0
Rates 4*s.*	10	10	0
	68	5	0
At straw one-third of winter, ten for twenty weeks, 1*s.* 6*d.* a week, ...	15	0	0
Labour one man 10*s.* 6*d.* ditto, ...	27	6	0
Boy 8*s.* ditto, ...	20	16	0
Forty-five loads of hay, at one load and an half an acre, thirty acres, 30*s.* an acre, rent, tithe, and rates, ...	68	5	0
Mow, make, cart, and stack, 20*s.*	30	0	0
£.	229	12	0

Six score dry ewes run over rouen.

Produce, ...	343	11	10
Expenses, ...	229	12	0
Thirty cows, ... £.	113	19	10

" I will here add a statement of the annual expense and produce of a dairy of twelve cows in the north-eastern part of the county, and at fifty miles distance from the capital. The expenses are chiefly estimates, but as nearly accurate as may be. The produce in butter and cheese is from correct extracts from the farmer's books; and the rest of the produce is according to the best and fairest computations that could be made; and the whole is upon a medium of seven years, beginning with 1780.

Expenses.

Expenses.

	£.	s.	d.
Interest of twelve cows, costing something more than 6*l.* 10*s.* a-piece -	4	0	0
Ditto upon the first cost of bull, at 7*l.*	0	7	0
To thirty acres of pasture, at 20*s.* per acre - -	30	0	0
Tithe, at 4*s.* an acre	6	0	0
Poor's and other parish rates, at 5*s.* in the pound -	7	10	0
Annual supply and reduction in the value of the cows -	10	0	0
Dairy-maid's board and wages, 40 weeks	10	0	0
Labour incidental to the dairy, including haymaking, &c.	7	0	0
Fuel - - -	2	16	0
Salt for butter and cheese - -	2	7	8
Brushes, brooms, cheese cloths, &c. -	0	12	0
Dairy vessels of all kinds - -	1	1	0
Interest upon the first cost, wear and tear of dairy utensils	2	0	0
Allowing ten per cent. upon the annual produce; cow doctor, &c. -	10	0	0
£.	93	14	8

Produce.

	£.	s.	d.
Cream, butter -	22	9	2¾
Cheese -	45	9	11¾
Whey butter -	2	10	0
Milk used in the house, or sold at a halfpenny a pint	3	0	0
Cream ditto -	0	12	0
Calves - -	20	0	0
Hogs and pigs	10	0	0
£.	104	1	1¾
Expense - -	93	14	8
Balance in favour of the dairy £.	10	7	5¾

" In

" In this account no allowance whatever is made for the care, labour, and superintendance of the mistress, which were constant and unremitted.

" The account for the seven years beginning with 1789, stands rather more favourably. The medium annual produce was 120*l.*, from the increased price of butter, cheese, calves and hogs; and if we allow ten per cent. for the increased expenses, there remains a nett profit in favour of the dairy of about 16*l.* Pitiful indeed! it is true, no notice is taken of the manure arising from the cows; but neither on the other hand is the value of the hay consumed by them brought to account instead of part of the rent, rates and tithes; which is certainly much exceeded. Upon the whole, the real nett profit could not have been much more than 16*l.* or 18*l.* scarcely equivalent to the annual board and wages of a common servant, during even these seven best years. Much more advantageous would it have been, if practicable, to have sold the hay of the thirty acres of pasture and lett the after-grass for feeding, though manure had been regularly bought to keep up the heart of the soil. An acre of hay in the near vicinity of London is worth 12*l.* or 15*l.* a year; here not half so much*."

GRAZING.

Mr. COOPER, at Langenhoe, for his very extensive occupation buys in any sort of bullocks that he can get worth his money: he prefers Scots, but they are generally too dear. He never ties up any. He buys in at Midsummer for turnip feeding; they are put to good grass, and thence

* Howlett.

to

to turnips; after these to rye, and then to ray-grass and clover, clearing them in May and June. North Wales runts he purchases in October, as they suit the marshes, where the water is bad; Scots must have better water: these are put to straw in the winter, have a few turnips in the spring, or a little hay; then to the marshes, and are sold in August or September.

Mr. SPERLING, of Dynes-hall, when he was in the suckling system, made it a rule to cut his bull calves as soon as he bought them, which renders the veal much the better: they were stalled, and kept quite clean and curried as well as his stall-fed bullocks.

At Yeldham, cows are not numerous; they are suckled, by some and dairied by others: Mr. EATON has both Suffolks and Welch, and is not decided which are most profitable.

At Toppesfield they suckle; but the number kept not considerable. Mr. ELY prefers Suffolks, and has had all sorts. He has suffered greatly by cows slipping calf.

Mr. MAJENDIE's system for securing as well as may be, a profitable consumption of his straw, hay, turnips, &c. is that of buying in from 15 to 20 Scotch or South Wales bullocks from October to December, at from 7*l.* to 9*l.* and selling them fat within the year. They rise from 25 to 30 score. Doubling the money a fair profit, but not always to be effected. This conversion of food into beef and mutton being the most difficult part of the farmer's business, it is proper to see the proportion of the stock to the crops raised.

Farm 1805.—Fallow 28 acres; oats 14; barley 34; wheat 77; white clover seed 13; red ditto 14; turnips 34; Swedes four; potatoes four; cabbages four; leaving out fallow, here are,

Straw,

Straw, ... 125
White clover stover, ... 13
Spring food red ditto, ... 14

He has 450 acres in all: twelve horses, three or four cows; 100 wethers gone in spring; 80 ewes cleared in autumn.

Mr. KEMP, of Hedingham, being one of the greatest maltsters in Essex, and consequently having the command of abundance of malt coombs, ties up many beasts for fattening: he gives oil-cake, cut chaff, and malt coombs; generally to Irish and Scotch beasts. He gives three cakes a day, and about half a bushel of malt coombs at 1*s.* a bushel selling price: the beasts drink much.

Mr. HONEYWOOD is in the system of buying in Welch heifers at about 6*l.* which he sells in a year fat, doubling the money, and sometimes more.

Mr. SAVILLE, of Bocking, has found the most profitable system to be buying North Wales runts in September. Welch calves sometimes do well, but some are apt to be in calf, and must be re-sold; and they are hardly of a ready sale.

Mr. LEE, of Maldon, who has grazed on a respectable scale, has found that South Wales cattle are not so good as those of North Wales.

Mr. WAKEFIELD, of Burnham, is clearly of opinion from long experience, that home-breds will not do as *trimmers* to follow other stock, like Scotch runts. His favourite breed is the Devonshire. Being at Lord SOMERVILLE's in Somersetshire, at Michaelmas 1802, he bought twelve cows and a bull, which are his present stock; and he intends to add largely to them by the purchase of the whole of that nobleman's present dairy. He prefers them on account of their inclination to feed, and the rich quality of their milk. As to hard living, he has not tried them at it.

it. Relative to milk, however, there is one circumstance to be noted: they have declined here considerably in the quality of their milk; it was for a certain time after their first coming much thicker than at present: as this is certainly a rich country, the fact deserves the more attention: I did not hear of any other breed declining in quality of milk. They have had no distempers, and are to the eye in good case. Mr. WAKEFIELD saves all the calves. His bull is one of the most beautiful I have seen.

Mr. PRENTICE, of Prittlewell, in Rochford hundred, buys in Fifes and Galloways between Michaelmas and Christmas, for fattening on mown coleworts in his yards, which are spacious, and surrounded by haulm walls; some also in stalls; and when it is profitable to wait for a rise of markets, gives oil-cake or bean-meal freely, and has no doubt of its paying: has with this view fed with cake at 16*l.* 16*s.* a thousand, and with meal when beans have been 40*s.* a quarter. He thinks cake and meal nearly equal in fattening, if measured by price. He gives what hay they will eat. He has generally found that this system is profitable, combining the two objects of dung and a rise of markets;—but his grand staple dependence is mown cole. His stalled beasts he curries and dresses clean, and when used to it they like it much, and thrive the better for it. He fattens about a score here, sometimes more.

The principal feature in the farm of Mr. HANBURY, at Coggeshall, is his cattle system, having a large portion of grass. He buys in one parcel of beasts in autumn, turning them to the rouens, and to straw about the end of November, which is given so plentifully, that they only pick the sweetest; it then litters other beasts that are stall fed. In February they are put to hay, and continue at it till grass is ready, which is on an average the middle

middle of May, and they are cleared off about harvest. Running an average estimate on these beasts, the account he conceives is nearly this for each bullock:

	£.	s.	d.
Seventeen weeks autumn grass and straw,	0	17	0
Thirteen hay,	2	12	0
Summer grass,	2	8	0
Food,	£. 5	17	0
Prime cost,	9	0	0
	£. 14	17	0
Sale at,	18	0	0
	14	17	0
	£. 3	3	0

Another system he also carries on regularly, is to buy larger beasts in July; these, from the time of coming home, are kept as highly as he is able, as it is a point to get rid of them the February following, as Mr. HANBURY thinks that there is on an average a chance of a good market at Smithfield, between the supply of beasts from hay in the shires, and that from turnips in Norfolk. This lot are taken from the rouens as soon as they fall off, and put to oil-cake and the best hay till they are sold; their account:

Grass

	£.	s.	d.
Grass sixteen weeks, ...	1	12	0
Ninety-seven days cake at 7*d.* per diem, 679 cakes at 22*s.* per 100, ...	7	14	0
Hay ten pound per diem, ...	2	9	0
Food, ... £.	11	15	0
Prime cost, ...	18	0	0
	29	15	0
Sale, ... £.	30	0	0

Leaving on these beasts only the dung, from which a small matter is to be deducted for attendance; as on a large scale one man would attend forty of them in winter. Mr. HANBURY has about fifty bullocks of all sorts: from thirty to forty at all times.

In the first of these systems his favourite beast is the North Wales runt; and in the second, Fifes; which, however, are bought in very dear: he has tried the Irish and Staffordshire, but they are so long fattening, that he has for some years avoided them. Mr. HANBURY, in laying in his cake, is always attentive to buy it in June, when it is cheapest. This is a capital point, for he never gave above ten guineas a thousand; yet the price has afterwards been as high as 16*l.* or 17*l.* This year (1805) he bought at 11*l.*, and now in October it is 14*l.*

In regard to the profit as thus stated, he has no doubt of it, for the dung has a value which no other manure to be got in the country comes near to; and it is to be noted, that there is a profit upon the grass and hay at the prices charged. In stalling, he finds it of consequence to keep the beasts as warm as possible; warmth is essential to their thriving; and if it brings off the hair, no matter,

it

it is a sign of thriving, and they will feel the better in Smithfield.

I must here make an observation of my own, to remark how slowly agricultural knowledge moves, even after the facts are before the public. Thirty-six years ago I published an account of Mr. MOODY's ox-house and fatting system at Retford, in which he found warmth of such consequence, that he gradually closed the air holes of the building, provided with sliders on purpose, till his beasts sweated off the hair, and they did not thrive to his mind till this happened. He was an uncommonly successful grazier.— From that time to this I never heard of any similar practice till now in 1805, at Mr. HANBURY's. Men farm without an idea of any necessity of knowing what others have done before them; nay, they encourage themselves in ignorance, by a pride of rejecting book husbandry: and it is very right and fit that thousands of pounds should have been lost by oil-cake feeding shivering beasts in open sheds, by men who think they can learn nothing beyond the practice of the old women their grandmothers; and the Board of Agriculture is annually bringing to light in County Reports, profitable practices unknown to the very men who cannot see any use in such publications; but ignorance is its own punishment.

Mr. HANBURY has been in this fattening system twenty-two years; for the last six or seven he has bought at 10*l.* per thousand (they weigh 3 lb. each); but before that, got them at 7*l.* or 8*l.* In feeding, he has convinced himself that beasts in general eat in proportion to their size; a large beast seven cakes a day; and a middling one five.

Mr. HANBURY has another application of oil-cake, which is much more uncommon; indeed I have met with it but once before—that of giving it to his milch cows. They have four cakes a day and the best hay, and the effect

effect on their milk is extraordinary; cows almost dry have immediately a flow of milk: they are kept tied up and warm like the fatting beasts, being let to water twice a day. Last winter two thus fed supplied his family of twenty with butter, milk and cream; and they are with four cakes a day always in nice sleek order in the coldest weather, far beyond the state of other cows differently fed: the butter very good, without any taste, but rather light coloured. Two cows gave all the winter from 12 to 15lb. per week, besides the milk and cream used. Mrs. HANBURY's dairy is well situated, built, and aired.

At Snorum and Latchingdon, Scots are better liked than North Welch; but all sorts are kept.

In Foulness Island, Welch and Scotch are chiefly kept. Mr. BELL brought a bull and cows of the Devonshire breed here, and some of them are left now. Mr. POTTON observed, that they have a good character amongst the people who milk them. The number of cows kept in the island is very inconsiderable.

Mr. HARWICH, at Rayleigh, buys in Welch calves, which he has had at 3*l.* 15*s.* and nearly trebled his money after keeping them one year.

Mr. PORTER, of Little Leighs, has found the half bred buffalo stock remarkably good for fattening while young, and have been very profitable to him.

Mr. DYNES, of Snorum, spoke of several persons having tried the buffalo cross, but considered it as a whim that would die away.

Mr. DUNKIN, of Bealy-mill, has made several experiments on the application of the bran to the use of live stock, and has found that milch cows pay better than any other for this food; it answers better than hay, and they give more milk from it.

Mr. WILLIAMS, of Ongar, is one of the most success-

ful graziers in Essex. Some years ago he kept 70 to 80 cows for suckling, but had such losses by their slipping calf (even to the amount of 60 out of 80) that he gave up the business, and commenced grazier. His favourite bullocks are the Herefords for a great size, and Scots for a smaller: has them bought at Ross and Hereford fairs. He has had much success with them; and it was with pleasure I viewed 20 very fine beasts that will be fat at Christmas, or soon after. He has 300 acres of good grass, which he has manured very highly. In winter he stall-feeds them, on grains (he is a very considerable brewer) hay, and Swedish turnips: at first he gives turnips to them in the field, and when they eat them well, takes them home to the stalls: grains two or three times a day with turnips; and at night rack up with hay; they rarely fail going on well. Now and then he has given barley-meal: has tried cabbages, but thinks them better for sheep than for bullocks.

In his practice as a suckler, he preferred the short-horned Yorks, and after them the Derby. He is of opinion that beasts do not eat in proportion to their size, and has observed the same ration of food eaten by small ones as by large.

The following is a grazing account furnished by Mr. HOWLETT:

Dr.

Dr. Stock bought.

1801. Sept. 30.	£.	s.	d.
6 beasts, at 12*l.* -	72	0	0
3 weeks grass, at 15*s.*	2	5	0
300 bushels of carrots,	9	0	0
100 bushels of cow-dust,	5	0	0
Oct. 20.			
15 qrs. of beans, at 30*s.*	22	10	0
3 heifers, at 10*l.* 10*s.*	31	10	0
Dec. 4.			
4 beasts, at 10*l.* 10*s.*	42	0	0
60 bushels of carrots, at 9*d.* - - -	2	5	0
60 bushels of cow-dust,	3	0	0
120 bushels of pollard, at 12*d.* - - -	6	0	0
Two acres and a half of turnips, at 3*l.* - -	7	10	0
6 loads of straw, fodder or litter, - - -	6	0	0
Chaff and cutting of straw, - - - -	3	7	6
Oil cakes, - - -	3	0	0
100 bushels of cow-dust, - - -	5	0	0
5 qrs. of beans, at 30*s.*	7	10	0
20 qrs. of beans grinding, - - - -	4	0	0
200 bushels of potatoes,	10	0	0
Interest upon capital,	4	13	0
Man's wages, - -	5	3	0
1802. Feb. 11.			
Profit in balance, -	62	0	0
£.	313	13	6

Cr. Stock sold, &c.

1801. Dec. 10.	£.	s.	d.
1 heifer, - - -	16	2	0
Dec. 15.			
1 ditto, - - -	13	11	0
1802. Feb. 9.			
1 ditto, - - -	14	10	0
3 beasts at 20*l.* - -	60	0	0
6 ditto, at 20*l.* - -	120	0	0
3 ditto, at 18*l.* - -	44	0	0
Dung from beasts and hogs, - - -	20	0	0
21 young hogs fed chiefly from the beasts and potatoes, - -	25	10	6
£.	313	13	6

The same person feeds and fattens his sheep and wethers, in a manner not totally dissimilar to this of his beasts. He folds them upon his dry pastures and young clovers, giving them turnips, bean-meal and malt-combs in troughs commodious for the purpose, and at proper intervals letting them out to run more at large. The manure hence arising is incredibly rich and fertilizing; and probably too the clover, if thus folded upon in the autumnal months, is the better secured against the frost; the soil being more compressed, of course less loose and less penetrable, and the roots of the plant the more firmly fixed and the less liable to injury.

SECT. II.—SHEEP.

" As there are but few breeding flocks in this county, the usual mode of stocking with sheep, is to buy ewes in the months of August or September, to entice those that have not already taken the ram, to be so disposed as early as possible, that the lamb may be returned fat in the spring, and the ewe fattened and sold off before the end of summer.

" For this purpose, the sheep generally preferred, may be divided into two classes; the Dorset, which begin lambing about the beginning of October, and whose lambs are usually returned fat by the Easter following; cost about 25*s.* each, and are calculated to pay very well if they return 3*l.* per couple (lamb, wool, and fat ewe included) by harvest. The other class is a medley of Norfolk, Welch, Hertford, Wiltshire, the lambs of which are falling from the middle of December till the beginning of February, and sometimes till Candlemas. These generally cost from 15*s.* to a guinea a piece, and are also allowed to pay very well, taking lamb and wool equally into the account, if they turn over (*i. e.* double their first cost) in time for the land to receive its new stock of sheep in the autumn. The reasons generally assigned for preferring any of these latter class individually, are, that the Welch are good nurses, and feed excellent lambs; that the Hertford and Wiltshire* stand well out of the dirt, are hardy, and will do

* I have repeatedly observed, that these sheep, bought in during the month of November, and cleared off before the November following, give a produce in lambs, wool, and themselves fattened, on an average of

do well upon a coarse and sour herbage; or that the Norfolk are good turnip sheep, always feeding quick, and paying well after the lamb is fattened.

"The experiment stated to have been made at Finchingfield, upon a Norfolk and South-down ewe, illustrates in some degree, the peculiar excellences and defects of those breeds; and it is only to be regretted, that the trial was not made upon a larger scale, and in such a manner as to ascertain with a still greater certainty, the absolute intrinsic value and characteristic qualities of either animal; enough however is established from the experiment to prove, that barring the first cost of the South-down ewe, it is unquestionably proved to be the better sheep. On the score of the first cost of these sheep, an objection may be very justly stated as to their genaral use; but when the South-down shall be more generally bred and increased through the country, in that proportion will the present objection be done away; and though they may continue in equal estimation, they will nevertheless, by their being more generally diffused and increased through the country, be brought to a more equal level, in point of price with the Norfolk, Welch, and all those breeds so justly held in requisition for the fineness of their wool, and the superior excellence in the flavour of their mutton.

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of from 35*s*. to 40*s*. for their average of ten months keep; and even when purchased at 25*s*. or 30*s*. a head. I know some this year which cost even 34*s*. a-piece, and I make no doubt they will turn out equally profitable. The circumstance mentioned by Mr. VANE, that these sheep stand well out of the dirt, is a high recommendation with respect to our wet and heavy lands, and must ever render them profitable in such situations to either the South-down or the Leicester, however superior these latter may be on soils and pastures more peculiarly suited to them."—*Howlett.*

" The leading and characteristic qualities of the high, and full bred Norfolk and South-down sheep, appear upon comparison to be nearly these: the wool of both is found to be of the first clothing quality, but the larger quantity is produced from the South-down. The mutton of both is equally delicious. But the quiet and gentle South-down in pasture, must be opposed to the wild impatient ramblings of the Norfolk, whose constant exercise not only excites continual appetite, but at the same time occasions considerable waste in the pasture, by treading down and unnecessarily spoiling a great deal of what they do not eat. For this extraordinary exertion on the part of the Norfolk sheep, in thus (as it were) wantonly destroying a large portion of food that is prepared for its subsistence, there does not appear from the experiment above-noticed, to be the smallest occasion at least to put it on an equal footing with the South-down in that particular; for it is evidently demonstrated by that experiment, that in an equally sized sheep, the heaviest, and most capacious stomach, and consequently requiring the greatest quantity of food, is found to appertain to the Norfolk sheep. The hardiness of the South-down, enduring wet and cold lodging, and a greater degree of abstinence and fatigue than the Norfolk in the fold, is a superiority of much moment; and only to be equalled by another, which they possess in a very superior degree, which is that of doing well upon coarse sour pastures. These are fairly to be contrasted with the delicate constitution, and the tender aromatic herbage, required by the Norfolk; add to all which, the South-down is an equally good turnip sheep, and for every possible purpose, whether for its flesh, for its wool, for breeding, for folding, or for the butcher, they demand a less supply of food,

and

and of an inferior quality, to that which in every situation seems indispensable to the well doing of the Norfolk.

" The crosses which have been made between the Norfolk and Welch sheep by the South-down ram, are by some farmers esteemed highly advantageous; by others they are despised as mongrel, destitute of all the excellences, but retaining most of the defects, which individually appertained to the stock from which they were produced. This contrariety of opinion, and that amongst gentlemen equally respectable for their veracity and judgment, embarrasses and obscures the question so much, that nothing short of a regular series of experiments accurately attended to, and conducted upon an extended scale, can ever elucidate the truth, and prove the necessity of a preference either on one side or the other.

" From the excellent state of the high land drainage through this county, there are but few spots in it which are liable to communicate the rot to sheep. In the progress of the tour, but one instance deserving notice occurred, and that was in the neighbourhood of East Horndon, upon the commons called Bulvan, and Orset Fen. These commons, it is to be remarked, are particularly subject to inundation, winter or summer; but the disease is observed to be more prevalent and fatal after light and partial overflowings in the summer, than after the more frequent and extended inundations at other seasons. The other diseases and accidents to which this valuable animal is liable, are not so seriously experienced in this county as in many other parts of the kingdom. The foot-rot, and scab, which produce considerable inconveniences in other places, are but slightly felt even among sheep produced from the stock of the Lincoln and Leicester breeds, and which are found most generally to depasture in the

islands and upon the marshes which have been embanked from the sea*."

"*Expenses and Profits of One Hundred and Sixteen Sheep and Lambs in* 1800.

Dr. Stock bought.

July 30, 1800.	£.	s.
75 lambs, at 13*s.*	48	15
10 ditto, at 11*s.*	5	10
21 ditto, at 13*s.*	13	13
106	67	18
Feed upon twelve acres, at 3*l.*	36	0
Tithe,	3	0
Poor's rate,	13	0
Rent,	12	0
Interest of capital, about	4	0
Profit upon balance,	54	0
£.	192	0

Cr. Stock sold, &c.

August 27, 1800.	£.	s.	d.
1 Lamb,	0	8	0
Feb. 14, 1801. 1 Lamb,	0	10	0
Feb. 16. 1 Ditto,	0	9	0
July 18. 1 Ditto,	0	8	0
Wool,	13	17	8
Aug. 15. 2 Lambs,	1	4	8
Oct. 31. 86 Lambs taken from turnip fold, at 37*s.* 6*d.*	161	5	0
Fourteen died from mismanagement,			
Seven acres folded,	14	0	0
£.	192	2	4†

"The Norfolk and Cambridgeshire sheep, with a cross of the West Country and Hertford, are generally preferred; and as a great diversity of opinion prevails respecting the superiority of the Norfolk and South-down, it has led to the following experiment by a very accurate and well informed gentleman at Finchingfield. At Horringer fair, in Suffolk, in September 1791, a lot of ewe lambs was bought in at six pounds ten shillings per score. At Lewes fair, Sussex, in the October following, a lot of South-down ewe lambs was bought in at thirteen pounds per score. These sheep were depastured together, and in every respect received the same treatment until the 25th of September, 1793; a single sheep, which was ad-

* Vancouver. † Howlett.

judged

judged to be the level of each lot, was then taken out, and after both had fasted twenty-six hours, were weighed alive, the South-down weighing ninety-six pounds, and the Norfolk ninety-five pounds: they were then slain, and the following resulted from the experiment:

"*South-down.*		*Norfolk.*	
lbs.		*lbs.*	
52½	carcass,	53½	
8¾	skin,	7	and horns.
1½	legs cut off at the usual knee joints,	1½	
4¼	caul,	3	
4	blood,	5	
7½	head and pluck,	7½	
2¼	gut fat,	2¼	
12½	entrails and their contents,	14	
2	lost by killing, supposed to be urine,	1¼	
96 lbs.		95 lbs.	

"In favour of the South-down were,

	s.	*d.*	*s.*	*d.*	*s.*	*d.*
2¼ lbs. of fat, 4½*d.* per lb.	0	10				
1¾ lbs. of skin and wool,	0	5				
			1	3		
"In favour of the Norfolk were,						
1 lb. of mutton,	0	5				
and first cost,	6	6				
			6	11		
"Total difference in favour of the Norfolk sheep,			5	8		

"It is to be observed, that neither of these ewes had had any young, but at the time of making the experiment, the Norfolk was more than half gone with lamb, and the South-down had but just taken the ram.

"In

" In the Islands of Wallasea, Foulness, &c. Lincoln, Leicester, South-down, and every breed of polled sheep are preferred to those of the horned kind. The home or marsh-bred wethers, from a cross between the Lincoln and Welch, when fat, at two years old, will weigh twenty pounds per quarter, and six pound to the fleece. The cross between the Lincoln and Leicester at the same age, will weigh twenty-four pounds per quarter, and eight pounds to the fleece. These breeds are held in equal estimation, and with proper care on the part of the shepherd, are always kept healthy, and found to answer extremely well.

" The South-down breed of sheep has been lately introduced at Gosfield, and promises to answer extremely well; a preference, however, is still given by very good judges, to a cross breed between the South-down ram and Norfolk ewe; the produce from which fattens well, and is much approved of by the butcher*."

" This seems the proper place to introduce the communications on this subject in a letter from Mr. THURLOW, of Gosfield.

' It is about seven years since I introduced South-down sheep upon my grass lands; for some time after, I had to encounter the prejudices of my shepherd and all my neighbours. When I first took on these sheep, I had about fifty Norfolk ewes, to which I put a South-down ram. The lambs from this cross were generally admired, and several of my neighbours wished to try a similar experiment. They did, and succeeded extremely well. It is a fact very well known, that scarcely any other rams are here now made use of than South-down or Leicester-

* Vancouver.

shire,

shire, by those who buy in Norfolk crones in order to procure fat lambs. Upon the whole, I trust, I have ground for asserting that the South-down are superior to the Norfolk, Cambridgeshire, and West Country sheep, in point of form, hardiness, fineness of wool, and disposition to fatten. However, these sheep are now likely to be supplanted by the new Leicestershire, or Dishley breed; some of which I have been in possession of for the last four or five years. The wether lambs of the Dishley and South-down breed have been constantly kept together, from the time of their being weaned to the time of their being drawn off by the butcher; and the Dishley have invariably drawn off first as the fattest and heaviest sheep. The same fact is repeated this year. The rams also of this breed are now preferred to the other for putting to Norfolk ewes, the produce being larger and sooner fat.'

" The butchers complain that the sheep above described are rather disadvantageous for them, the offal, and those parts considered peculiarly as their perquisites, not being nearly great, in proportion to the carcass, as is the Norfolk, Cambridgeshire, and West Country. But this perhaps is a satisfactory proof of their superior excellence; and it was the grand object that Mr. BAKEWELL always aimed at, to produce as large a quantity as possible of the most valuable parts, and as small a one of the less valuable: in short, to render them the most profitable and advantageous to the grazier, leaving the butcher to shift for himself. But even he, perhaps, is nearly compensated by the superior value of the skin.

" But notwithstanding the above high recommendations of these sheep, and however well they may answer upon our dry and light soils, and such firm and solid pastures as those of Mr. THURLOW, I am apprehensive they would by no means so well suit our heavier and wetter lands,

as

as the Norfolk and Wiltshire, whose longer legs and shorter wool keep them so completely out of the dirt, which must become so troublesome and pernicious to the former. This I have heard some of our farmers strongly object to.

" Mr. VANCOUVER remarks, that Norfolk ewes are the stock usually grazed upon the marshes in the neighbourhood of North Fambridge; but that the South-down breed are now trying upon the marshes; but as the experiment is quite new, no report can be made therein.

" The above communications from Mr. THURLOW were sent me in the year 1796 or 1797; he has now very recently (December 1801) indulged me with some additional information respecting the new Leicester and South-down breeds of sheep, which seems more decisive, as to which claims the preference. After an experience of about twelve years of different sorts of sheep, a decided preference is now given to the South-down breed. The new Leicester have had a very fair trial: the best sorts were procured, and rams of high blood were annually hired; this practice was regularly carried on for eight or ten years, but is now discontinued, and the South-down stands with the highest reputation."

" If the South-down sheep have the preference upon the comparatively dry soil of Gosfield-park, they must have it in a still higher degree upon the heavier and wetter grounds of which a very large portion of the county consists*."

Mr. FEN, at Middleton-hall, finds that Wiltshire ewes pay him better than any other stock he has tried. He buys two or four toothed ewes rammed, which lamb soon after Christmas. He has given as high as 45*s.*, but the ave-

* Howlett.

rage

rage 33*s.*; and he has sold the first six score lambs as high as 46*s.*; but 35*s.* the average price. For the ewe he gets from 42*s.* to 45*s.* The lambs are gone in May and the beginning of June, and the ewes all by Michaelmas. The losses are heavy; but the wool may pay them. His profit may amount to about 40*s.* a-head.

Mr. MAJENDIE buys in full-mouthed Wiltshire ewes in autumn; the ram is put to them, and the lamb sold fat; then the ewe fattened, and cleared within the year.

Mr. SAVILLE, of Bocking, has bought in Norfolk ewes four toothed; to which he put South-down rams, and sold the couples fat: a year ago he bought 100 South-down wether lambs in Sussex, at 22*s.* 6*d.*, and they are now 16lb. a quarter and worth 40*s.* a-head. Has given 20*s.* for Norfolk ewes, and sold the couples at 60*s.*; but that was extraordinary: he has often made 30*s.* a-head profit: his South-downs gave 3lb. of wool. One hundred and thirty ewes covered by South-down rams have brought twenty-six lambs over the number. He has remarked, that when a lot of Norfolk ewes are covered by Norfolk and South-down rams, the lambs from the latter have always been soonest fat; and he is well convinced that the best stock for this vicinity are South-down sheep and North Wales runts for straw.

The Rev. Mr. THURLOW, of Gosfield, has long paid a great attention to breeding sheep, and having made various trials on different breeds, is well qualified for ascertaining that which suits his soil and situation best. He takes stock once a year, generally in August or September: by noting the result of this annual examination, his progress will clearly appear.

In 1789 he began his importation.

August 6, 1791.

Stock: 285 South-down ewes, valued at 285*l.*; 2 rams at 8*l.* 8*s.* each. Bought 70 Norfolk ewes.

October

October 1792.

212 South-down ewes, at 20*s.*
65 New Leicester ditto, at 30*s.*

August 23, 1794.

168 South-down ewes, at 20*s.*
52 Leicester, at 30*s.*
111 South-down ewe lambs, at 15*s.*
17 Leicester ewe lambs, at 16*s.*
105 South-down wether lambs, at 14*s.*
32 Leicester wether lambs, at 16*s.*
12 Rams, at 42*s.*
153 Norfolk ewes, at 8*s.* 3*d.*
243 ditto at 8*s.* 8*d.*

September 26, 1795.

200 South-down ewes, at 20*s.*
58 Leicester ditto, at 30*s.*
27 South-downs,
67 Wether lambs, at 15*s.*
89 Ewe ditto, at 15*s.*
9 Ram ditto, at 21*s,*
7 Rams, at 3*l.*
23 Wether sheep, at 30*s.*
35 Leicester ewes, bought at 3*l.* 3*s.*
8 Leicester rams, at 9*l.*
17 Leicester ewes, at 4*l.* 10*s.*

1796. 17 Leicester ewes, at 4*l.* 10*s.*
4 ditto rams, at 18*l.*
89 ditto ewes, at 42*s.*
201 South-down ewes, at 25*s.*
58 Leicester ewe lambs, at 20*s.*
95 South-down ditto, at 16*s.*
37 Leicester wether lambs, at 20*s.*

102 South-down wether lambs, at 16*s*.
11 Ram lambs, at 42*s*.
2 South-down rams, at 63*s*.
68 Wethers, at 36*s*.
25 Leicester ewes, at 50*s*.
Paid for tupping twenty-five Leicester ewes 10*l*.

September 14, 1797.

168 Leicester ewes, at 42*s*.
179 South-down ditto, at 31*s*. 6*d*.
55 Half breeds, at 31*s*. 6*d*.
128 Leicester lambs, at 21*s*.
196 South-down ditto, at 16*s*.
32 Wethers, at 40*s*.
4 Leicester rams, at 15*l*.
4 Leicester rams, at 42*s*.
Paid Mr. ASTLEY for the use of a Leicester ram, 56*l*. 14*s*.

August 22, 1798.

150 Leicester ewes, at 42*s*.
254 South-down and Leicester half breeds, at 25*s*.
115 Leicester lambs, 8 ram ditto, at 20*s*.
228 Half bred lambs, at 20*s*.
15 Young rams, at 42*s*.
3 Old Leicester rams, at 55*l*.
88 Refuse ewes, at 23*s*.
40 Young ditto, at 20*s*.
129 Wethers, at 34*s*.
53 Leicester lambs, at 20*s*.
Bought in 203 Norfolk ewes, at 10*s*.
Ditto 64 South-down ewes, at 24*s*.
Ditto a South-down ram lamb, 42*s*.
60 Norfolk ewes, at 12*s*. 3*d*.

1799. 105 Leicester ewes, at 52*s*. 6*d*.
88 South-down ditto, at 32*s*.
3 Leicester rams, at 5*l*.

12 Ram

12 Ram lambs, at 42*s.*
28 Refuse lambs, at 20*s.*
341 Lambs, at 16*s.*
130 Half breds, at 29*s.* 10*d.*
40 Leicester shearling ewes, at 30*s.*
8 Ditto rams, at 4*l.* 15*s.*
90 Half bred wethers, at 27*s.*
40 Leicester wethers, at 29*s.*

Bought in 489 on the South-downs, 866*l.*

1800. 129 Leicester ewes, at 50*s.*
75 Ditto ewe lambs, at 25*s.*
24 Ditto wethers, at 25*s.*
10 Ditto rams, at 60*s.*
162 South-down ewes, at 25*s.*
465 South-down lambs, at 16*s.*
8 Ditto wethers, at 25*s.*
13 Ditto rams, at 40*s.*

September 1801.
259 South-down ewes, at 35*s.*
168 Wethers, at 40*s.*
5 Rams, at 5*l.* 5*s.*
230 Lambs, at 25*s.*

Auction produce, 1801.	£.	s.	d.
15 Leicester ewes,	44	0	0
40 Ditto shearlings,	76	5	0
15 Ditto ditto,	27	7	0
40 Ditto ditto,	113	10	0
60 South-down ewes,	115	10	0
10 South-down rams,	34	18	6
17 Leicester rams,	85	4	0
£.	496	14	6

September

September 1802.

320 South-down ewes, at 35*s*.
287 South-down lambs, at 25*s*.
20 Ewe lambs bought in at 30*s*.
3 South-down rams ditto, 20*l*. 5*s*.
50 South-down ewes ditto, 105*l*.

Produce of auction.

	£.	*s*.	*d*.
10 South-down ewes, at 30*s*.	15	0	0
24 Leicester ewes, at 39*s*. 6*d*.	46	16	0
37 Ditto shearling, at 52*s*.	96	4	0
68 South-down shearling wethers, ...	168	15	0
20 Leicester ditto ditto, ...	48	0	0
4 Ditto shearling rams, ...	18	11	6
6 South-down rams, ...	28	0	0
£.	421	6	6

September 7, 1803.

376 South-down ewes, at 35*s*.
154 Ewe lambs, at 25*s*.
115 Wether lambs, at 25*s*.
31 Ram lambs, at 40*s*.
6 Rams, at 6*l*.

Produce of auction.

	£.	*s*.	*d*.
125 South-down ewes, ...	218	7	6
116 Shearling wethers, ...	210	8	0
50 South-down wether lambs, ...	59	10	0
60 South-down ewe lambs, ...	69	10	0
17 South-down rams, ...	71	3	6
£.	628	19	0

1804. 308 South-down ewes, at 35*s*.
150 Ditto shearling, at 35*s*.
170 Ewe lambs, at 24*s*.

5 Wether lambs, at 15*s*.
28 Rams, at 44*s*.
34 Ram lambs, at 24*s*.

Bought in 98 wether lambs, half breds, at 16*s*. 6*d*. ditto 62 Dorset ewes, at 46*s*.

Produce of auction.

	£.	*s*.
60 South-down ewes,	97	0
160 Wether lambs,	168	0
50 Ewe lambs,	45	5
112 Shearling wethers,	207	14
10 South-down rams,	22	12
£.	540	11

1805. 440 South-down ewes, at 35*s*.
218 ——— wether lambs, at 24*s*.
174 ——— ewe lambs, at 24*s*.
20 ——— rams, at 60*s*.

Produce of auction.

	£.	*s*.
60 South-down ewes,	93	0
40 Ewe lambs,	41	10
40 Wether lambs,	43	0
100 Half-bred wethers, South-down and Norfolk,	182	0
45 Dorsets,	80	10
9 Rams,	30	5
100 Ewe hoggets, at 40*s*.	200	0
£.	670	5

Produce of the flock for the year ending August 1805, about 1000*l*. wool included.

Such have been the circumstances upon which Mr. THURLOW's preference of South-downs to all the others he has tried, has been founded. Throughout, the Leicesters

ters have carried much the higher prices; but he gave up that breed from various remarks: he found them more subject to the scab and fly; but what was much more against them, they never had so many lambs as other breeds; nor could so many, proportioned to value, be kept on the same land. He is well convinced that the South-downs are the best stock for all his purposes, that he has any where seen.

He does not fold except in littered sheep-yards, one of which is very complete; well and warmly fenced in and with a thick stubble stack nearly across the centre, forming two covered sheds for them to retire under, with space sufficiently open to the air, that they may be sheltered or not at pleasure. He finds this consumption of straw so profitable, that he intends it shall absorb that of the whole farm; which he thinks will be more profitable than by buying in bullocks.

In regard to the land they go over, the farm consists of 250 acres of grass and 750 arable: rent 20*s*. grass, and 18*s*. arable.

Mr. THURLOW provides rouen, rye, and has tried winter barley, but prefers rye, being forwarder. Tares are ready to take them from the earlier provision.

I have been informed that Mr. HONEYWOOD was the first who introduced South-down sheep into Essex; he has at present (1805) about 500. He tried the Leicesters, but did not find they answered: *the land not dry enough*, was the bailiff's account. The farmers in the vicinity of Coggeshall prefer the cross of Norfolk ewes with South-down rams, which they buy in and fat off every year. Mr. HONEYWOOD sells many South-down rams.

Mr. R. TABER, at Beerchurch, in the dry turnip district of Colchester, fed off his turnips and clovers with wether sheep and bullocks: his system was, to buy the middling

and inferior Norfolk lambs at Ipswich fair (often dealing with Mr. GWILT, of Icklingham), and keeping them a year as followers of the preceding stock; the early sold bullocks being gone, made way for these as fatting stock, and always sold from turnips, after keeping about a year and a half. On an average they were bought in at 13*s*. to 14*s*. and they were often sold at 45*s*. besides the fleece; forming a very profitable turnip and clover system.

Mr. STRUTT, at Terling, began his experiments on South-down sheep about 20 years ago, by buying 100 wethers at Kingston fair, and they fatted so soon and so profitably, that from that time he changed his stock, which had long been Norfolks or Wiltshires; he sold 60 of them to a butcher at Maldon, and the mutton was so much approved, that the man sold many others under the name of South-downs: from that time Mr. STRUTT has kept to this breed; he had for some years 300 breeding ewes, but as the country is much better adapted to an annual fatting stock than to a breeding system, he gave them up for a yearly purchase of wethers when he could get them; otherwise wether lambs, but still adhering to the breed. He has uniformly found that they fatten better on grass than either Norfolks or Wiltshire; but thinks that the former better on turnips. Mr. DINES, his tenant at Snorum, in Dengey, sending him two New Leicester wethers for a comparison, two of his own South-downs were marked and weighed, and they went in all respects fairly together: the New Liecesters beat considerably, and became much fatter; but neither the mutton nor the well ascertained information he had received relative to the disadvantage of breeding them, would permit him to think of a flock of that sort. The best South-downs he has ever been able to procure, were from the Duke of RICHMOND's flock; a breed which he esteems as greatly preferable to the *new*

improve-

improvements; so that when he hears of these being killed of great weight or value, he is only convinced that much pains have been exerted to injure a most excellent breed of sheep.

Mr. BRAMSTONE, at Skreens, had been many years in the Norfolk breed of sheep; but at Terling Mr. STRUTT shewed him a parcel of wethers, Norfolk and South-downs, which had gone long together on the same food: the former were barely meat, but the latter quite fat; and this induced Mr. BRAMSTONE to change his stock. He sent into Sussex for 200 in 1793, from which time he has bred all his own; and one of the ewes then bought having lambed a ram lamb of extraordinary beauty, he was kept, and the flock has been formed from his getting.

Sale of 1801.

	£.	s.	d.
61 Ewes, at 33*s.*	100	13	0
111 Wether lambs, at 22*s.*	124	6	0
61 Ewe lambs, at 21*s.*	64	0	0
7 Rams,	21	10	6
7 Ditto lambs,	14	14	0
Wool,	108	0	0
£.	433	3	6

	£.	s.	d.
1802. 92 Ewes, at 37*s.*	170	4	0
146 Wether lambs, at 26*s.*	189	16	0
34 Ewe lambs, at 23*s.*	39	2	0
3 Rams,	15	15	0
3 Ditto lambs,	6	16	6
Wool,	104	0	0
£.	525	13	6

	£.	s.
1803. 103 Ewes, at 31*s.* 6*d.*	162	4
110 Wether lambs, at 18*s.*	99	0
45 Ewe ditto, at 14*s.*	31	10
5 Rams,	21	0
3 Rams,	15	15
Wool,	103	0
£.	432	9

1804. 106 Ewes, at 28*s.*	148	8	0
119 Wether lambs, at 20*s.*	119	0	0
50 Ewe lambs, at 14*s.*	35	0	0
1 Ram,	6	6	0
2 Ditto,	10	10	0
4 Ditto,	14	14	0
1 Ditto,	2	12	6
Wool,	125	19	0
£.	462	9	6

1805. 100 Ewes, at 31*s.* 6*d.*	157	10	0
135 Wether lambs, at 22*s.* 6*d.*	151	17	0
41 Ewe lambs, at 20*s.*	41	0	0
1 Ram,	6	6	0
3 Ditto,	9	9	0
Wool, at 3*s.* per lb.	194	0	0
£.	560	2	0

These prices are a sufficient proof that the stock is good, and that the original ram had merit. The price of the wool this year is the highest I have heard of. In 1805 Mr. BRAMSTONE puts 336 ewes to ram. In 1804 he put 366 to ram. The flock is constantly folded, according to

to season and weather, on the sheep lawn of 116 acres, or on the arable; and in bad weather are in a warm well sheltered and well littered yard. In respect of food, they have not been pampered at all: their winter provision is, first straw of barley or oats, and then hay to the amount of twenty-five tons on an average; as to turnips, they have never had more than ten acres, often not so many, and sometimes none. In summer their support is the lawn, and the motive of keeping a flock at all, was that of keeping it close fed; and this is so effectually done, that I scarcely saw a single bent in it.

Being very badly provided in late springs, he does not put the rams in till the 5th of November, except to a lot of favourites for breeding rams. This seems to be a very encouraging account for a clay farm, every acre of which is hollow-drained, and necessarily so. The rot is quite unknown; another proof of its being clay.

Mr. HANBURY, at Coggeshall, buys wether lambs in autumn, and sells them that time twelvemonth, to those who buy for fattening on turnips; he was for many years in the Norfolks, but of late South-downs; but these have got so much dearer, that he has great doubt of their answering, however agreeable it is to have a breed more quiet than the Norfolks. Lambs bought at 22*s.* to 23*s.* sell at 34*s.* to 35*s.* besides the fleece.

Mr. COOPER, at Langenhoe, who is the greatest farmer within many miles of Colchester, keeps a breeding flock of 300 Norfolks, selling no wether lambs, but keeping them *round*, till fat from turnips at two shear.

On the poor wet loams around Dunmow, which they miscall *red land*, not more than from ten to fifteen sheep per 100 acres are kept.

The general sheep system of Tendring hundred is, to

buy wether lambs at Ipswich fair, which are cleared off at various seasons, according to the feeding; some farmers forcing them on more than others: some are sold fat the spring following the purchase in August; others during summer; and some are wintered a second time, and sold the March twelvemonth after the purchase. Turnips and clover the general food. Price bought in according to *times*, from 15*s*. to 24*s*.

Mr. SALMON, of Beaumont-hall, had this year a good lot of South-downs for the first time, from Mr. HOWARD, of Fornham.

Mr. ROGERS, of Ardleigh, has had at one time thirty score of Wiltshire wethers, corn fed on long pod beans given whole. He bought them, as he has often done, at Royston; and those that had a cross (one-fourth) of the Berkshire knots, are esteemed the most profitable. He has found that what are called the watery-coated ones fatten best; they are darker coloured in wool, open and loose, except at the extremity of the ringlets; rams where these sheep are bred have been rejected on this account, as the wool is worse than that of others, but it is certain that sheep gotten by them fatten better than others. He buys three shears in November, and sells from March to June: this system he conceives to be much more profitable than the common one of buying Norfolk lambs at Ipswich fair in August, which are summered on clover, and sold the March following, though so high as 3*l*. a head. Mr. ROGERS has sold his Wiltshires as high as 58*s*. after keeping only five or six months.

Mr. ROGERS, of Ardleigh, I found making a sheep-yard, having an high opinion of the system: he had fixed on the scite, and built a range of sheds on two sides, as a fence to it. Carts earth as a foundation, and litters upon it.

Mr.

Mr. BUXTON, at Layer de la Haye, has also a warm well fenced (with stubble walls) sheep-yard, and finds it very useful.

Mr. POLLEY, bailiff to Mr. FEN, at Middleton-hall, who is a very intelligent and observing farmer, approves of sheep-yards well littered; but remarked that the dung should be moved often enough to prevent any heat, for if it heats it is dangerous to lambing ewes, and ewes and lambs.

Mr. WAKEFIELD, of Burnham, has a semi-circular lambing yard, which he finds of great use: in summer it serves as a shed for cattle in the heat of the day, and in winter he feeds beasts in it.

Mr. BAWTREE, of Southminster, has a sheep-yard well fenced by high walls of haulm; approves much of the system.

Mr. BAWTREE, of St. Osyth, keeps 800 South-down breeding ewes; and keeping his whole crop of lambs to different ages till fat, has seldom less than 2000 in his flock of all sorts. His *saltings*, the marshes over which the tide flows, are of great use to his flock. I viewed one of his flocks with pleasure, accompanying him for that purpose nearly to the shore: it is a good flock, and well woolled, though more unequal than it will be some years hence: he has many fine ewes. They find great refreshment in lying quite on the beach in hot weather. He folds all except the fatting stock. He has had South-downs nine years, but his father in Dengey hundred has had them sixteen years.

Mr. BUXTON, at Layer de la Haye, in common with his neighbours, was for many years in the system of buying in Norfolk lambs; and then the cross of Leicester and South-downs, which have been getting in, and has been found an improvement; but he has for some years bought whole

whole bred South-downs, and he can lay them thicker, and finds them much more quiet than Norfolks.

Ipswich fair lambs form the sheep system of Mersea Island also: good ones put to turnips are sold fat the spring following; others are kept a year and a quarter, and sold at or about Michaelmas. Turnips and clover the main support of all.

Mr. AMBROSE, of Copdock, in 1789 bought above 11 score of South-downs, some of them of Mr. ELLMAN, of Glynd. From this beginning of a conversation I expected much before the conclusion. His present stock twenty South-down ewes, twenty Leicesters, and one hundred Norfolks.

"Mr. AMBROSE, which do you prefer, South-downs or Leicesters?"

"I don't know which. Both good."

Mr. WESTERN began his sheep experiments with an interesting comparison of one hundred new Leicesters and one hundred South-downs. The former coming from a soil better than his, did not support their new situation well; he continued them six years, but finding that they degenerated, and did not produce full crops of lambs, but that on the contrary, the South-downs increased in size and improved in shape, he abandoned the Leicesters, and continued the South-downs. He did not find one breed more subject to disorders than the other. The wool of the South-downs has continued just as good as that of the original stock. His present flock:

200 Breeding ewes,
20 Rams,
220 Lambs,
100 Sells 100 of the worst shearling ewes,
100 also the same shearling wethers.

640 The

The last article, if put to turnips before Christmas, at 50*s.*; if not at 42*s.*

The ewes this year produced 3¼lb. of wool; hoggets near 4lb. He sheared his lambs this year for the first time; they yielded each 1¼lb. He never folds, except occasionally in the farm-yard; but having an high opinion of this practice, intends it more regularly the ensuing winter, and to give cut hay in troughs. The farm over which this flock goes (corn, &c. included) contains 500 acres.

Mr. DUNKIN, of Bealy-mill, near Maldon, gave bran to two hundred wethers, Norfolks, South-downs and Leicesters; the first paid best for it, but he lost by all.

At Snorum, Latchingdon, &c. Norfolks, Leicesters, and Lincolns, have been long the stock of the country; but of late years South-downs have come in, and get the advantage of all others very fast: they are much liked, yet it is admitted that the new Leicesters will fatten faster than any other; but they are bad breeders. However, this country is ill calculated for breeding flocks. Mr. STRUTT, the landlord of the farm, had doubts upon the question of Leicesters fatting better than South-downs, and suspected that they were better fed. Mr. DINES, therefore, sent him a couple to go with his own South-down wethers, and the result was so much in favour of the Leicesters, as to establish that point in Mr. DINES' opinion.

In Foulness Island, the whole stock were Lincolns: ten or twelve years ago there was not a South-down in the Isle; now many, and increasing. Mr. PRENTICE has no others.

Mr. WAKEFIELD, of Burnham, on his fine farm of 1700 acres (700 grass and 1000 arable) began with Leicester sheep; and has at present three flocks a Leicester, a half bred, and a South-down flock. He keeps 1000 breeding

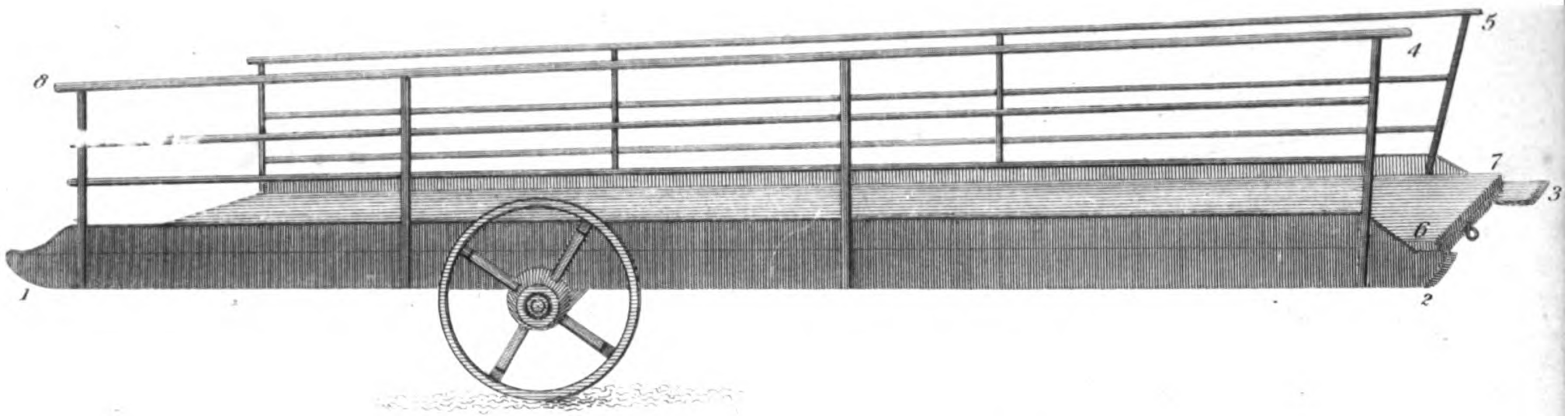
breeding ewes in all; keeping the produce round, but selling [illegible] shearlings: general stock 3000. He is so convinced of the superiority of South-downs, that he is changing them all by South-down rams, gradually to be [illegible] and most wisely does not cover his best [illegible] of his own breeding, from a foolish par- [illegible] has stood so dreadfully in the way of im- [illegible] flocks; but has constantly gone else- [illegible] this year he has one from the Duke of [illegible] another from Sir WILLIAM ROWLEY. [illegible] of South-downs is founded on New Leices- [illegible] bad breeders: his own comparison and [illegible] one hundred Leicesters will bring eighty [illegible] hundred South-downs will bring one [illegible] lambs. He never folds; but many [illegible]

[illegible] invented by this gentleman, for [illegible] flocks over marsh ditches, has merit. (*Plate* [illegible])

Mr. [illegible], of Burnham, has found Norfolk sheep the best for a fat lamb; he buys ewes, and sells them in couples. Mentioning the New Leicester, he answered —"I should like to have them raised for me; but not to breed them."

Mr. BAWTREE, of Southminster, one of the most considerable farmers in the county (for he occupies 2600 acres) is certainly among the first, if not the first man, who had South-down sheep in Essex: he assured me that he had some twenty-five years ago. His flock has been 1140 breeding ewes; and at this Michaelmas (1805) he *setts* 3000; an immense stock, when I add, that except selling some lambs, his system is to *keep round*. He increases this rather than any other stock, for, says he, "sheep pay better than any thing." His wethers at two years and two months

A Casting Bridge for Sheep &c. Mr Wakefield Burnham.



	F.	In.		F.	In.
From 1 to 2	12	0	from 6 to 7	1	6
2 3	1	9	1 8	2	3
4 5	1	9	dia: w:	2	

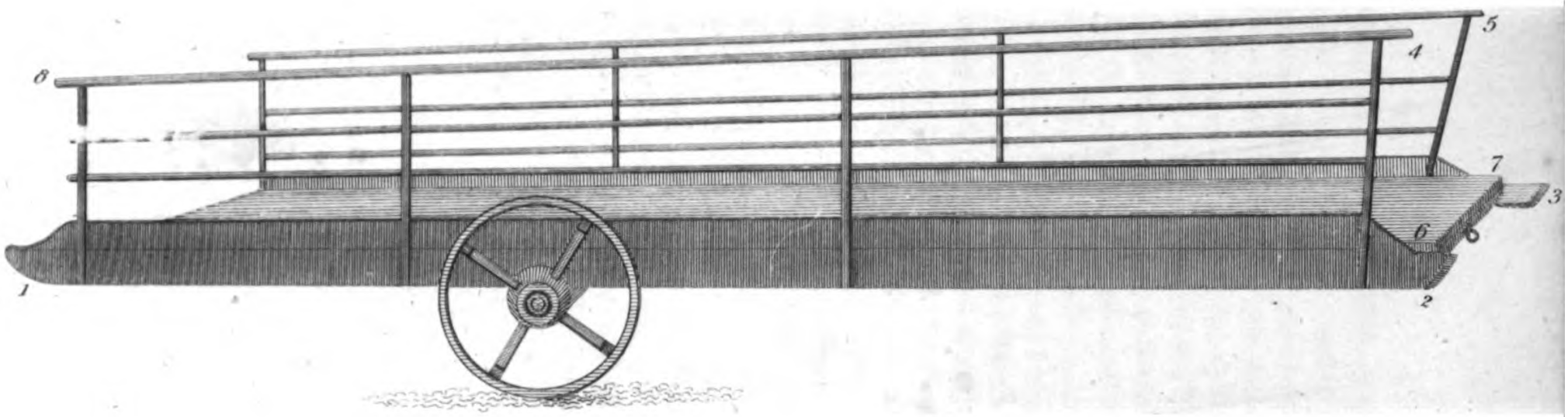
breeding ewes in all; keeping the produce round, but selling fat at shearlings: general stock 3000. He is so convinced of the superiority of South-downs, that he is bringing them all by South-down rams, gradually to be of that blood; and most wisely does not cover his best ewes by any tups of his own breeding, from a foolish partiality which has stood so dreadfully in the way of improving so many flocks; but has constantly gone elsewhere for them: this year he has one from the Duke of BEDFORD, and another from Sir WILLIAM ROWLEY. His preference of South-downs is founded on New Leicesters being such bad breeders: his own comparison and expression is, that one hundred Leicesters will bring eighty lambs, and one hundred South-downs will bring one hundred and twenty lambs. He never folds; but many farmers do.

A moveable bridge invented by this gentleman, for passing his flocks over marsh ditches, has merit. *(Plate* LIV.)

Mr. KETCHER, of Burnham, has found Norfolk sheep the best for a fat lamb; he buys ewes, and sells them in couples. Mentioning the New Leicester, he answered —"I should like to have them raised for me; but not to breed them."

Mr. BAWTREE, of Southminster, one of the most considerable farmers in the county (for he occupies 2600 acres) is certainly among the first, if not the first man, who had South-down sheep in Essex: he assured me that he had some twenty-five years ago. His flock has been 1140 breeding ewes; and at this Michaelmas (1805) he *setts* 2000: an immense stock, when I add, that except selling some lambs, his system is to *keep round*. He increases this rather than any other stock, for, says he, "sheep pay better than any thing." His wethers at two years and two months

A Lifting Bridge for Sheep &c. at Wakefield Burnham.



	F.	In.		F.	In.
From 1 to 2	12	0	from 6 to 7	1	6
2 3	1	9	1 8	2	3
4 5	1	9	dia: w:	2	

months from grass only, both in summer and winter, have many of them come to 20lb. a quarter: twelve score ewes have brought him sixteen score lambs. I saw his rams and a part of his flock: Mr. BAWTREE is well satisfied with them.

At Bradwell, Norfolk sheep are fast giving way in favour of South-downs, which are found to be more quiet. Mr. ANDREWS, a Norfolk man, had some hesitation, but admitted that if he could get weight for weight at the same price, he would prefer the Downs. The common system is to buy ewes, and sell them in couples.

Mr. BARRINGTON, near Rochford, informed me that his father and himself have had South-down sheep 22 years; I did not see them, and therefore know not whether they are in a style that mark a twenty years progression. He does not fold but *keeps close*; that is, stocks hard.

Mr. WRIGHT, of Rochford-hall, keeps Norfolk wethers, and finds them profitable: they stand feeding cole well: many sheep are lost in feeding that plant, by the overflowing of the gall.

Mr. PRENTICE, of Prittlewell, has South-downs and Lincolns, but most Wiltshire wethers; buys in in October and November, and keeps them to the Christmas twelvemonth following; lambs from 25*s.* to 32*s.* and sells at 60*s.* or 63*s.* and a fleece: rarely fails of doubling his money. Feeds on cole or turnips, with hay; as pastures here are not *forcing*, they must have artificial grasses.

Mr. HICKS, of Hockley, whose farm consists of a very heavy and tenacious clay, would not hear of South-downs, finding the Welch to pay so much better: these he buys at 15*s.* Downs at 25*s.* and the lambs of one sell for as much as of the other.

Mr. VASSAL, of Eastwood, keeps only the old Leicester,

ter, and Lincolns. He does not like *new fangled whims.* He keeps one hundred Lincoln ewes, and one hundred Leicesters, which, with one hundred shearlings, make three hundred on his farm of three hundred and fifty-five acres, thirty of it meadow and fifty clover. His shearling wethers come to 23 or 24lb. a quarter. In 1774 he had one of above 34lb. clips on an average 8lb. of wool, and this year sold at 16*d.* per lb.

At Pitsey, on their strong land farms, Welch sheep generally kept: very few South-downs, except by Mr. SPITTY.

Sir THOMAS LEONARD, who has at Avely 500 acres in his hands, keeps above 500 South-down sheep: buys lambs from Sussex at from 26*s.* to 30*s.* keeps them two years, when they generally come to 20lb. per quarter, besides the two fleeces: he has some Leicesters also, but he thinks South-downs are beyond them.

Mr. NEWMAN, at Hornchurch, has had great success with South-downs. His farm consists of 530 acres, upon which there never was kept more than 100 sheep. Last year he had 770 sheep and lambs; and except folding off 15 acres of tares, till the lambs were taken away, this stock had only 56 acres of grass; no clovers: in winter five acres of turnips, and he bought seven other acres; also five of cabbages: not a load of hay through the winter. He has had them five years. This year he sold his wether lambs at 26*s.* the refuse at 20*s.* and 21*s.*; the ewe lambs at 20*s.* and 21*s.* His flock 310 breeding ewes; 140 shearling ewes; 388 lambs; and the wool sold for 155*l.*

Sales

Salesman's account for 1805:

	£.	s.	d.
62 Ewes, at 22s. ...	68	4	0
3 Ram lambs,	1	1	0
47 Ewes at 24s.	56	8	0
20 Ditto, at 23s.	23	0	0
100 Wether lambs, at 26s.	130	0	0
23 Ditto, at 21s.	24	3	0
22 Ewe lambs, at 20s.	22	0	0
10 Ditto, at 21s.	10	10	0
5 Rams,	17	6	6
	352	12	6
Wool,	146	17	0
£.	499	9	6

He folds constantly, never missingunless of bad nights; and this article of produce he sets against the shepherd's expense.

Mr. HATCH, of Claybury-hall, has South-downs: buys ewes three or four years old; sells the lambs from 5s. to 10s. under the price given, and the ewes at 35s.

Sir RICHARD NEAVE keeps South-downs and Wiltshires; no ewes but of the former breed.

The Earl of St. VINCENT, at Rochetts, keeps 50 South-down ewes, and 100 of other breeds; but prefers the former.

Lord PETRE, at Thorndon, sheared this year 600, of which 250 are breeding ewes, the rest wethers, and a crop of lambs besides; 1000 has been sheared here: the original basis of the flock was Norfolks, but his Lordship's father crossed them with South-down rams, and he has continued, so that the quantity of Norfolk blood at present is very small. He never folds.

Mr.

Mr. KNIGHT, at Ramsden-Crays, has some Leicester sheep, which he breeds; and lets or sells rams.

Mr. COVERDALE, of Ingatestone, has found the most profitable breed to be half Ryeland and half Leicester, and this crossed by a South-down ram: it must be clear, however, that the mixture thus compounded cannot be preserved in these proportions without more attention than is likely to be given. In general, he buys ewes and sells in couples.

Mr. DYER, of Ongar, buys and sells every year, South-downs chiefly, and he brings them to lamb as early as the Dorsets. Many Welch are kept in this vicinity.

Mr. MANSFIELD, near Epping, as he buys every year to sell fat, prefers ewes a cross between a Ryeland ewe and a new Leicester ram, to which ewes he puts a South-down ram. This mixture pays him better than any other breed; nor is it difficult to procure ewes so bred. This taste will give a demand in Herefordshire, which will gradually destroy their native race.

The number of sheep kept at Chesterford before the enclosure was very small, except by the two flock farmers, who fed the open fields exclusively; and at present it is only a few bought in and sold out every year. Mr. NASH has a breeding flock of 20 score Wiltshires for the fold, but he is getting into new Leicesters. Lambs got by a Wiltshire ram sell at 15*s*., by a Leicester at 16*s*. Sold his wool this year at 40*s*. a tod.

Lord BRAYBROOK, at Audley-end, has been for some years in the Norfolk breed, but is now getting into South-downs. Besides rams, his Lordship has bought 50 four-toothed ewes. This breed spreads every where in Essex. His Lordship always folds them, unless in bad nights, or when heavy with lamb. In conversation on the question of folding, with the very intelligent bailiff Mr. NOCKOLD, he

he remarked, that the lawns at Audley-end are extensive, and must be kept close fed for beauty; they can be considered only as sheep-walks, which cannot be broken up, and therefore not to fold, would be to lose a certain advantage without an adequate return; and if these lawns were fed without folding, the manure always being the same, would not answer equally as on fields admitting a change. There is much good sense in this.

Mr. HUBLAND, at Hallingbury, keeps 300 South-down breeding ewes, which he folds on clovers for wheat, as well as on grass land.

Mr. WALTHAM, who has grazed on a very considerable scale in the eastern marshes of Dengey hundred, Burnham, and Southminster, for near forty years was largely in Lincoln sheep; he afterwards got into South-downs, and they paid him much better.

ROT.

Wherever I have been, in the marsh districts of Essex, and they are numerous and extensive, I have inquired for this distemper, and agues, and marsh fevers. The answer has been every where the same—*the rot unknown, but agues in plenty.*

SECT. III.—HOGS.

"THERE is no animal in the whole economy of good husbandry that requires more attention, as to breed, number, and supply of food, or will better requite the care and trouble of the farmer, than a well-managed and proper stock of hogs. These things, however, are too much over-

ooked, or rather disregarded by farmers in general, though all are ready to agree, that an over-stock in other respects must ever prove fatal to the interests of the farmer. Hogs are too frequently conceived to be a trifling and unimportant part of the stock of a farm; whereas if their first cost, and the value of their food, were duly considered, with their improving value, it would certainly bear them out against some of the more costly animals, and challenge more attention and care than what is usually bestowed upon them. A due regard to the breed which the peculiar circumstances of the farm may call for, is particularly necessary, as some breeds are much better suited to depasture, and feed upon grass and herbs only, than others. The most hardy and best qualified to prog for themselves, are the Chinese; a cross with which breed upon almost any other, may, under most circumstances, be prudently recommended. Let the breed be what it may, a well proportioned stock to every farm will most abundantly requite the care, and repay the expense of the necessary food provided for them. A few acres of clover would be well applied to the use of the hogs in the summer; but in the stye it would be well to restrain them to a certain quantity of water; and to lodge them clean and dry, notwithstanding the wilful neglect and too prevailing opinion to the contrary; for cleanliness is as essential to the preservation of their health and well doing, as to that of any other animal*."

"Nothing I think, can be more judicious than the whole of this paragraph; and nothing can be of greater importance to the profits of the farmer than the care and management of hogs. The produce of a single breeding sow is sometimes worth from 10*l.* to 20*l.* or 25*l.* a year.

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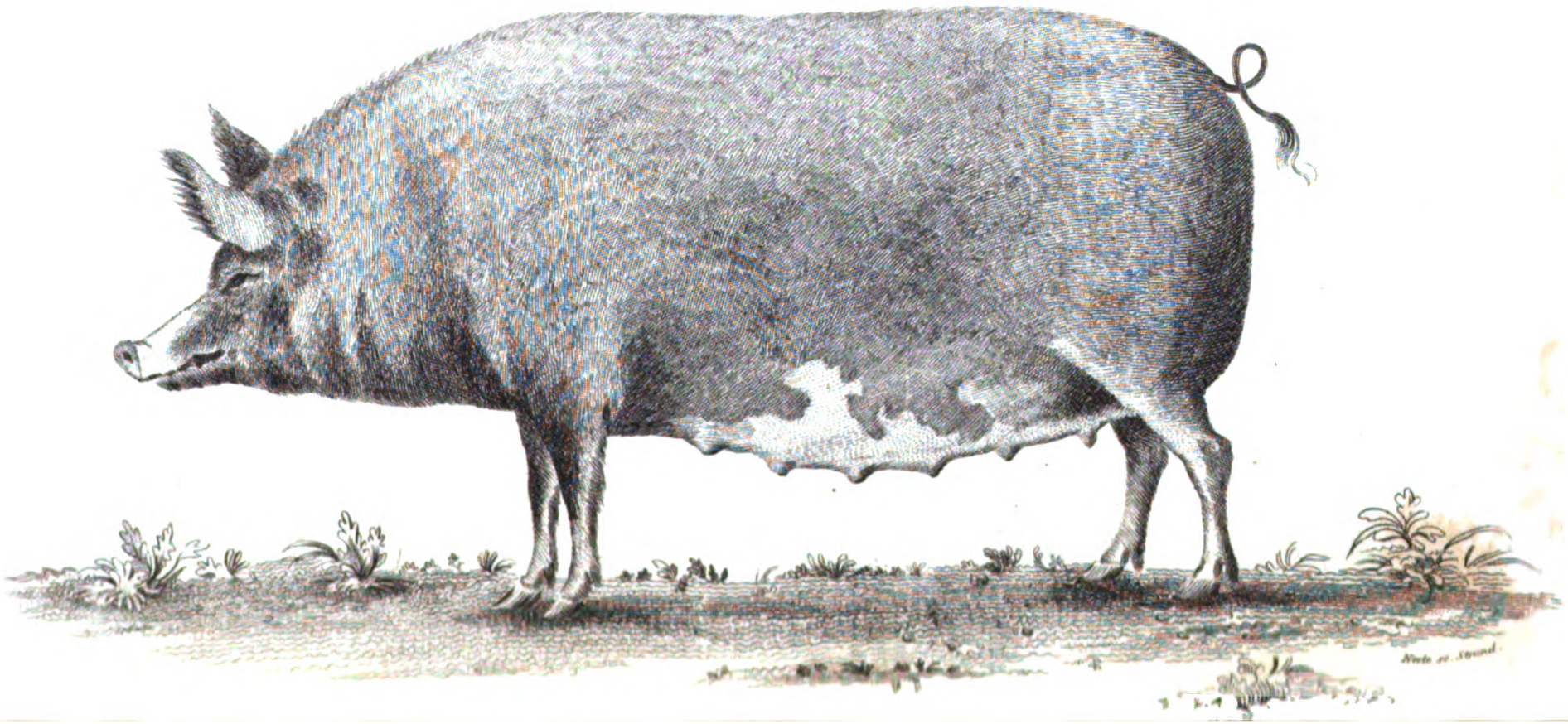
* Vancouver.

But

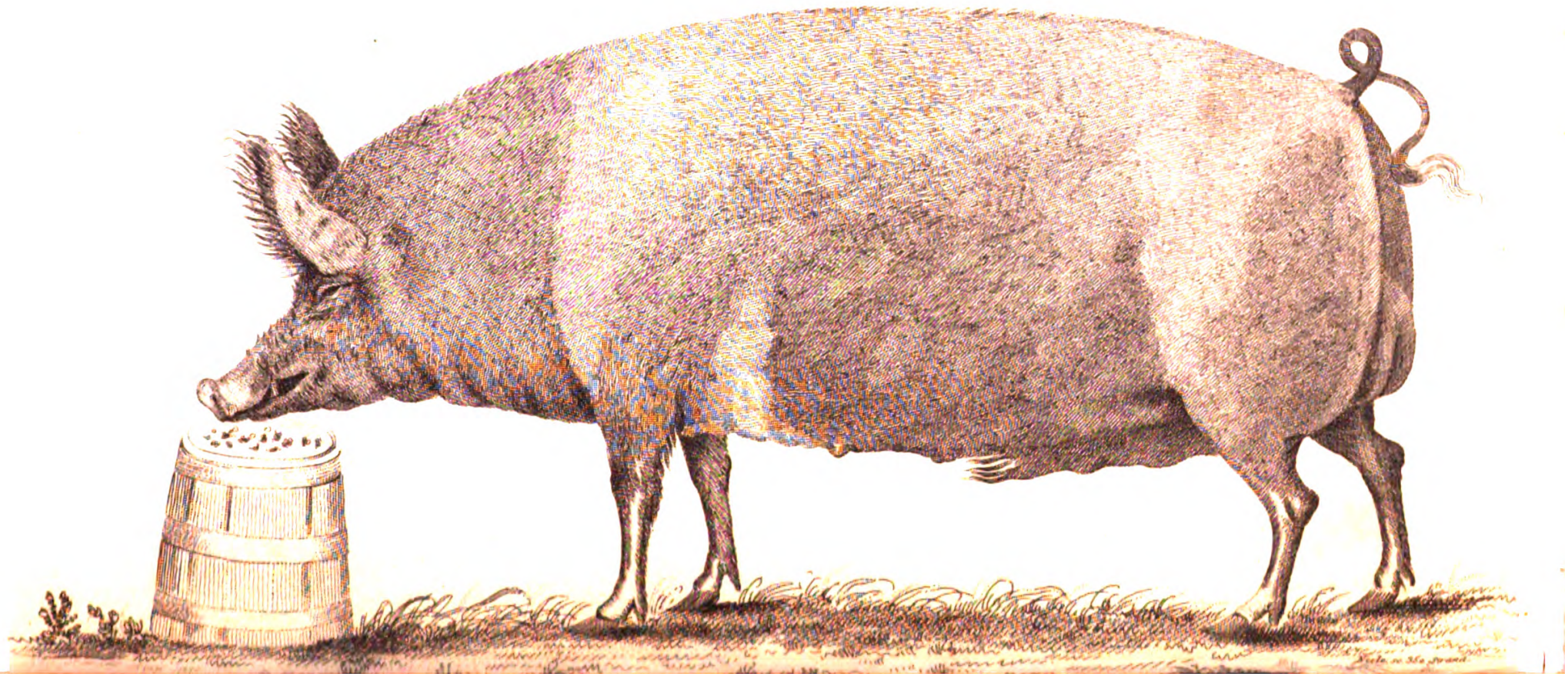
Mr Western's Sow.

Plate 55. P 341.



Mr. Westerns Boar.

Plate 35 P. 341



But the breed is, if possible, less attended to than that of other stock. The cross, however, of the Chinese with other breeds, I find is more and more general. My friend Mr. THURLOW has lately introduced a boar and sow of the Dishley breed; but the experiment of their utility or excellence is not yet sufficiently advanced, to ground any satisfactory report upon.

"The Berkshire is the favourite breed in the southern parts of the county; in the northern we have every possible variety of mixture*."

Mr. WESTERN, at Felix-hall, has by far the finest breed of hogs that I have seen in Essex, and indeed equal, if not superior to any elsewhere to be found: they are black and white, short hair, fine skin, little prick ears, short snubby noses, very fine bone, broad, deep, straight, and light in the belly; full in the hind quarters; and bring litters from eight to twelve. An admirable breed: he sells only at five or six months, price of sows and boars from five to ten guineas each. He is of opinion that it answers well to convert a large corn produce into money by means of hogs, and his practice corresponds with his theory, having received in three years and three quarters 1640*l.* for hogs, fat and lean. *(Plate.* LV.)

Mr. WESTERN writes to Sir JOHN SINCLAIR:—"The breed of hogs you noticed are justly entitled to the merits you give them. They are, however, by no means peculiar to my farm, or Mr. BRIDGE'S; they are a breed pretty general in this county, but little known elsewhere. We call them the Essex half black, and I am inclined to think the best sorts of them are inferior to none in the kingdom. They feed remarkably quick, grow fast, are thin in the skin, and light in the bone and offal, and they are also

* Howlett.

an excellent quality of meat. Upon any fair experiment of comparative age, weight and food fairly registered, I will undertake to produce of my own or neighbours, against any other sort whatever. The sows are good breeders. There are a great many pigs bred and fatted in this neighbourhood, and sent to London market for sucking pork, weighing from six to eight or ten stone, which weight they come to at five or six months old, without putting up: they have some beans given them as they run. A practice has recently found its way into this neighbourhood, first tried, I believe, by Mr. PATTISON, of Maldon, of fatting larger hogs in separate stalls, so constructed that the animal can, at his pleasure, conveniently rise up and lay down, but cannot turn round. I am told they will thrive in this manner faster than in any other way; they are certainly fed by these means more cleanly, as they cannot get at dirt or filth of any kind; the stalls they are in, are paved upon an inclined plane from the head to the tail of the animal, and they are cleaned out every day."

At Braxtead clover is much fed with pigs; scarce a field without many swine in it, who have no other food. If the pigs are young, they have every day a few oats given.

Mr. ROGERS, at Ardleigh, has bought oil-cake at 7*l.* per thousand (now 14*l.*) and given it to hogs, which fattened very well; but when the pork is roasting it smells disagreeably; and this is perceivable even when the hog is only fed on the cake when lean, and before fattening on other food.

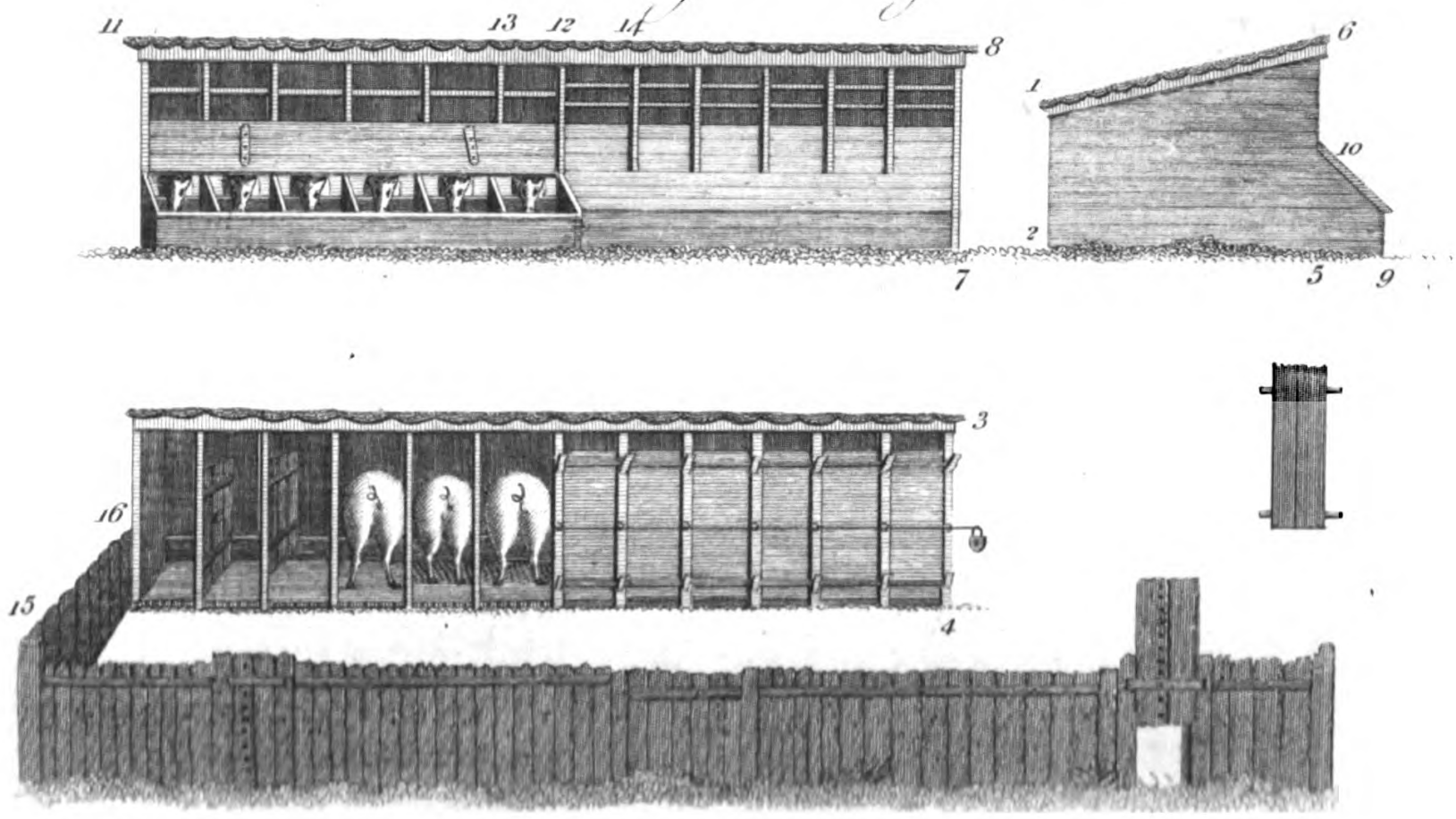
Mr. ROGERS conceives that it will answer to fatten hogs of a good breed with beans at 30*s.* a quarter when pork 6*d.* per lb.

Hogs pay Mr. HARDY, of Bradfield, 4*s.* an acre over the whole farm.

Mr.

Mr Pattisons Pig Case

Plate 56. P. 343.



Mr. PATTISON, of Maldon, has for some years practised a method of fattening hogs, so different from the common one, that it merits notice. He builds his styes in divisions, each to contain a pig, and to fit him as near as may be; when he is in, he cannot attempt to turn himself round; but there is a space left at the bottom of the divisions, by which he is enabled to lay down at pleasure, his feet in that case passing through such space. On one side the building is a range of small troughs in the wall, and on the other a row of sliders, which shut in the pigs. The pavement of the apartments slopes gently backward. No litter of any kind is permitted, a hoe and broom keeping them sufficiently and entirely clean; and Mr. PATTISON thinking that they having the power to eat, or chew the litter, &c. to be injurious to their thriving. He finds that they fatten far better in these styes than in common ones, and attributes it to their being much more quiet: having only to eat and sleep. Barley-meal mixed with water is the food; and he has found the improvement so great, that he will engage that a pig forward in flesh, weighing 70lb. shall in twenty-eight days increase in weight to 140lb.; the gain of 70lb. live weight may be called forty-five dead, which at 8*d.* per lb. is 30*s.* or 7*s.* 6*d.* a week. This is very considerable, and affords sufficient reason for conceiving that the method is a real improvement. Mr. PATTISON has fattened many hogs in the common manner; and the constant loss he sustained by them made him try by experiment what improvement could be made to convert that loss to profit. (*Plate* LVI.)

From 1	to 2	.....	3 feet 0 inches.
3 —	4	.....	3 — 0
5 —	4	.....	4 — 0
7 —	8	.....	4 — 0
5 —	9	.....	1 — 2

From 5	— 10	2 — 0	inches.
8	— 11	16 — 0	
11	— 12	9 — 0	for 6 fat pigs.
12	— 13	1 — 6	
12	— 14	1 — 2	
15	— 16	5 — 0	

Under *e*, the side-board, a space of six inches for their legs, when laid down to sleep.

Mr. DUNKIN, of Bealy-mill, near Maldon, has fattened hogs in this method, and approves much of it. He has found that a hog half fat, when put into the cases, has gained 15lb. a week; and he has made a treble case on wheels, to keep moving about on grass land for its improvement. (*Plate* LVII.)

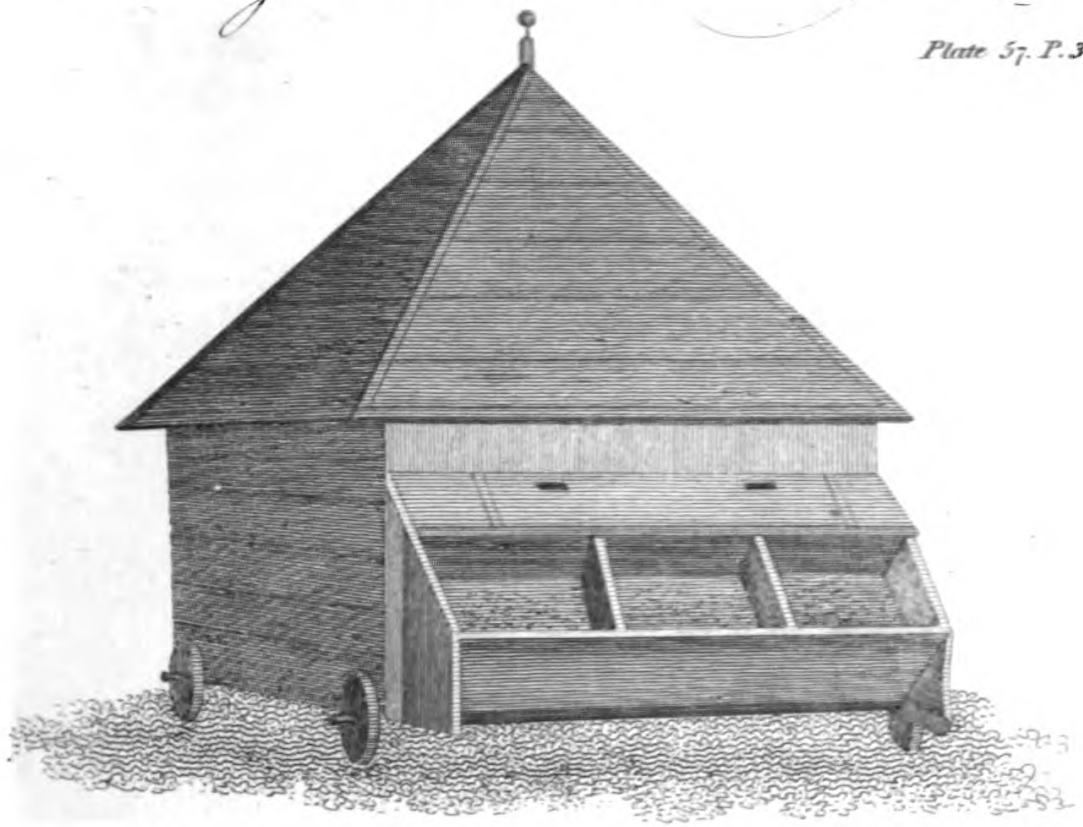
From 1	to 2	5 feet	0 inches.
1	— 3	6 —	0
3	— 4	6 —	0
5	— 6	5 —	3
6	— 7	5 —	3
6	— 8	3 —	2
8	— 9	1 —	1
9	— 10	1 —	1
Diameter wheel		1 —	0

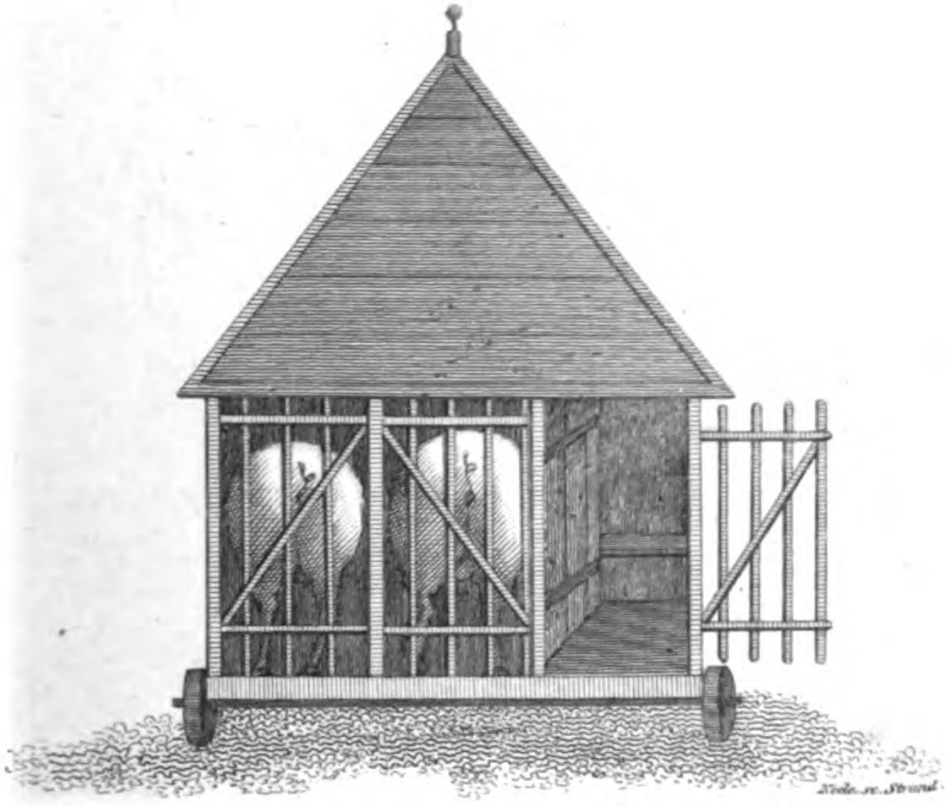
Mr. WALTHAM, of Maldon, who has for above thirty years been one of the most considerable graziers in Dengey hundred, occupying for many years about two thousand acres of rich land, has long been famous for his breed of pigs: they are the black and white; great breeders, and come to a large weight; feed profitably, and are very hardy, grazing well on marsh land. He claims the origin of Mr. WESTERN's stock, who has rendered them more famous. Mr. DUNKIN, at Bealy-mills, has a sow and boar of this breed, a good specimen also; and has found them very profitable.

Mr.

Moveable Pig Case, Mr Dunlap Healy Mills.

Plate 57. P. 344.





Neele sc. Strand.

Mr. WAKEFIELD, of Burnham, has this Essex breed from Mr. WESTERN's, and approves of them very much in every respect except one: they bring good litters, but are such bad nurses, that a due proportion of the pigs are not reared. He is breeding them gradually to be all black, as the white parts of the skin are apt to crack when they are feeding in clover. He wishes to have a full stock of swine, but does not find that a great increase of breeding sows answer, for they do not succeed well when very numerous.

Mr. KETCHER makes it a rule to keep his hogs in yards all the winter, by which means he prevents much mischief, and makes dung largely; and in summer they are also confined, except in feeding clover.

It was a common practice about Rochford, to buy Berkshire hogs at Romford market, for turning into clover: Mr. WRIGHT's father had three hundred of them at once. He used to buy in good hogs about six months old, at 30*s.* more or less; kept them entirely on clover, and always sold them at a handsome profit. But the practice declined much, from the trade getting into few hands, and from bad treatment in selling. Mr. WRIGHT keeps nine breeding sows.

Mr. KNIGHT, at Ramsden Crays, has been long famous for his breed of hogs, and shewed a boar which gained the prize at Chelmsford: his men told me that Mr. WESTERN had his breed from Mr. KNIGHT. Mr. WESTERN has become so famous for pigs, that those of whom he bought any are ready to claim their share; but that gentleman has outstripped Mr. KNIGHT, whose present stock, as far as what I saw, have not been bred with sufficient attention to rival Mr. WESTERN.

Mr. THOMAS PITTMAN, of Barking, who carries on his great business on a scale and with a spirit that deserves

every commendation, has been the greatest breeder of swine that I have met with; he has had 35 sows and five boars, and 600 head at one time, of his own rearing. The sort, Berkshire, and he has now a boar and sow which he would shew against all England for 100 guineas.

Sir RICHARD NEAVE, at Dagnam-park, has three acres of potatoes annually, and fattens his hogs with this root, boiled and mixed with biscuit-makers' sweepings; upon which, his bailiff informed me, they did so well, that some further experiments ought to be made to ascertain the effect of wheaten-meal in mixtures, when that grain is too cheap.

SECT. III.—HORSES.

"A DESCRIPTION of the particular breeds of horses, chosen and required in this county for the purposes of agriculture, does not seem to apply so materially to the purpose of this inquiry, as the expense attending their maintenance, the general mode of feeding, and the working management of them.

"The practice of cultivating green food, and soiling the horses in the yard or stable, during the summer season, is now become very general through the county*; and the daily accumulation of dung by this means, together with the superior health and hardiness which is induced in the plough horses, by their lodging in the straw-

* "Not a fifth part of the farmers in this neighbourhood do this, though it is undoubtedly an excellent practice in various respects, and in some parts of the county is gaining ground, and indeed also in this."—*Howlett.*

yard,

yard, rather than in the stable, through the winter, is a sufficient inducement with the most able and experienced farmers to continue both practices, and to justify their general recommendation of them throughout the kingdom.

" The allowance of oats during the winter season, and whilst the horses are fed upon what is called dry meat, is two bushels a horse per week*. In the summer, and when soiled upon green food, about half that quantity. The road teams are necessarily fed at a greater expense than the plough horses, as well in the article of hay as in that of corn; the allowance of the latter to both, increasing as the work presses, or in proportion as their exertions may require.

" In this view, the expense of feeding the farm horses through this county is really enormous, and can only be lessened by the introduction of some equally nourishing substitute, lying equally within the farmer's reach, to be procured as readily, and at a less expense. The minutes display that substitute in potatoes, and to Mr. TABRUM, of Avely, upon that subject, are the public much indebted, for his very important and candid communication.

" To reduce the consumption of the present costly horse food, by the general adoption of Mr. TABRUM's practice†, where under a similarity of circumstances, the soil would equally well allow of the culture of potatoes, must prove of the highest public as well as private importance, as thereby a still more valuable appropriation would be given in a large proportion of the surface territory of

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* " Two-thirds of our farmers do not allow half this quantity; except on particular occasions;—but those who pique themselves upon their fine teams, or think it worth while to keep them in a saleable condition, give them much more."—*Horsfield.*

† See this under the article of potatoes.

the

the kingdom, now employed in the culture of horse food: thus contributing in a very great degree to the augmentation of our internal resources, and thereby superseding the necessity of importing into this country, that immense quantity of oats, hitherto annually supplied by the northern parts of Europe.

"Upon the light and temperate lands, two horses in the wheel or common foot plough are usually employed, and these are managed with much dexterity by one person, who holds the plough, and drives the horses to a very equal labour at the same time. Upon the stronger land, three, and sometimes four horses are required to a plough; these as necessarily require a driver; and here in like manner with the two-horse plough teams is the day's work at plough, and at harrow, done in one journey of seven and a half or eight hours. To plough an acre, or at most five roods, is the common day's work. This is the general mode of working the farm horses, but which (under the peculiar circumstances of this county) is not to be applauded or approved of by any means. In open counties, where the work lies detached, and often at the distance of two, or even three miles from the farm-house, the rounding of the day's work into one journey, particularly in the winter season, seems to be a practice indispensably necessary: but in a country like Essex, where the farms lie compact, yet moderately large, and where the farm-houses in general are tolerably centrical, and conveniently situated; it cannot surely admit of an excuse for the ploughmen in the middle of their journey, to halt to breakfast upon the headland (perhaps * at the back of the stable,

* Perhaps, however, at the distance of more than a *mile* from the house, as is often the case in farms consisting of two or 300 acres only; and the travelling four miles a day is a matter deserving some attention. And as to the

stable, or contiguous to the farm-yard) the horses all the while shivering with cold, getting stiff and diseased from neglect, and the consequences attendant upon their morning's labour, whilst the ploughmen are idly consuming the time, which custom has sanctioned, to complete their day's work in one journey. By dividing the labour of the day, and baiting between two journies of four hours and a half, or five hours each, a greater time would be allowed for the performance of more labour, which in this manner would be done with far greater ease to both men and horses, and particularly with much less exhaustion and injury to the latter*."

Mr. HANBURY, at Coggeshall, has carried the stabling and dry food of horses to a very extraordinary length, for a country residence. One of his coach-horses is 21 years old, and in 14 years has never been out for feeding a single day; nor have they ever any green food given; nor are they ever taken out merely for airing or exercising. Old oats, old hay, and a few old beans in winter only; water twice a day. Never greasy heeled. But his farm-horses are soiled in the yard through the whole summer.

At Yeldham, five per 100 acres, arable; at Toppesfield, five per 100.

The Suffolk breed of horses are the favourites in Essex; and several persons have made considerable exertions in procuring good mares and stallions. Mr. WESTERN, at

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the danger of catching cold, &c. it is easily (in general)guarded against by a careful ploughman, by placing the horses under such parts of the hedge as screen them from the wind, and they amuse as well as refresh themselves by eating their lock of hay, while the men are refreshed with their morsel of bread and cheese. This is all dispatched in 20 minutes, or at most half an hour; less time than would be required for going home and returning again, without allowing a single moment for baiting either man or horse."—*Howlett.*

* Vancouver.

Felix-

Felix-hall, gave one hundred guineas for a stallion, and one hundred and fifty for three mares; and he is going to purchase three more at the same price.

Mr. WRIGHT, of Rochford-hall, has seventeen, and to shew the healthy hardiness of the breed, remarked, that in ten years he has neither lost, changed, nor added one to these teams, except a stallion.

Mr. WAKEFIELD, of Burnham, who has made uncommon exertions in the introduction of Suffolk horses in Essex, possesses probably the best stallion (Briton) of that breed that exists. He has been offered four hundred guineas for him. He has a two year old stone colt got by Briton, for which he has refused one hundred and twenty guineas: his price is one hundred and fifty. He has above forty of this breed in all; values his geldings at 50*l.* to 60*l.* each, and would not take 50*l.* on an average per head for his whole stock.

Mr. WOOD, of Ingatestone, who has been remarkably attentive to the management of horses, has a very ill opinion of giving them much water. Soiling on tares can be rendered consistent with quick motion merely by the denial of water; and it is remarkable, that when any horse has a wound, the only chance of a cure, if it be a bad one, is keeping him from water. He has had some cases so bad, that cures were despaired of; but by an absolute prohibition of water till the wound runs good matter, he has effected several surprizing cures.

Another remark he has made deserves noting. He had a horse wounded by a kick, and by very bad management of a farrier, was after a fortnight returned much worse than he was sent, with an enormous load of proud flesh on the wound. He read accidentally in the papers, that a strong solution of salt in water, very often applied, had reduced an inveterate wen in the human body. It struck

him

him that the same application might be used to reduce the proud flesh on his horse; and accordingly tried fomentations of hot beef brine five times a day: the success was rapid and complete; the horse was cured, and has now been posting for four years past.

Mr. Wood has had considerable success in ordering a medicine for a violent fit of the cholic in horses: a horse was in the last stage of the distemper, and manifested various signs of approaching death; a pint of red port diluted with half a pint of warm water and two ounces of bark given in it, effected a cure. He tried port wine for another horse that had been ill of a lingering wasting distemper, he knew not what: he gave him a bottle of port without any addition, and it had a remarkable effect; he did well, though he never absolutely recovered from the effects of the illness. I mentioned to him some remarkable cases of the late Dr. Norfolk's prescription of laudanum for the strong gullion, and he assured me that he had tried it with great success more than once; giving once as much as 3 oz. of liquid laudanum.

Every post-horse Mr. Wood keeps eats three bushels and a half of oats per week the year round, except for about two months at tares, then less; and he remarked the immense difference in the effect and duration of the dung of horses thus fed, from that of weaker feeding. It is this, and this only, that has given him in a good year, more than three loads an acre of hay.

Among the best farmers in Essex, I found them very generally in the system of keeping their horses in warm well littered yards, with sheds for them to retire under. Into these they are turned at night, and kept in them day and night when not worked. Mr. Ketcher, of Burnham, has one for his cart-horses in common, and another for mares and foals.

Mr.

Mr. WRIGHT, of Rochford-hall, has a yard into which horses are turned every night; nor is there a shed in it. His teams have not stood in the stable for ten years.

Mr. NEWMAN, at Hornchurch, reckons the decline in value of horses after seven years old at five guineas a year, besides accidents and farrier. The food of his when he kept them, eight bushels of oats per week to four, and a load of hay in three weeks.

Mr. MILES, bailiff to Lord PETRE, estimates the expense of keeping only at 25*l.*

The Rev. W. MACKLIN, at Chesterford, calculates the expense at 25*l.*

At Rise, &c. in the Roodings, Mr. CHAMBERLAIN estimates the expense of keeping only at 20*l.*; yet they are racked up with straw in the winter. 40*l.* not an uncommon price for a farm horse. Some farmers buy colts, which they work for two years, and then sell them; but the profit is much questioned, as these cannot be worked like other horses; the best managers are of opinion, that it is more profitable to wear them out.

Maplestead, four per hundred acres.

Strong land at Hempstead, six per hundred.

Ditto at Kelvedon, five per hundred.

Mr. TWEED, at Sandon, three hundred and eighty-five acres (fifty-two meadow) twelve to sixteen.

At Bradfield, five per hundred.

At Great Holland four hundred acres, three hundred of them arable, twelve horses, and three of them in winter in the thrashing mill. Mr. COTES does not think that so many horses are used in this country as in Suffolk, near Blyborough, where he has farmed: but they are stronger here.

At Kirby, five per hundred.—At the Clacktons, five to six per hundred. Price of ploughing 6*s.* per acre.

On

On the turnip land of St. Osyth's, four per hundred.

On the very strong clays of great Wigborough, five per hundred. They use three in a plough.

At Birch-holt, five per hundred.

At Felstead (crop and fallow), six.

At Dunmow (ditto), six.

At Great Waltham, four to five.

At Little Leighs, eight to two hundred acres.

At Burnham, five per hundred acres.

In Foulness, eight to one hundred or one hundred and ten acres.

Mr. POTTON has one hundred and forty, and keeps ten.

At Bradwell, five per hundred: they cost 35*l.* to 50*l.* and the annual expense 25*l.* to 30*l.*; decline in value, two in twenty being lost annually, or ten per cent. on the value.

At Assingdon the price 25*l.* to 40*l.* The allowance of oats one bushel per week in summer, and two at seed times.

Dr. ASPLIN, at Little Wakering, twelve to two hundred and eighty acres; four ploughmen and two boys: fifteen hands in harvest.

Mr. VASSAL, of Eastwood, takes the tithe of the parish, and therefore keeps eighteen horses: fourteen necessary for his farm of three hundred and fifty-five acres; thirty of it meadow.

At Thorndon, Mr. MILES, four per hundred.

At Buttsbury Mr. BRIDGE has three hundred acres, and fourteen horses.

Mr. COOPER, at Langenhoe, having long occupied a farm of above one thousand six hundred acres of land heavy and strong at Langenhoe, and light at Fingeringhoe, found that two horses would plough as well at the latter as three at the former; and in the number kept per hundred acres, the proportion is the same—six on heavy land and four on light.

Mr.

Mr. TABRUM, at Beerchurch, to three hundred and fifty acres, from twelve to fourteen horses are necessary.

Expense of horses at Bradfield:

32 weeks at 15*s.* or two bushels of oats, at 3*s.* 6*d.* are 7*s*; Hay for six, 1½ cwt. at 4*s.* is 6*s.*; for twenty weeks one bushel a week 3*s.* 6*d.* One acre of tares will last twelve horses a week, and worth 3*l.* 12*s.* at the lowest or 6*s.* a horse. Decline of value 2*l.* shoeing 15*s.* and farrier 5*s.*

	£.	*s.*
Thirty-two weeks, at 15*s.*	24	0
Twenty weeks, at 9*s.* 6*d.*	9	10
Decline,	2	0
Shoeing,	0	15
Farrier,	0	5
£.	36	10

But a deduction on account of one-third of the team being in the straw-yard for three months.

At Kirby, more than 20*l.* per horse.

Three horses are kept for each plough at Layer de la Haye, though not always used, and each clean earth Mr. BUXTON estimates at 9*s.* Six horses per hundred acres; ten for two hundred.

At Great Waltham, Mr. SAVILLE 15*l.* per horse.

Mr. WAKEFIELD, of Burnham, thus reckons the expense:

Oats,

	£.	s.	d.
Oats, two bushels a week, 13 qrs. at 30*s.*	19	10	0
Summer food twenty-two weeks, at 3*s.*	3	6	0
Hay thirty weeks, at 28lb. per day, 2 ton and 140 lb. at 3*l.*	6	3	9
Shoeing (it was a guinea seven years ago),	1	10	0
Tax, ...	0	12	0
Decline, ...	3	0	0
Farrier, ...	0	10	0
£.	34	11	9

Ploughing an acre 8*s.* to 9*s.*

Mr. WRIGHT, of Rochford-hall, never gives oats in the summer for nearly five months; they feed in the field. Ploughing 10*s.* an acre.

In the parish of Barking, and immediately adjoining Hainault Forest, the East India Company has an establishment that does them no small credit: it is that of a stud for breeding stallions, &c. to send to their Settlements in the East. Mr. YELL, their manager, shewed me Worthy, bought of Sir FERDINAND POOLE, and many colts and fillies. The farm consists of only one hundred and eight acres, and the stock at present upon it consists of

2 Covering stallions,
25 Mares,
23 Colts and fillies,
18 Last year's ditto,
12 Two year olds,
5 Three year olds,

85 in all

With one cow and one sow for the manager. Last winter the stallions and colts were kept chiefly on carrots, and

it was not possible for any thing to do better. There were only two barren mares last year nor this.—The establishment is an experiment, which if it succeed, will probably be increased. It appears to be well managed, and no expense incurred but for real utility.

SOILING.

Mr. ROGERS, at Ardleigh, makes it an invariable rule to keep his teams always confined. He soils them first on rye and tares; they are next served with rye-grass and clover, and also on clover alone; then they have clover that was lightly fed to delay the growth, or spring tares. This husbandry cannot be too much commended. He has lucern in contemplation for the same purpose.

Mr. SAVILLE, of Bocking, has a high opinion of this husbandry; indeed a few entries may suffice, for I found it a universal practice among all the best farmers.

Mr. WAKEFIELD, of Burnham, soils his horses on tares all the summer; four or five acres will feed eight or ten horses till harvest.

Mr. KETCHER, of Burnham, soils every thing that he has litter for.

Mr. BAWTREE, of Southminster, is much in the practice, and thinks that it ought to be universal: cows should be soiled, and it is the best of all systems for every thing; even for fatting bullocks for about three weeks growth of the tares; this is, provided a succession of food can be had. The less water horses have while soiling at tares the better.

Mr. SPURGEON, of Bradwell, mentioned a notion they have at Bradwell, that tares are not good for horses—too washy: soil on them *sometimes* in the yard.

Mr. NEWMAN, at Hornchurch, is a great practiser of this

this husbandry: all his horses are soiled; but he does not confine himself to them, he always soils cattle with tares, and greatly approves the system.

I have very rarely met with any person who was more convinced of the benefit of soiling than Mr. Wood, at the Spread Eagle in Ingatestone; he has in one respect carried it to a length which I have not before met with. For cart, and other horses never put beyond a slow pace, it has long been admitted to be excellent; but Mr. Wood soils all his post-horses while in constant work. This is extraordinary, yet he has persisted in it for fourteen years, and with uniform success. The precautions, which well deserve attention, will appear from the detail of his management: every morning before tares are given, each horse has two feeds of oats, but no water on any account whatever. They have what tares they will eat from the time of their having had the oats even to harnessing for posting. At night they have each half a pail of water, which is the whole for four and twenty hours. Some other inn-keepers on the road have tried the food, and all failed; Mr. Wood has no doubt of the reason, which was the boys giving water: if this point be not steadily enforced, the practice will be sure to fail. Mr. Wood has never less than twenty-eight horses in the stable, often many more; and in fourteen years he has not had a greasy heel: thirty horses eat four acres of tares in from two to three months.

SECT. V.—OXEN.

Mr. Honeywood, at Marks-place, works oxen, and approves of them highly.

Mr. WESTERN, at Felix-hall, works three Devon bulls, and finds them very hardy and useful.

Mr. PORTER, at Little Leighs, bought Hereford oxen in November at 15*l.* each, and put them to straw and worked them, but had then some chaff and oats: they ploughed a great deal of land in the winter, and carted much dung in summer, and did both as well as possible; but the men so plagued him against them, that he was forced to give them up. After working a year, he turned them to straw without working; and when grass came, to fattening: in the winter following tied them up to hay only, and sold them from it at 28*l.* each.

Mr. WAKEFIELD, of Burnham, has worked 24 oxen three years; never more than a pair in a plough, and without a driver: Sussex and Hereford beasts: treats them in every respect as well as possible, and entrusts them only to the best men; allows them a bushel of bean-meal per week. He is clear, that in ripping up a fallow deeply, two of them cannot do the work of a pair of horses. He finds Sussex beasts suit him best; Devons are too weak, and Herefords gummy, and too slow; short-horns worst of all: but one objection to the Sussex, is their being subject to scouring: of one parcel, he lost three in eight: has tried every remedy (BELLAMY's among others), as well as dry food, but nothing has cured it. He has no objection to them on account of any want of hardiness; but the quantity of hay they eat is a great one: one of them will swallow a truss of hay while the men are at breakfast. They do rather less work than horses, and go on no long journies: he never shoes them, nor are their feet sore.

The Rev. Mr. DUDLEY worked six short-horned oxen in Fillingham marshes five years, till Michaelmas 1805.

Mr. NEWMAN HARDING, at Hornchurch, works 18 oxen,

oxen, and has only two horses: they are all Devonshire beasts, except two, which are half-bred between Suffolk and Yorkshire polled, and these two are fully equal to the Devons, it being hardly possible to have two beasts that work better. Mr. NEWMAN uses them for every sort of work; from two to four in a plough; and in general, three oxen at any work that demands two good horses. He has lent his oxen to a neighbour, and as horse-ploughs of three horses were at work in the field, a clover-lay, he had an opportunity of seeing that four oxen did the work as fast as three horses; and Mr. NEWMAN is well convinced that the natural pace of these oxen is quite as fast as that of horses. They were bought at three years old of Mr. PESTER, of Yeovil, in Somersetshire, at 18*l.* 10*s.* each, a price they were worth for grazing: three did not do well, and were fattened, made famous beef, which sold at 5*s.* 6*d.* per stone, and the three oxen for 96*l.* 14*s.* never having had any thing but grass and hay; no tares, turnips, cabbages, &c.

His oxen draw incomparably, and with perfect handiness, at all works. In ploughing, they will turn at the land's end, and re-enter the furrow as well as the most tractable horses. Complaints having been made that oxen will not bear hot weather, I inquired of Mr. NEWMAN how they were in this respect; and he assured me that they are uncommonly quiet, and better in this point than horses, for though the oxen not at work are cocking their tails, and running wild from the flies, the moment their harness is on they are at once changed, and quite gentle. He works them in collars, and without goads. Somersetshire men came with them, who broke some in for him by hooking them to timber; but he has found it better to put them to an iron roller, and though violent at first, they have been tamed with but little difficulty. As to the

comparison between horses and oxen, Mr. NEWMAN is able to speak from sufficient experience: fifteen do the work for him which twelve horses did before, and the advantages far outweigh this disproportion. On the question of general conviction, he has not a shade upon his mind, but is absolutely decided in the superiority of oxen. The reasons they have been given up by many, he conceives, are various, and in no case that he has seen, difficult to analyze: some have had beasts ill adapted to their work; others have suffered their purpose to be defeated by the mischievousness of their men; some have not kept them well enough, for Mr. NEWMAN is clear that they should always be in good flesh. Oxen consume much more hay than horses, but the difference is more than made up by the oat account. Mr. NEWMAN assured me, that if any man would give him twelve such horses as he had before, which cost from 35*l.* to 40*l.* each, he would not accept them, to be forced to keep them.

Mr. WALTERS, at Alborough-hatch, works Devon oxen to his entire satisfaction, as his bailiff, in his absence, informed me.—He has no horses; they do every thing with perfect handiness, and even go to London, fourteen miles, to Wimpole-street and back, in the day, and sometimes have gone to the city without shoeing, but have been rather sore in the feet, and no wonder. I saw three working in a plough with a driver, and they walked out very well. The bailiff assured me that they worked just as well as horses. Have nothing but grass and hay.

SECT. VI.—RABBITS.

"Of this subject I know not much of myself, and have received no additional information. All the rabbit-warrens which have come under my own immediate observation, have long since been converted into fertile corn fields*."

SECT. VII.—POULTRY.

"Of this we have as great variety and as large a quantity, geese, turkies, ducks, fowls, &c. as heretofore, though by no means an object of sufficient importance to excite the particular attention of our larger and more spirited farmers. Whenever it becomes such it will doubtless have it*."

SECT. VIII.—DECOYS.

One of the best, if not the most considerable decoy in the county, is in Mersea Island, and rented with a small farm of about sixty acres, by Mr. Buxton, of Layer de la Haye. He was so obliging as to accompany me from thence into Mersea, and to shew me his decoy. Not having before viewed a decoy in the *taking* season, I had not remarked the precaution of each person taking a piece of lighted turf stuck on a table fork in his hand to approach the decoy; as the wild ducks, it is said, would smell the person without this caution, and immediately

* Howlett.

quit the pond. I found the expenses of this decoy considerable: two men attend it, who are paid above 100*l.* a year; repairs, nets, rent, &c. amount in all to about 300*l.* a year. Ducks are sometimes so low as 14*s.* a dozen.

The contrivance for taking dun birds was new to me. At the decoy for them near Ipswich, there are a series of very high poles, to which the nets are attached, for taking them in their flight; and these poles are permanent. At this Mersea decoy, to which this bird resorts in large quantities as well as ducks, the net poles are suspended when not at work.

Mr. LEE has a decoy at Goldhanger, in which he took at one haul one waggon load and two cart loads of dun birds; but the disturbance made, frightened such as escaped so much, that he took no more that season.

SECT. IX.—PIGEONS.

"THESE I suppose have been gradually decreasing for time immemorial, nor do I know that this is much to be regretted; as they are universal depredators upon the corn-fields of the neighbouring farmers all around; far beyond any compensation finally made, I believe by their value to any body*."

* Howlett.

SECT. X.—BEES.

"Of bees I know but little; I believe that their wealth and industry are in this county much less attended to than they deserve. They are not however, entirely without respect amongst persons of all ranks and denominations. In the gardens of our gentlemen, mansions are erected for them with all the various and elegant ingenuity suggested by Mr. WILDMAN. They here afford a pleasing amusement to the curious; and the produce of their labours are of considerable domestic utility in wax, honey, and that salutary and delicious species of wine called metheglin, or mead.

"But with the views of profit, they are chiefly attended to by our farmers (especially the smaller ones), and our cottagers, to whom they are sometimes extremely profitable. One of these assures me, that in a favourable summer, when the flowers of all kinds of plants and vegetables were peculiarly abundant, he has had in the course of the season from a single stock 40lbs. of honey; which, added to the wax, must be an object of valuable consideration; besides that he occasionally regales himself with the pleasant cooling beverage obtained from the last droppings of the combs.

To country labourers, especially those who have gardens, a due attention to the management of bees might be rendered advantageous; not so much so indeed as before the importation of sugar from the East and the West, but still sufficiently to compensate the trouble. But the success, however, is extremely precarious, and the motives not very powerful and operative; it is not, therefore, to be expected that the attention will ever become general among our cottagers. And it is also to be ob-

dserve,

served, that it would greatly diminish the price both of honey and wax, and consequently the profit would become much more inconsiderable than at present. Besides, I have generally observed, that it is not only the more industrious but the more ingenious, of our peasantry, that turn their application this way. To such it is likely to be confined; and while it is, their trouble and attention may be tolerably rewarded. I may further remark, that although the produce of a single stock in a favourable year may, as stated before, amount to 40lbs. of honey, yet I was assured by the same person who gave me this information, that the average was not even 10 lbs*."

SECT. XII.—FISH.

I know not any article in rural economy so much neglected as this; and in Essex as much so as in any other county. Upon an average, the ponds of that county do not yield one twentieth part of the produce which they ought to do. For the supply of London, I know not that it would answer, but for family use, and to save the heavy expense, and prevent the disagreeable uncertainty of sea fish, it is every where an object worth attention. The neglect is, however, general and great. Mr RUGGLES, at Spaines-hall, has made a beginning: two hundred years ago the proprietor of his estate made seven ponds, each an acre, and he has kept a fish register, from which I made the following extracts.

Experiment, No. 1.—July 10, 1784, stocked pond No. 3, with 200 brace of store tench and carp, size from

* Howlett.

small

small ones to half a pound. June 22, 1787, drew down No. 3; produce, tench 164 brace, from a quarter of a pound to one pound; carp 40 brace, from three quarters of a pound to two pounds; eels 26 brace, good size and colour; all these fish in good order, but not fat. To calculate this return, let us suppose them when put in a quarter of a pound, at an average, they amounted to 100 lb.

	lb.
164 brace of tench, at ten ounces each, ...	204
40 brace of carp, at 22 ounces, ...	110
	314
26 brace of eels, suppose ten ounces each, ...	32
	346
Deduct the weight put in, ...	100
	246

	£.	s.
Suppose value, 1s. per pound, ...	12	6
For three years, or per acre per annum, ...	4	2

Experiment, No. 2.—In July 1786, stocked pond No. 1, (the mud of which had been taken out the preceding winter), with carp and tench from four ounces to twelve ounces, 100 brace. Drew down in 1788: produce 72 brace of tench from a quarter of a pound to a pound and a quarter, in good order; and 50 brace of carp from one pound to one pound and a half, and some two pounds.

	lb.
72 brace of tench, at twelve ounces, ...	108
50 ditto of carp, at twenty ounces, ...	125
	233
Deduct 100 brace, at eight ounces, ...	100
	133

At

	£.	s.	d.
At 1*s.*	6	13	0
Per acre per annum, ...	3	6	6

Experiment, No. 3.—Drew down No. 2, in July 1786: produce, seven brace of carp, at three pounds; 50 brace of tench, from a quarter to three quarters of a pound; five brace of carp, one pound to two pounds; 38 ditto from a quarter of a pound to three quarters of a pound; in all, 145 lb.

Experiment, No. 4.—June 22, 1787, stocked pond No. 2, with 30 brace of carp, from three quarters of a pound to a pound and a half; and 100 brace of tench of a quarter of a pound to half a pound; weight in all 142 lb. Drew down in July 1789: produce, tench 94 brace, from a quarter of a pound to a pound and a quarter; carp ten brace, two pound to three pounds; and 17 brace smaller, suppose one pound.

	lb.
Tench 94 brace, at twelve ounces, ...	141
Carp ten brace, one pound and a half, ...	30
Ditto 17 brace, ...	34
	205
Deduct, ...	142
	63

	£.	s.	d.
At 1*s.*	3	3	0
Per acre per annum, ...	1	11	6

Experiment, No. 5.—July 1790, drew down pond No. 3: produce

produce 99 brace of tench, from a quarter of a pound to a pound and a quarter; and 73 brace of carp, from half a pound to two pounds; this weight amounts of both sorts to 330 lb. There is no minute of the weight put in, but this produce clearly must have amounted at least to 3*l.* per acre per annum.

Experiment, No. 6.—*Noted* 1805. In 1791 drew down the first pond: took 130 brace of tench, two ounces to 16 ounces; 34 brace of carp, good size; several bushels of small perch and tench.

Put into pond No. 2, 18 brace of tench,
4, eight ditto,
2, 84 ditto,
3, twelve and a half ditto,
Moat, 52,
Ditto, 48.

Experiment, No. 7.—July, 1792, drew down pond No. 4. Carp thirteen brace and a half, thirteen to fifteen inches, fifteen inches, a pound and three quarters. Tench 59 brace, from ten to twelve inches, eleven inches, three quarters of a pound.

Put into pond No. 1, 53 brace of tench.

Experiment, No. 8.—September 1793. Drew down No. 3: tench 84 brace.

Put into No. 4, 73 brace, ten to twelve inches,
Ditto, 20 —— ten to fourteen inches,
2, 4½ —— of carp, ten to twelve inches,
Ditto, 2½ —— of tench.

November, drew down No. 4, to receive fish from No. 5, but they got through the pipe; all are in No. 5, probably, that were in No. 4.

Experiment, No. 9.—July, 1794, drew down No. 5: head

head bad, and had lost much water: took 66 brace of tench, from a quarter of a pound to a pound; good colour, but not equal to expectation in a pond that had been some time under grass; also 23 brace of carp, from a quarter of a pound to two pounds. Put the 66 brace of tench and 23 carp, and some small ones into No 3; also into No. 3, 16 brace of carp, from Mr. SHRIVE. Two bushels and an half of small perch taken out.

Experiment, No. 10.—December 6, emptied stew: put 20 brace of tench into No. 4.

Experiment, No. 11.—December 1794, took out of moat 56 brace of tench, two ounces to one pound, and put into No. 4.

Experiment, No. 12.—June 1795. Head of No. 4. being unsound, drew down the water.

45 brace of tench into No. 5.

9½ ditto, ... } ditto
4 ditto of carp, }

July.—Drew down No. 1: 83 brace of tench, 25 brace of carp, fine and fat. Put 70 brace of tench into pond No. 6, and 20 brace of carp. Into No. 4, 13 brace of tench.

Experiment, No. 13.—September 1796, drew down No. 2: 31 brace of carp, one and a half to two pounds and a half.

Put 19 brace into No. 1.
40 ditto, ——— 1.

Experiment, No. 14.—June 1797, drew down No. 6:

20 brace of carp into No. 7; 46 brace of tench. Head of No. 7 made good.

Note in 1797.—The carp which were old stock not the least grown; the stores from Mr. SHRIVE well grown.

I have not often seen instances of such neglect of ponds, comparatively with the management of former periods, as in the case of Leighs-priory, belonging to Guy's Hospital, and in the occupation of Mr. PORTER and Mr. SCRUVY. There is a chain of them near a mile in length, and occupying about thirty acres, which were once under water; formed and sluiced with great attention, and a stream through them: but at present, and for many years past, water only in two of them, and those almost choked up with mud by neglect. This of all the other branches of rural economy, is the least practised, and the least understood in England: yet fish is every where a great luxury, and sells at an high price. The priory was built by HENRY III. and there are respectable remains of it.

CHAP. XIII.

RURAL ECONOMY.

SECT. I.—LABOUR.

AT Maplestead, winter, and to harvest 9*s.* a week. In harvest 4*l.* for four weeks, with four bushels of malt, and 3lb. of hops; 8*s.* in lieu of dinners; and a pair of gloves. Altogether near 7*l.* a man. Ploughman 12*s.* a week in money and beer. Women in hay 8*d.* a day.

At Bocking, Mr. SAVILLE gives 12*s.* an acre round for the whole harvest business, and no malt or beer. In winter 10*s.* 6*d.* a week; summer 12*s.* His carter 11*s.* and a cottage rent free.

At Dunmow, in winter 20*d.* and beer; in summer 2*s.* In harvest 4*s.* 2*d.* and six or seven pints of ale. Reaping 6*s.* 6*d.* to 10*s.* and even 12*s.*

At Warners, in winter 20*d.* and five pints of small beer. Reaping 8*s.* Mr. SAVILLE's men this year, 1805, by the piece in harvest, earned just 5*s.* 9*d.* a day and beer.

Rivenhall, Kelvedon, and Braxtead, in winter 10*s.* to 12*s.* and to harvest.

Harvest 10*s.* 6*d.* 11*s.* per acre to do every thing, and three bushels of malt, and 3lb. hops. Reaping 8*s.* 3*d.* Mowing 4*s.* 6*d.* Grass, 3*s.* Hoeing turnips 5*s.* 6*d.* once only. A new plough 5*l.*; a tumbril 8*l.* 9*l.*; a waggon 27*l.*; butter 1*s.* 2*d.*; cheese 8*d.*; mutton and beef 8*d.*; veal 9*d.*; candles 11½*d.*; coals 1*s.* 4*d.*

At Beerchurch, near Colchester: in winter 2*s.* and small beer; hay 2*s.* 6*d.*; harvest 4*s.* and beer.

At

At Bradfield, in winter 2*s.* but earn on an average 2*s.* 6*d.*; if the year round, exclusive of harvest, were all reckoned, it would be 2*s.* 6*d.* and beer; and the system of labour is in the proportion of one man to every twenty acres, including every species of work; and the earnings, beer, and harvest included, being about 44*l.* this makes the expense of labour per hundred acres to be 220*l.* or 44*s.* per acre per annum.

At Little Oakley, in winter 2*s.* and beer, but thrashers, &c. earn 3*s.* and the three men that work Mr. SCOTT's thrashing machine 15*s.* a week. In summer 2*s.* 6*d.* a day. A journey at plough 1*s.* 6*d.* and then a job of 1*s.* To reap and bind wheat 9*s.* an acre (do half an acre a day), and five pints of ale and one of old beer. Mowing barley and oats 4*s.* and beer; to pitch and load 2*s.* an acre. To put this work out separately, he finds very useful, for it makes it decidedly the interest of these men, that all the others employed in the field and barn should work up to them; it is one link, and carries with it many others of the chain. If they are not well supplied, or teams too slow, complaints are certain directly.

At Beaumont, in winter 2*s.* and beer, equal to 2*s.* 3*d.*; this till harvest, then 3*s.* 6*d.* and beer. Reaping wheat, 8*s.* to 10*s.* 6*d.* and five pints of ale with small. Mowing spring corn 3*s.* to 4*s.* and beer. Three hoeings of beans 15*s.* an acre.

At Clackton, in winter 2*s.* and beer; summer 2*s.* 6*d.* and beer; harvest 5*l.* 5*s.* a month and beer, and two or three dinners a week; to reap and cart wheat 11*s.* and beer.

At St. Osyth's, as at Clackton.

At Layer de la Haye 2*s.* 6*d.* a day, and beer, the year; in harvest 6*l.* 10*s.* and beer, for five weeks.

In Mersea Island, rather cheaper than at Layer.

At Birch-holt, in winter and summer 2*s.* and beer; in harvest 5*l.* 15*s.* for five weeks, with a dinner and three suppers per week. Reaping 8*s.* and beer. At Langenhoe, 2*s.* 3*d.* to 2*s.* 6*d.* in winter and beer; in summer 2*s.* 6*d.* and beer: in harvest 6*l.* 6*s.* and beer the month.

Sandon, to harvest 12*s.* horse-keepers 15*s.* and house rent; harvest 12*s.* an acre to finish; three bushels of malt and two lb. of hops, and gloves: ten acres a man 6*l.* 10*s.*

Colchester, 2*s.* 4*d.* to 2*s.* 6*d.* a day. Reaping wheat, 8*s.* 9*s.* 10*s.* 6*d.* per acre and beer.

Mr. LEE, of Maldon, in Dengey hundred, gave twenty-eight years ago 10*s.* 6*d.* the year round; now 14*s.* and the harvest. In winter now, 2*s.* which was 1*s.* 4*d.* Barnmen and others at piece-work are not content if they earn less than 18*s.* a week.

At Snorum for two or three years past, the men have earned 18*s.* a week, and some 21*s.* the year round. In winter 2*s.* 6*d.* a day; beer in hay and harvest.

At Latchingdon, in winter 2*s.* 6*d.* In summer they earn 20*s.* or 21*s.* per week. In 1803, 25*s.*; but public-houses keep them very poor. On Mr. WAKEFIELD's farm at Burnham, thrashing wheat 3*s.* a quarter to 14*s.*; barley 12*s.* to 3*s.*; oats 1*s.* to 2*s.* 6*d.* In winter 2*s.* 6*d.*; summer the same, and in harvest they earn 40*s.* a week: have sometimes earned 9*s.* and 10*s.* a day, and the corn shelling on the ground for want of cutting. I hope there is not a man in this county, who thinks that the invention of a machine for reaping corn would be an injurious discovery!—Ploughmen 13*s.* a week the year through; a good cottage rent free; and their taxes paid; if liable; one chaldron and a half of coals, two pigs kept, and 1*l.* 11*s.* 6*d.* extra for harvest. There being two box clubs at Burnham, Mr. WAKEFIELD gives two guineas a year to each, and pays the first year for all his men. An ensign

in

in the army once had not such pay. I heard great complaints of the statutes for hiring being on Michaelmas day, in the bean harvest in a late season, and in the midst of wheat sowing in an early one. The love of change of place also is a great nuisance here, for the servants have rarely any idea of staying longer than a year.

In Foulness Island, winter and summer 2*s*. 6*d*. but most of the work done by measure. The harvest 10*s*. to 14*s*. an acre: some men this year, 1805, earned 10*l*. 12*l*. and a few even to 14*l*. and 15*l*. for their harvest. Good hands earn 30*s*. a week on an average the year round.

Only two farmers live in the island, Mr. POTTON and Mr. WIGGIN: the rest of the farmers employ *lookers*, who are paid 12*s*. to 14*s*. a week; have a cow kept; pigs; their rent free, and one or two chaldrons of coals. Ploughmen have 15*s*. a week the year round, besides their harvest and some privileges.

At Bradwell, in winter 2*s*. 6*d*. summer 3*s*. harvest 2*l*. 2*s*. a week; and the men earn on an average 50*l*. a year. Mr. SPURGEON has given 16*s*. an acre for reaping oats, and they earned only 2*s*. 6*d*. a day. Mr. SPURGEON gives his ploughmen 12*s*. a week; a house rent free; four bushels of malt and four pounds of hops; their firing; a five weeks harvest, in which they earn at the least 8*l*. and sells them twelve score pounds of pork at 5*s*. a score. Altogether, at least 54*l*. To other men he gives 10*l*. a year, and 10*s*. a week board wages.

At Assingdon, in Rochford hundred, in winter and summer 2*s*. 6*d*.; in harvest they earn 10*l*. in five weeks, besides beer, or two bushels and a half of malt, and hops; together 30*s*. Thirty years ago a ploughman had 9*s*. a week; now 15*s*. besides privileges.

Around Rochford the rise of labour has been very considerable; ten years ago 9*s*. a week and beer, was the pay

of horse-keepers; now it is 13*s.* 6*d.* and beer, and the average earnings of a good hand 21*s.* to 24*s.* a week: afternoon work adds to many employments 3*s.* a week beyond the common pay. The same farm that was carried on for 10*l.* a week in labour by Mr. BARRINGTON's father, costs him at present 20*l.* a week. Mr. WRIGHT pays 4*s.* a quarter for thrashing wheat. Ploughmen 15*s.* a week but no privileges.

At Shoebury 2*s.* 6*d.* a day in winter, and nominally so in summer; but little or nothing done by the day. Harvest from 15*s.* to 17*s.* an acre (three bushels of malt and three pounds of hops for the whole), to cut, cart, and do every thing; they will not on an average work for less than a guinea a week at any season in general.

At Hockley, Mr. HICKS, from Waldingfield, in Suffolk, informed me that labour here is one-third dearer on an average than it was there.

At Pitsey, in winter 2*s.* 6*d.* in summer to 3*s.* Reaping 10*s.* 6*d.* to cut and barn, or stack; doing every thing, 14*s.* to 15*s.* round.

At Avely, 14*s.* to 15*s.* a week in winter: in summer 16*s.* to 17*s.* Harvest eight to ten guineas for the job.

At Grays are some very considerable brick manufactories: Messrs. ATTERSAL and MAY pay 500*l.* a week to the labourers, in their own notes, being, as far as this circulation extends, country bankers. The brick-makers earn 5*s.* 6*d.* a day.

At Hornchurch, 15*s.* a week winter and summer; hay 18*s.* and harvest 30*s.* All earn this; and if taken off in harvest, they are paid 5*s.* a day.

At Claybury, 13*s.* in winter, 15*s.* in summer, and in harvest 21*s.* per acre, to do every thing.

At Thorndon, winter 13*s.* summer 15*s.* to 16*s.*; in harvest 30*s.*

At

At Billericay in harvest 6*l.* 10*s.* for a month, and a gallon of ale and two gallons of small per acre. In winter, 2*s.* 6*d.* In summer they do not earn so little as a guinea a week, with a very small boy. They will not work by the day.

At Ingatestone, in winter 2*s.* to 2*s.* 6*d* and small beer. In hay time higher. In harvest 5*s.* and beer.

At Roxwell, in winter 2*s.* and beer; in summer 2*s.* 6*d.* and ditto; in harvest 4*s.* some 5*s.* &c.

At High Ongar and Stamford Rivers, in winter 2*s.* and beer; hay 2*s.* 6*d.*; harvest, the month 6*l.* but they will not at any time take work to earn less than 14*s.* or 15*s.* a week.

At Chesterford, in winter and summer 9*s.* and small beer: but it is nominal, for they must have job-work. Harvest 2*l.* and fed. Mr. MACKLIN 5*l.* 5*s.* for the month, with four pints of ale, and as much small as they please. A horse-keeper 10*s.* 6*d.* a week and small beer, besides having his harvest.

At Saffron Walden and Audley-end, in winter 9*s.* a week and beer; hay 10*s.* 6*d.*; harvest 2*l.* 2*s.* and board; or without board from 4*l.* 4*s.* to 5*l.* 5*s.* and beer. Some farmers give more; and in general the quantity of day work is small, for they will not work for these earnings.

At Hallingbury in harvest 4*l.* 14*s.* 6*d.* to 5*l.* the month, with beer.

At Terling 12*s.* winter and summer, and beer; in harvest 3*s.* 6*d.* to 4*s.* a day, and beer.

At Coggeshall, winter and to harvest 10*s.*; no beer. In harvest, cut, cart, &c. and do all but drive, 8*s.* an acre round, with four bushels of malt, no hops, and two suppers, equal to 11*s.* all included. Twelve acres per man on Mr. HANBURY's farm, but according to the quantity of straw.

At Yeldham, in winter 1*s.* 3*d.* and beer, in summer 1*s.* 4*d.* and ditto ; in harvest 6*s.* 6*d.* per acre round, to do every thing, with four bushels of malt, three pounds of hops and 4*s.* per man for sundries. From four to five constant men per 100 acres arable.

At Toppesfield, six men constantly on a farm of 160 acres arable, with some grass.

At Birdbrook, in winter 1*s.* 6*d.* and beer; summer the same; harvest 6*s.* 6*d.* per acre round; four bushels of malt, three pounds of hops, three hawkies, and Christmas dinner; equal in the whole to 10*s.* 6*d.* per acre round.

At Borely, in winter 1*s.* 4*d.* and beer; in summer 1*s.* 6*d.* and beer; harvest 3*l.* 5*s.*; four bushels of malt and two pounds of hops, for the month.

General average, beer, &c. included, winter 13*s.* 6*d.*; summer 15*s.* 3*d.*; harvest 30*s.*; ditto per acre 13*s.* 4*d.*

Mr. VANCOUVER's general averages in 1794, were: winter, 8*s.* 10*d.*; summer 9*s.* 5*d.*; rise in eleven years, winter, 53 per cent. summer, 62 ditto. Had Mr. VANCOUVER given the harvest price, that would have been found to have risen in a greater proportion.

SECT. II.—PROVISIONS.

IN June 1767 I found the prices at Hedingham, Braintree, &c. to be as follow: butter 6½*d.* per lb.; such cheese as the poor ate 3½*d.* per lb.; mutton 4½*d.* per lb; beef 4*d.* per lb.; veal 4½*d* per lb.; candles 7½*d.* per lb; coals 1*l.* 13*s.* per chaldron.

In 1794, Mr. VANCOUVER in the same district found: butter 10½*d.* per lb.; cheese 6*d.* per lb; mutton 4½*d.* per lb.; beef 4½*d* per lb; veal 5½*d* per lb.

In 1805, I again found at the same places the prices to be:

be: butter 13*d.* per lb.; cheese 8*d.* per lb.; mutton 7¾*d.* per lb.; beef 8*d.* per lbr; veal 9½*d.* per lb.; candles 11¼*d.* per lb; coals 3*l.* per chaldron. Rise per cent on these articles in eleven years: in butter 23¾, in cheese 33, in mutton 72, in beef 77, in veal 72.

Mr. VANCOUVER's averages for the whole county: beef 4¾*d.* per lb.; mutton 5*d.* per lb.; veal 5¼*d.* per lb.; fresh pork 5¾*d.* per lb.; pickled ditto 7¾*d.* per lb.; butter 10¾*d.* per lb.; cheese 6*d.* per lb.; potatoes 18¼*d.* per bushel.

I have some reason to think that the increased culture and consumption of potatoes (scarcely known in 1767), has made up to the poor the rise in *these* articles.

" For information under this head, it may be sufficient to subjoin the following table, drawn up by Mr. VANCOUVER.

Districts into which Mr. Vancouver has divided the County.	Price of Provisions.									Stated Daily Labour.		Value of Labour by Task-work in Thrashing of					Men Servants' Wages.						Women Servants' Wages.				
	Beef per lb.	*Mutton per lb.*	*Veal per lb.*	*Pork, fresh, per lb.*	*Pork, pickled, per lb.*	*Butter per lb.*	*Cheese per lb.*	*Household Flour per Peck.*	*Potatoes per Bushel.*	*In the Summer per Week.*	*In the Winter per Week.*	*Wheat per Quarter.*	*Barley per Quarter.*	*Oats per Quarter.*	*Pease per Quarter.*	*Beans per Quarter.*	*Head Men per Annum.*			*Boys per Annum.*			*Women per Annum.*			*Girls per Annum.*	
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*s. d.*	*s. d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*
District 1	4½	4½	5½	5½	7¾	10½	6	23¼	13½	9 0	7 6	28½	16¼	11½	27	14	8	10	0	2	0	0	4	0	0	2	5
Ditto - 2	4½	4½	5½	5½	7¾	10½	6	23¼	13½	9 0	7 6	28½	16¼	14½	27	14	8	10	0	2	0	0	4	0	0	2	5
Ditto - 3	4½	4½	5½	5½	7¾	10½	6	23¼	13½	9 0	7 6	28½	16¼	14½	27	14	8	10	0	2	0	0	4	0	0	2	5
Ditto - 4	4½	4½	5	5	7	10	6	24	15	9 0	9 0	30	16	12	28	14	8	0	0	2	5	0	4	0	0	2	0
Ditto - 5	4½	4½	5	5	7	10	6	24	15	9 0	9 0	30	16	12	28	14	8	0	0	2	5	0	4	0	0	2	0
Ditto - 6	4½	5	5¾	6	8¾	10½	6	24	19	9 6	9 0	30	20	15	28	14½	10	13	0	3	0	0	4	13	0	2	0
Ditto - 7	4½	5	5¾	6	8¾	10½	6	24	19	9 6	9 0	30	20	15	28	14½	10	13	3	3	0	0	4	13	0	2	0
Ditto - 8	4½	5	5¾	6	8¾	10½	6	24	19	9 6	9 0	30	20	15	28	14½	10	13	0	3	0	0	4	13	0	2	0
Ditto - 9	5	5½	6	6	8	—		26	24	10 6	10 6	—	—	—	—	—	—			—			—			—	
Ditto - 10	4½	5	5½	6	9	11	6	24	22	10 0	10 0	39	24	16	28	16	12	0	0	5	0	0	5	0	0	2	0
Ditto - 11	4½	5	5½	6	9	11	6	24	22	10 0	10 0	39	24	16	28	16	12	0	0	5	0	0	5	0	0	2	0
Ditto - 12	4½	4½	5	5½	7½	10	6	23	15	9 0	7 0	30	23	14	26	14	8	0	0	2	0	0	3	10	0	1	10
Ditto - 13	4½	4½	5	5½	7½	10	6	23	15	9 0	7 0	30	23	14	26	14	8	0	0	2	0	0	3	10	0	1	10
Ditto - 14	4¾	5¼	5¾	6	8½	11	6	25	20	10 0	9 0	35	24	17	28	16	10	10	0	4	0	0	4	4	0	2	0
Averages	4¾	5	5½	5¾	7¾	10¼	6	24	18¼	9 5	8 10	30¾	19¾	14¾	27¼	14¾	9	12	2	2	17	10	4	4	8	2	5

"This

"This table represents the average price of provisions in each of the fourteen districts into which Mr. VANCOUVER has divided the county, the stated wages of daily labour, the value of task-work in thrashing various kinds of grain per quarter; the yearly wages of the farmers' men servants and women servants, together with the aggregate average of the whole.

"The price of provisions has since been considerably advanced; butchers' meat, and butter and cheese, at least a penny in the pound. In flour, it is well known the increase has been vastly more; but is now again sunk rather below what it was when the table was formed.

"The daily wages of labourers, unless an estimated value of beer be included, were certainly too high. There has since been a partial and temporary advancement, but on the whole very inconsiderable; and scarcely to make them equivalent to the representation of the table.

"The cost of thrashing per quarter varies from year to year, and even in the same year, at least one-fourth. I have this year known some American red wheat thrashed at 20*d.* and 2*s.* a quarter, and good wages earned; and revet wheat at 3*s.* and yet very indifferent earnings made. If Mr. VANCOUVER's account was given for the average of seven years, however, as not improbably it was, for the several species of grain each respectively, I am inclined to think it was pretty near the matter.

"The annual wages of men servants, I believe to be rather too high, as well as that of women. Those of boys and girls are too vague and various to be satisfactorily estimated.

"Hours of labour in summer, are from six to six: this begins a little before Lady-day, and ends a little after Michaelmas. In part of the interval, from seven to five; and

and through the remainder from light in the morning till it is dark in the evening.

" When the labourer works by the piece, he confines himself to no particular limits, but in the long summer days, if vigorous, active and industrious, sometimes continues his application from four in the morning till eight in the evening; and from his longer continuance, and more vigorous exertion, he not unfrequently earns one-third more than when he works by the day. But human nature in general is not capable of this; and the very strongest constitution it will wear down very fast, and bring on old age long before its usual period*."

" The labourers are generally employed by the piece, and their work let to them on such terms, as enables them to earn from eight and sixpence to twelve or fourteen shilling a week, each man; and, in the harvest month, calculating all his perquisites of malt, hops, gloves, dinners, &c. from four to six guineas†, according to the different parts of the county he is engaged in‡."

SECT. III.—FUEL.

" This in general is wood or coals. The quantity of wood is greatly diminished in most parts of the county, and its price is increased in the proportion of almost three to one within the last forty years. This might be fairly

* Howlett.

† All these, since this was given, have been considerably advanced.—1801.—*Howlett.*

‡ Messrs. Griggs.

urged

urged as an additional argument for discontinuing the unnecessary and, in some cases, hurtful practice of using wood in land-ditching.

" Wood is the common fuel of the poor; a small proportion of them are able to purchase, and therefore steal it. Occasional fuel, and for particular purposes, hop-bines, haulm, the straw of cole-seed, carrot-seed, and turf from the tan-yards, are used; and in places where they abound, these are of great utility to the poorer classes.

" Forty years ago our farmers burnt very little else but wood; at present a large proportion of them burn a considerable quantity of coal; and this quantity is every year increasing. Gentlemen and tradesmen have always burnt both; but coal is every where gaining ground upon wood; and in a few years, not improbably a great part of our labourers must have recourse to the same substitute. In the neighbourhood of our sea-ports, this perhaps may be no great evil, especially if cottage chimneys are altered, and improved somewhat in the manner of Count RUMFORD. In the more inland and central parts of the county, the expense of carriage is very heavy. To this place (Dunmow) from Colchester and Maldon, it is from 18*s*. to a guinea a chaldron. This burden, however, it is hoped, by means of inland navigations and navigable canals, will be gradually lightened. One of these is already completed from Maldon to Chelmsford; by which the carriage will be lessened about 6*s*. or 8*s*. a chaldron to this place, and the final total charge about 6*s*. or 7*s*. Other conveyances of the same kind, and perhaps still more advantageous, might easily be opened; for instance, from Maldon to Braintree, and from Colchester to Halstead. And each of these might in time penetrate still further into the interior: that at Chelmsford into the Roodings; that at Braintree, through

through Shalford, Wethersfield and Great Bardfield, to Finchingfield; that at Halstead, through the Hedinghams to Yeldham. Or perhaps what was projected a few years ago with great ingenuity by a Mr. PHILLIPS, might be more than equivalent to these three last extensions taken together: it was proposed, that the navigable canal should commence at Lynn, come by Norwich, and pass through the counties of Norfolk, Suffolk and Essex, to London.

The proposal of another has been very warmly, and much more recently agitated; I mean that from Cambridge to Stortford, which, though it was to pass through a scanty dimension of this county, would have been highly beneficial to an extent of at least ten miles on this side of it; and as the person who principally opposed it is now no more, the scheme will not improbably be again attempted, and with greater probability of success*."

CHAP. XIV.

POLITICAL ECONOMY.

SECT. I.—ROADS.

"NOTHING can more clearly evince the value and importance of good roads, than the great improvements to which of late years they have so much contributed, by

* Howlett.

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affording a more ready admission of manure, and a free circulation of air, thereby materially improving the soil and climate of Dengey hundred. In many parts of the county, the difficulty and expense of procuring proper materials for making good roads, is very great*; but even in those places (and although the materials may cost from 1*d.* to 1½*d.* a bushel, and the road rates upon the rack rents being occasionally from 3*s.* to 4*s.* in the pound), the exertions of the parishioners are unceasing, seeing that their health, comfort, and convenience, are so much dependent thereon. In this pursuit, however expensive and meritorious, the exertions of the *tenantry* are often weakened and discouraged, by the very unequal assessment of the parish rates; and the yeoman and tenant are too often subjected to, and aggrieved by the imposts inflicted upon the carriage and transportation of manure upon the adjacent public (and often inferior) turnpike roads; than which nothing ought to be more carefully guarded against; as in the general scale of rural improvements, imposts of this nature must be considered as the most invincible of all obstacles to the improvement of those lands which do not contain

* "This may be the case in particular places; but, in general, I believe there are few counties in which materials for making good roads are more abundant than Essex; witness the excellent state of our more public roads for time immemorial, the small number of our turnpikes, and yet the wealth of some of them. Our private roads are very much improved within the compass of the last 30 or 40 years: gravel-pits have been made very successfully where it was the least to be expected, even in the Roodings, which perhaps comprehend as heavy a soil as any in the county, and want nothing but perfectly good roads to render them as pleasant and rich a spot as any whatever. They have been wonderfully improved in the course of the period last mentioned; and it would contribute not a little to their advancement, if the Clergy more generally resided upon their livings, which are sufficiently valuable to require it, and they would by that means be rendered still more so."—*Howlett.*

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any natural manure, as thereby a prohibitory tax* is laid upon the admission and application of that which is foreign or artificial†."

It is impossible to say too much in praise of the roads of most of the districts in Essex. All through Tendring hundred I found them excellent, and wherever they branched off, all carried the same appearance. In Dengey hundred they are incomparable: every lane seemed to rival the finest turnpikes; yet I was informed at Latchingdon, that the gravel wherewith they were made, and are repaired, cost 4*s*. the load of 24 bushels. The roads of this hundred ought not to be mentioned without assigning the merit where due: it was the unwearied exertions of the Rev. H. B. DUDLEY that effected the marvellous change experienced: from being as bad as I described others in this county in 1767, his attention as a magistrate made them equal to any in the world. What he effected there, instigated others to similar endeavours, and the result has been a general blessing to the county.

SECT. II.—CANALS.

"OF these I think we have none that penetrate far into the county, excepting that from Maldon to Chelmsford, very recently finished, which conveys coal, manures, &c. and probably will become of great utility to the ad-

* This as a general maxim may be readily admitted; but its application so seldom can be made in the county of Essex, that it demands no very particular attention. There may be a few individuals who experience some little disadvantage; but many most heavily complain about the merest trifles.—*Howlat.*

† Vancouver.

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jacent villages, and even to parishes at a considerable distance. The several smaller cuts about Lee, Bow, Stratford, in the vicinity of the capital, as well as in other quarters, though doubtless of considerable importance, I am utterly unable to say any thing about worthy attention*."

SECT. III.—FAIRS.

"LISTS and account of all the fairs established and holden in this county, may be seen in our Histories of Essex, and in other books published expressly for that purpose; it may not, however, be amiss to mention a few of the principal ones, and some of the business proposed to be transacted at them: these are, Colchester, Maldon, Chelmsford, Braintree, Halstead, Brentwood, Ingatestone, Harlow, and Harlow-bush, Walden, Sawbridgeworth, Hatfield, Bardfield, and Stebbing.

"In the town of Colchester there are no less than five fairs: one in April, one in June, two in July, and one in October, or November, since the alteration of the style. That in April begins on the second Tuesday of that month, and continues three days, for buying and selling live-stock, goods, wares, and merchandize. The most considerable of the five I believe is that holden on the 20th of October and the three following days: the cattle fair is on the first, the rest are for wares and merchandize of various kinds, and the general amusement of the neighbourhood.

"At Maldon there is a fair in the month of October, for live-stock of all kinds, but more especially for store lambs, Welch heifers, &c. and lately, from the spirited exertions of the neighbouring gentlemen, for wool on the

* Howlett.

first

first Thursday in July, I believe. How this last succeeds, and what beneficial effects it is likely to produce, is perhaps as yet uncertain. The intention was a good one —the procuring the wool grower a fair price for his commodity.

" Braintree has two fairs, one on the 8th of May, the other on the 2nd of October, of which the latter is by much of the greater consequence. It continues three days; the things bought for sale are live-stock, especially black cattle, of which I am told there have sometimes been two or three thousand; but that this last year there were not so many hundreds. There are also very considerable quantities of hops exhibited and sold, particularly from the neighbouring parishes of Shalford, Wethersfield, Finchingfield, and the two Hedinghams.

" At Chelmsford, two annual fairs are holden, one on the 12th of May, and the other on the 12th of November. The former is of the most importance; it is chiefly for horses, and other live-stock.

" Halstead has two annual fairs, the first on the 6th of May, and the second the 29th of October. The former is for horses, bulls, and lean cattle, and is, I think, the most considerable of the two.

" At Brentwood there are two yearly fairs, one July 18, and the other October 15; both for live cattle, at which great numbers are usually sold. There are also fairs within a few days of the same times each respectively at Billericay, and Ingatestone, and for the same purposes.

" Romford has a fair on the 24th of June, for cattle.

" From these last fairs the South western parts of the county, comprehending a great part of what are usually called the Hundreds of Essex, are supplied with their live-stock.

" Harlow has three considerable fairs, on Whitsun Monday,

Monday, September 9, and November 28, all for horses, cattle, &c. but the largest and most distinguished of the three is the second, holden upon Harlow-bush common, about three or four miles from the town. Besides horses of all kinds for the waggon, the plough, and the saddle, there are black cattle and live-stock of every description; and there is now also, from the spirited exertions of Colonel BURGOYNE, &c. no inconsiderable exhibition of wool, with the same intention as that before mentioned at Maldon. Besides these transactions of business, it affords a scene of no inconsiderable amusement, and its vicinity to the capital draws thither an amazing concourse of people, as well from thence as the neighbourhood in general, to an extent of fifteen or twenty miles around.

"At Maldon there are two yearly fairs; one on the Saturday in Mid-lent, for horses, young bulls, &c. and the other November 1, for heifers and young cows, &c. chiefly brought from Leicestershire, Cambridgeshire, Derbyshire, &c.

"Bardfield fair is on the 22nd of June, for horses, colts, and cow cattle, of all which there are very considerable numbers.

"Stebbing has its fair on the 10th of July, for horses and cows; but there are but few comparatively of either; it used to be most distinguished for the show of fat lambs.

"August 5, there is a considerable fair for lambs, from Norfolk, and for various other breeds now kept in this county, as South-down, Leicester, &c.*"

* Howlett.

SECT. IV.—MARKETS.

"Our chief markets are Colchester, Coggeshall, Witham, Maldon, Chelmsford, Romford, Epping, Walden, Braintree and Halstead. At all these are sold corn, butter, eggs, poultry, and occasionally cattle and live-stock of all sorts. At those of Colchester, Chelmsford, Romford and Epping, great numbers of suckling calves in spring and summer, from Suffolk and the dairying part of Essex*."

The town of Colchester was always a populous place, and therefore a good market for all the neighbouring country: the decline of the manufactory lessened its powers in this respect: but having since become the station of a numerous body of troops, with extensive barracks built, it has fully, and even more than regained its former importance in this respect. But few houses were pulled down in consequence of the fall of the manufacture; and at present the families and followers of the troops fill every empty house, raising the prices of house-rent and lodgings. And it was remarked to me with judgment by the very sensible and intelligent gentleman (Mr. Taber) with whom I conversed on the subject, that though such an influx of troops did at first raise the price considerably of a few articles of large consumption, as hay and potatoes, yet that the supply presently measured itself to the demand; the prices fell, and have for some time been as moderate as in other places where no such circumstance had taken place. The remark is, I believe, universally true—*demand* is sure to produce *supply*: how very slowly have the

* Howlett.

minds

minds of men moved in relation to this great fact, when applied nationally to corn!

I heard several complaints in Rochford hundred, for want of an internal corn market: they are so situated, that all their corn must of necessity go to London, and from making comparisons with the prices they get, and what has been offered for the same samples at Chelmsford they have found a loss of some shillings per quarter.

SECT. V.—COMMERCE AND FISHERIES.

In the Blackwater river, &c. is a considerable oyster fishery, and West Mersea one of the principal stations of the dredgers: above 30 boats belong to the island, and are almost always at work. Vessels come from Kent to purchase the oysters; and they sell some to Wivenhoe, where the Colchester beds are. They are sold by the tub of two bushels; generally from 4*s*. to 6*s*. a tub; at present 6*s*. A dredging boat is from 14 to 30 or 40 tons burthen; all are decked, and built at Wivenhoe, Brightlingsea, &c. &c. The price 10*l*. a ton for the hull of the vessel only; and fitting out one of 20 tons will demand 150*l*. There are from two to four men to each vessel, who are paid by shares; and the master has a share for the vessel. In the spring they go to the coast of Hants and Dorset, dredging there: last week Mr. Buxton counted 130 vessels at work within sight of Mersea. This fishery is an object of considerable importance to the country, from the earnings being great: when the men die, their families come to the parish greatly increased by the number of apprentices they have taken. Can any thing be so preposterous as a police of the poor, which permits the benefit of commerce and manufactures to load the land with rates at 8*s*. in the

pound!

pound! How very small a contribution by a box-club would prevent the evil.

Mr. BENNET HAWES, of Mersea, favours me with the following:

"I wish I was better prepared to give correct answers to your questions respecting the oyster business I can only send you calculations drawn from a local knowledge of the places in Essex where it is carried on.

"Number of vessels employed from eight tons to 40 and 50, near 200, employing from 400 to 500 men and boys: a vessel carrying three men has one share and a half of all the earnings, and the men one share each; larger vessels have generally two shares; but I believe none more than this.

"The vessels, built at East Donyland, Wivenhoe, Brightlingsea, Burnham, and Mersea, will last from 30 to 40 years, with care.

"A person now living at Wivenhoe, informed me he had within the last 20 years built 100 vessels for the oyster business alone.

"Oysters are sold to London, Hamburgh, Bremen, and in time of peace, to Holland, France and Flanders.

"The principal breeding rivers in Essex are the Crouch (which is by far the most certain in produce), the Blackwater, and the Coln. The beds, or layings, are in the creeks adjoining the said rivers: from these rivers we stock our oyster layings, or beds. The price has varied but little within these last ten years.

"There has been an increase of boats, and of course of men, of more than one-half within the last 30 years.

"I can scarcely calculate the quantity consumed in a season, but suppose it cannot be less than 12 or 15,000 bushels..

"Most of the vessels of 16 tons and upward, go to Ports-

Portsmouth, or places adjacent in the month of March, to catch and carry oysters; those under 25 tons are employed in catching them, and the larger ones to carry them into Kent and Essex, where they are laid for the ensuing season; they generally return from thence in the month of June, when the large ones go after mackarel, herrings, and sprats, during the latter part of summer, and the ensuing winter the smaller ones to catching in the breeding rivers before named.

"The other fishery is so blended with the oyster fishery, it is impossible for me to state the capital employed; suppose from 60 to 80,000*l.*

"The breeding rivers are very uncertain, as to the quantity they produce: some seasons they have a great quantity, sometimes only what we call a good sprinkling; and at other times produce none; nor do they all produce or fail in the same season."

At Burnham they have seven dredging smacks, belonging to the company that hire the river of Sir HENRY MILDMAY; four other private ones, besides smaller vessels. The smacks are from 18 to 20 tons. There belongs to the town also a brig of 200 tons, a sloop of 100, in the coal trade; and four barges of 60 tons each, for corn and chalk. There are about 100 fishermen and sailors belonging to the place: a poor account for so very fine a river, above half a mile wide, and up which a 90 gun ship can come.

The salt water stews for various sorts of sea fish in Foulness Island, are well contrived, and answer the purpose completely. The fish are caught in weirs, on the extensive sands which extend several miles on the coast, and deposited when plentiful in these stews, where they drag for them with a small net, as in a fresh water stew.

"I conjecture we annually send to the capital at least

250,000 quarters of wheat, 150,000 quarters of malt, and vast quantities of oats, pease, and beans. Doubtless great quantities of woollen cloths of various kinds are still sent to the metropolis, as well as exported, especially in time of peace, to foreign nations from the towns of Bocking, Braintree, Halstead, Coggeshall, and Colchester; though at all these places the manufacture has long been on the decline*."

SECT. VI.—MANUFACTURES.

"THE woollen manufacture for time immemorial has taken the lead in this county; but from its long continued dwindling condition, it is uncertain whether it will many years remain so.

"Our manufacture of sacks for the use of our farmers, from their increasing cultivation, seems gradually advancing. I know not that that of hop-bags is any where very flourishing amongst us: this manufacture, from the deficiency of our crops in the years 1799 and 1800, was astonishingly diminished, but is now, January 1802, reviving.

"Manufactures of lime and bricks are to be found in great abundance in the neighbourhood of London, and in almost every part of the county.

"Those of callicoes, &c. are, I believe, in a prosperous state as we approach the metropolis*."

"Baize wool in the neighbourhood of Bocking, which varies as to length, pliancy, and softness, according to the sort into which it is to be wove, is delivered out to the spinner, who always cards it too, to be returned in nearly an

* Howlett.

equal

equal weight of yarn. This is reeled off into skeins; 80 turns of the reel, by a little index in the lower wheel, marks a knot, and such a number of these knots is spun for 1*d.* as the state of the trade and demand for baize can afford. Five knots in the best, and eight knots in the worst times, are nearly the allowance. But the reel can be expanded or contracted; and sometimes the spinner, with the same number of turns, to make a knot for the 1*d.* is obligated to wind off the spinning spindle, by the long reel, one yard and a half in circumference; at others, by the short reel, one yard and a quarter; thus, betwixt the two reels, there is the difference of a quarter of a yard to the spinner. I cannot learn the reason for this distinction; the wool for both is spun into yarn, of the same degree of fineness and consistency, and no deception could be meant from such a palpable variation, as arises from reeling off the same number of rounds at the same price, by a different circumference. Custom has established it with eighty rounds of the reel, under this variation to the knot; and at five knots to the 1*d.* a grown, skilful, and industrious person can earn up to 10*d.* a day; at eight knots, up to 6*d.* and an aged person about 5*d.* at five, and 3*d.* at eight; a child at nine years of age about 3*d.* at five; and 2*d.* at eight knots. A pound of baize wool may be spun into 15 or 16 knots; the cards are frequently supplied to the spinner, and sometimes a deduction of 1*d.* in the shilling is made from the spinning, on this account. The carding and spinning this wool, often very coarse, and saturated with oil equally so, is very troublesome; and from the latter circumstance, and for children especially, probably unwholesome: the combed wool, which always makes the warp of the baize, is much easier spinning, but not quite so profitable; in weaving too by the piece, the wide baize, as being generally worked

with softer yarn, is made nearly of the same price as the narrower. But they differ so much in width, consistency, fineness, and length of shag, that I cannot understand how far a given quantity of the raw material, the wool, or of the yarn, will go, in the making a given quantity of the fabric*."

At Coggeshall, some baize are still made; and the straw-plat fabric has got in, by which large earnings are made. This is also well established at Bocking and Braintree, where some shops take to the amount of 60*l.* or 70*l.* per week; and at Hedingham one man has bought to the amount of 1500*l.* in a year.

At Colchester, in the manufacture of baize for Spain, are employed about 150 or 160 men, who earn about 14*s.* per week each; about the same number of women and children, who earn from 4*s.* to 7*s.* per week. Before the breaking out of the war with Spain, nearly five times the above number were employed; and it is probable at least that number will be employed on the return of peace.

Weekly Manufacture of Baize in Colchester, 1794.

IN PEACE.

In the time of peace immediately preceding the present war, ...	400
Exported, or used at home, ...	400
Hands employed in Colchester and the adjacent country, ...	20,000

IN WAR.

In the time of war, January 1794, ...	160
Exported, or used at home, ...	40†
Hands employed in Colchester and the adjacent country, ...	8000

* On

† At the most; the residue kept by the manufacturers in Colchester.

The

The manufacturers reckon every bay to give employment to 50 persons, from the sorting the wool to the roughing the bay.

WOOL.

"The average earnings of our best spinners (Dunmow, 1790), scarcely 4*d.* a day; 40 years ago commonly 8*d.**."

SECT. VII—THE POOR.

"THAT the value of labour is more generally proportioned to the price of provisions, in this county, than in many others in the kingdom, may be readily admitted; but that the poor's-rates, which are now upon the rack rents through the county 3*s.* 6*d.* in the pound, should have increased one-third of that sum within ten years, and that also, without the least shadow of proportion in the increase of population, is certainly very strange, and argues a positive inadequacy in the value of labour to that of provision, or a general mismanagement, or misapplication *of the revenues of the poor*†‡."

There

* Howlett. † Vancouver.

‡ This account of the average amount of the poor's-rates, taken in the year 1794 and 1795, I am apprehensive must be far from accurate, even at that time. The average seems to have been formed by dividing the total amount of the sum given by the number of parishes, for which the rates are respectively stated. But this must be extremely defective, even if every town and parish in the county were given, unless such towns and parishes were nearly of equal size. But some parishes are ten times as large as others: I mean not merely in point of extent, but with respect to number of inhabitants. What must still further increase the deficiency, some of the largest and most populous towns in the county, such as Colchester,

There is one circumstance in the economy of the poor at Hempstead, and which is owing to the attention of Mr. HORNER, that well deserves noting: the parish every year buys ten or twelve acres of copse wood, which is made up in fourpenny faggots, and being deposited in stacks or barns, are kept for selling out to the poor (a person attending for that purpose) in such a manner that no person having 4*d.* can be in want of a dry faggot at the cheapest hand. The consequence is, their hedges and trees are free from all plundering attacks. This deserves universal imitation.

I was much gratified at seeing the exertions of the Rev. Mr. SCOTT, in building some very capital cottages at Little Oakley. He bought two, and new built eight. Two new ones, a double tenement, of brick and tile, cost 300*l.* All have large gardens, to which they are exceedingly attentive; they keep pigs, and sell much produce to Harwich. They are very comfortable; well fed and clad; the children all educated: such as cannot afford to pay the schooling, have it paid for them. The rent of the house, if good, with the garden, 3*l.* 3*s.* One cottager (LUFFKIN) who lives in his own, with a garden of half an acre, sold to the amount of 20*l.* between Lady-day and Michaelmas, and yet lost no time from his day labour. There is an air of comfort and happiness appearing through the village, which is one of the most agreeable rural spec-

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chester, Bocking, Braintree, Saffron Walden, &c. are entirely omitted; in most of which the rates are uncommonly high, and consequently if added, must have greatly advanced the average. But whatever was the average in 1794, it must have been vastly higher in 1795 and 1796; and the increase within the course of these two years has probably been greater than that of the preceding ten. No contrivance short of adaptation of wages to the price of provisions, will ever be permanently efficacious for the reduction of the rates.—*Howlett.*

tacles

tacles that can be seen. Mr. SCOTT gives a remarkable character of the people, for decency of behaviour, regularity of conduct, sobriety and industry: his large business of 480 acres, goes on by these means with perfect smoothness: he attributes it to their having comfortable habitations and gardens, which employ their spare hours: another advantage is there being no ale-house in the village. The only evil custom I heard of among them was, that of heating their ovens with straw.

The introduction of the straw-plat manufactory at Gosfield, by the Marquis and Marchioness of BUCKINGHAM, has been one of the greatest of temporal blessings to that place. To make the first miserably coarse bungled hats, was a great effort, and as nobody would wear them, Lady BUCKINGHAM, decorated one with ribbons, and wore it in the sight of the whole village: the Marquis went to church in another, and laid it during service in the full sight of the congregation; but it was no easy matter to introduce the fashion amongst the farmers' daughters and others: gradually, however, by extraordinary efforts, and bringing an instructor from Dunstable, and every thing necessary, the fabric was improved, and the business well established. It spread over all the vicinity; girls were brought from Wethersfield and Halstead for instruction, but not without difficulty: all such, however, have been long at an end; and last year Mr. THURLOW took some pains to ascertain the earnings by straw-plat in the parish of Gosfield, containing no more than 453 souls; and found it to amount to about 1700*l.* As in Hertfordshire so here also, a cry has been raised against it, the young women earning so much, that maids for domestic purposes are not easily to be had; but the poor are in a situation which nothing else could have effected.

WILLIAM STACY, a little tenant of Mr. WESTERN's,

at

at Rivenhall, a farm of seven acres, with a very neat little miniature of a farm-yard, which, in a very small compass, and erected at a very small expense, contains every thing he wants: he has one good horse; a cow and calf; and two breeding sows. His field contains potatoes, tares, and after them turnips, pease, beans, oats, and wheat: he has a one-horse plough, and a common one, in case of hiring or borrowing another horse; a cart; and all his tools and tackle good, and in good order. He pays 3*l.* an acre rent, which is more than any farmer in the country pays: rates 6*s.* in the pound, and 28*s.* tithe for his seven acres. He longs much for nine or ten acres more land; and I hope he will have it. Himself and family are pictures of industry.

Upon the subject of the poor, Mr. HOWLETT has given a paper on benefit clubs: it applies more generally to the kingdom at large than, in my opinion, is quite consistent with a County Report; but as that extremely able writer is no more, and consequently the paper cannot be returned to him for any different application of it, nor for any re-consideration of the subject; and as some of the cases mentioned in it are drawn from the county of Essex, I think it right to insert it without addition or comment.

"*BENEFIT CLUBS.*

"Amongst the many plausible reasons urged in favour of benefit clubs, the leading and principal ones seem to be, that by periodical subscriptions of small inconsiderable sums, by persons in health and strength, which at the time are scarcely felt by each individual, and which would not otherwise be laid by and preserved, a common fund is gradually raised, from which very comfortable relief and assistance is extended to the members of such societies in times

times of sickness, infirmity and age; that this relief and assistance must otherwise have been given by the respective parishes to which they belonged, and of course must have greatly increased the parochial burdens.

"I much fear that this pleasing representation is every where replete with fallacy. That considerable relief and assistance have thus been afforded to numerous individuals, and that such instances may in particular cases have in some degree, though certainly not equal to the amount of such relief and assistance, prevented the augmentation of parish assessments, is readily granted. But this by no means proves the general utility of these institutions, when viewed in all their tendencies, connexions and consequences. Notwithstanding their superficial flattering appearance, they may have been highly pernicious; they may have contributed to the increase of idleness and intemperance; prevented the diminution of ale-houses, given occasion to illegal combinations, and seditious proceedings; caused much more misery and wretchedness than they have ever relieved, and instead of diminishing our poor-rates, may have really and greatly augmented them. Absolutely to demonstrate that these effects have resulted from them, is perhaps impossible. But where demonstration is unattainable, probability merits attention.

"Their tendency to the increase of idleness, may be fairly argued from their holding out certain definite relief and support in case of illness and incapacity for labour. The utmost exertions of the mere labourer, whether mechanic, manufacturer or husbandman, generally speaking, can secure nothing more. Of course all further incitement is, in a great measure, taken away. This has indeed been urged as an objection to our poor laws; but I think very unjustly, and for this plain obvious reason: they

they promise not a *definite*, but merely a *discretionary* provision, attended with abundance of distressing and mortifying treatment, even before that can be obtained; and that man must surely be absurd and stupid, who can consider the pitiful allowance which is usually granted by parish officers to distress and necessity, as an argument to abate his care and diligence to provide for himself and family. But with regard to the members of benefit clubs, they claim the needed assistance as matter of *right*, and with a certain fearless spirit of independence; and the certain prospect of this must operate accordingly*.

" To this may be added, that whenever members are reported to be sick, &c. in order to prevent imposition, one or more of the body are usually deputed to visit them: this takes up time, calls them from their daily occupations, diminishes their daily earnings, and perhaps occasions the otherwise unnecessary spending of money.

" That these societies naturally and powerfully lead to *intemperance*, needs on laboured proof. They periodically call the labouring classes of men to a public-house, from which they ought to be absent as much as possible; there certain sums of money are *allowed*, and even *required*, to be spent. When this allowance is exhausted,

* " Besides what is above said respecting the natural tendency of these clubs to encourage idleness, most of those which have come under my own observation virtually hold out premiums for that purpose. They suffer not a sick or infirm member to work at all, not even in the ordinary cultivation of his little garden spot, upon pain of forfeiting his whole allowance. In consequence of this, I have seen many a man idling and sauntering about for years together, without doing the smallest trifle towards his support, when, though incapable of full vigorous labour, he was well able to have done something, and would have done so, but for this absurd restriction. It may be said perhaps, that this is a mere abuse of the general institution; it would be found, however, no very easy matter so nicely to discriminate, as to prevent imposition."

and

and their spirits somewhat raised, he surely must know little of human nature in general, or the disposition of this order of men in particular, who does not see that an addition will naturally, and almost inevitably be made, and that before they break up, twice the allowed sum will by many individuals be expended. Thus habits of intemperance are gradually and insensiby formed; and it is no uncharitable conjecture, that many a man is thus made a sot and a drunkard, who would otherwise have remained temperate and sober. If this happens to only one in ten, which is surely a moderate supposition, it will counterbalance all the advantages arising from these institutions.

"But besides these regular periodical meetings, they have likewise their grand anniversary festivals, at which all the members are assembled from every quarter; and this, it has often been remarked, sometimes occasions two or three days of idleness, dissipation, and drunkenness.

"That these clubs directly tend to counteract the laudable desire of our magistrates to diminish the number of our public-houses, is strikingly evident. The profits arising even from their *allowed* expenditure, independently of what they will naturally occasion besides, especially in large populous towns, are alone sufficient to keep many of these houses on foot, which must otherwise inevitably fall. In the town of Sheffield, this expenditure is annually, I believe, at least 600*l.*, and in the city of Glasgow it must be nearly double that sum.

"As to illegal combinations, where are they so likely to be formed as in clubs and societies thus regularly assembling? And perhaps it might not be amiss to inquire, what proportion of those *pious*, *conscientious* men, the journeymen bakers of London, who so zealously combined

bined to deprive their fellow-citizens of a comfortable Sunday's dinner, had been educated in these modern seminaries*.

"How well they are calculated to produce a becoming respect for our excellent civil constitution, may be fairly conjectured from the curious petitions which have issued from those towns where these societies particularly abound, and which breathe the genuine spirit of the French Revolution.

"Sir FREDERICK EDEN, in his Observations upon Friendly Societies (for which he is in general an advocate), candidly acknowledges, "that these meetings, though "their object is the promotion of industry, frugality, and "good order, have an obvious tendency to encourage "drunkenness, dissipation, and quarrels, and to facilitate "combinations for improper purposes in trade, religion, "and politics. It may be doubted whether men are im-"proved by assembling together in large numbers. If the "inhabitants of the country are more virtuous than those "of towns, it is because they live more apart†. Conta-"gion, moral as well as physical, is too frequently the "result of multitudinous assemblies. Considered in "this point of view, friendly societies are not altogether "unobjectionable. Much collateral mischief may result "from their accidental form and organization‡, though "certainly none can be apprehended from the principle "on which they are established. We have been assured "from the highest authority (Secret Committee, 2d Re-"port, pp. 8 and 13), that they have been perverted to

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* "This was written in the year 1793, soon after the occurrence alluded to had taken place."

† "And yet Sir FREDERICK would collect them together in clubs."

‡ "Such form and organization, can they possibly be avoided?"

"purposes.

" purposes most inimical to social order; and that both " in the metropolis, and in manufacturing districts, dan- " gerous meetings have been held, under the disguise of " benefit clubs for the relief of sick members."

" From these various considerations united, it seems no very unnatural conclusion, that benefit clubs holden at public-houses (and none, female ones excepted, I believe, are holden elsewhere), instead of having diminished our parochial assessments, may have greatly increased them, and occasioned more misery and wretchedness than they have ever relieved.

" These ideas, as well as a variety of others, may receive illustration from the actual accounts of benefit societies in different parts of the kingdom; even of such as have the most advantageous appearance.

" In the town of Sheffield, in the year 1786,

" 52 clubs paid to sick members, ... £. 3670 15 0

" 55 clubs paid to ditto, ... 3519 10 8

" My obliging correspondent who communicated this information, and who appears highly to approve these societies, remarks that they must have greatly impeded the growth of the parochial assessments. The rates, however, by no means favour this supposition; for during the existence of these clubs, their increase has been prodigious, standing as follows:

	£.	s.	d.
" On an average of three years beginning at Easter 1760, ...	1119	1	4¾
" Ditto, beginning at Easter, 1770, ...	1801	17	0
" Ditto, ditto, 1780, ...	3124	13	3
" Ditto, at ditto, 1783, ...	3540	2	7¼
" Average of the two years beginning at ditto 1786 and 1787, ...	3817	3	6¾

" Part of this very rapid advance must doubtless be imputed

imputed to an addition of one-fourth to the population of the town during the above period; part likewise, if the remarks and reasonings of a very ingenious and experienced manufacturer of that place may be depended upon, may fairly be ascribed to the numerous benefit clubs established there. This gentleman observes, "that many "of the members of these societies frequently sink into "habits of sottish intemperance, who, if they had never "been exposed to the temptations there presented, "would probably have continued sober, and temperate, "and industrious;—that very few of them indeed take "care to lay by even the money required for their suc- "cessive periodical subscriptions, but apply to their "masters for them. The master has no other alternative "but to comply with the request, or lose a workman. If "the demand for his particular manufacture happen to "be brisk, he advances him the money; and this is "sometimes repeated till the debt amounts to 5*l.* or 10*l.* "The master at length is out of patience, and will lend "him no more; the workman seeks a new employer, "with whom he plays over again the same game; a stag- "nation of trade takes place; no employment is to be had; "not a farthing has he saved; his subscription is discon- "tinued; he is struck off the society's books: if young, "he enlists for a soldier, leaving behind him perhaps a "numerous helpless family; if advanced in years, he "falls upon the parish with a heavy load of increased in- "firmities. For these reasons," continues this intelligent manufacturer, "I have always disapproved of these so- "cieties, and have made it a constant rule to employ as "few of their members as possible; finding that those "who are unconnected with them are generally the most "sober, the most diligent, and the most to be depended "upon."

"The

" The respectable and ingenious Dr. PORTEOUS, of the city of Glasgow, assured me in the year 1792, that there were then nearly a hundred of these box clubs (so he calls them), and in Sir JOHN SINCLAIR's Statistical Account of Scotland, vol. v. eighty-nine of them are particularly mentioned. Of these forty-six annually contributed 1141*l.* to the relief of sick members. Of the remaining forty-three no accounts were given of their annual contributions for this purpose; but supposing them to have been proportionate to the others, the box clubs of that city alone afford 2000*l.* a year towards the relief of sick and infirm persons.

" Surely the parochial expenses for the poor must have been greatly reduced, especially when it is remembered, that from the commencement, and during the vast increase of these clubs, the price of labour in that city, contrary to what happened in the greater part of England, had been doubled, whilst the price of all necessary provisions had been advanced but about one-third. But what is the fact? just the reverse. About fifty years ago, before the institution of these clubs, the annual expenses for the poor were only between 5 and 600*l.*; at the time now under consideration they were 2400*l.* This may partly indeed be ascribed to the increased population within the period alluded to, which had risen from 23,000 to 61,945; this will still, however, leave 7 or 800*l.* a year unaccounted for, but which, adopting the remarks of the ingenious Sheffield manufacturer, may partly be imputed to the benefit clubs.

" In my parish at Dunmow, we have two, if not more, of these institutions*. I have no particular account but

* If monthly subscriptions, 1*s.* 4*d.* to the public-house where the club is holden.

of one of them. This has now subsisted upwards of thirty years upon its present plan, and which succeeded the dissolution of a former one established nearly on the same general principles; and it has continued to increase in its numbers from its commencement to the present time, they amounting on an average of the first five years, beginning with 1772, to 37, and the last five years, ending with 1801, to 80, notwithstanding the successive and pretty numerous expulsions which had taken place.

"Gentlemen most deeply prepossessed with the idea of the beneficial influence of these institutions towards reducing the legal parochial expenses, seem to have taken a very superficial view of the subject in general, and not to have duly attended to a variety of circumstances necessary to the forming a satisfactory judgment.

"I have already observed their very natural and powerful tendency to induce habits of idleness and intemperance, and that where they have most abounded, the parish rates, instead of being diminished, have very rapidly increased. These considerations alone afford no very flattering presumption in favour of the conclusion so generally adopted; but besides this, there are many other important particulars to be remembered, before any decided opinion can be fairly and rationally deduced; such as the age and health of the persons admitted into these societies; whether married men or bachelors; what numbers have been expelled; how much they had subscribed previous to their expulsion, what sums of money have been spent at public-houses at their several kinds of meetings, monthly and annual. It is well known, that few members are received but in the more healthy and vigorous part of human life; commonly between the ages of eighteen and thirty-five, indisputably the least sickly and the least mortal period of any, excepting that between

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five and fourteen. None are allowed admission who are afflicted with any known disease, or debilitating infirmity, whether bodily or mental. In a word, these clubs, in the very formation of them, generally consist of persons least likely soon to be chargeable to parishes. Bachelors, whether mechanics, husbandry labourers, or hired household servants, upon the occurrence of sickness, or other accidental calamity, have seldom, comparatively, occasion for parochial assistance; nor would they often receive it, should they apply for it; the sums subscribed by expelled members prior to their expulsion, as well as the money spent at public-houses;—all these circumstances should be duly considered.

"But let us descend to more minute and definite illustration. I have already observed, that we have one of these clubs in my parish of Dunmow, now consisting of upwards of 80 members, and which has subsisted above 30 years. The behaviour of these men I presume not to distinguish from that of their neighbours; some are honest, industrious, and careful; and some are of characters directly the reverse. They have contributed 706*l.* 1*s.* 8*d.* towards the relief of sick members, and they have still 137*l.* 11*s.* 8*d.* in hand; with something more than 120*l.* of which they, a few months ago, purchased 200*l.* stock in the three per cent. consols, and the half yearly dividend now due, added to the 137*l* 11*s.* 8*d.* after deduction for the letter of attorney empowering some person to receive it for them, with other attendant expenses, will raise the stock in hand to about 143*l.*

"Thus far the institution exhibits a very flourishing and a very pleasing and promising aspect, both for the great things it has already done, and what it may still continue to do. Few societies of a similar kind can, I presume, exceed, or even equal it. Let us not, however,

be too sanguine in our conclusions. Let us take a cursory view of the contrary side. Upon an average of the last ten years, of the 80 members, 15 have been bachelors; for the majority of the whole are still, I believe, under the age of 30, and very few exceed 50. All these circumstances have rendered them the less likely to need parish assistance; and yet, unless I am greatly mistaken, they have, three quarters of them, occasionally received it in common with their neighbours; and I have little room to doubt, that this is very generally, if not universally, the case. But this is not all. During the thirty years which the club has existed, 312*l.* 12*s.* 3*d.* have been expended at the public-house, and 57 members have been expelled, most of them from inability to continue their payments, and whose subscriptions prior to their expulsion amounted to 211*l.* 18*s.* 9*d.* These members, a very large proportion of them having long subscribed, had they remained in the club, would they not probably soon have become burdens instead of supporters of it? These burdens, whatever they may be, must they not, after their exclusion, be transferred to the parish? And had not these several exclusions taken place, would not the society's present stock in hand have been greatly diminished, or perhaps reduced to nothing? It is also to be remembered, that the society has yet experienced but a small share of the calamities to which human life is subject, a very large proportion of its members being either bachelors, or in the most healthy and vigorous stage of existence; in consequence, must not the expenses for the relief of its sick and infirm for the future gradually increase? Unless, therefore, it constantly receive a plentiful accession of young members (to whom the inducements to enter must daily diminish), will it not probably, in the course of the next 20 or 30 years, like most of its predecessors

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in this, and, I believe, in most other neighbourhoods, fall to pieces? Upon such occurrences many persons in the decline of life, and in the decrepitude and debility of old age, after having subscribed 20 or 30*l.*, and received from such subscription no benefit whatever, are frequently left destitute of all other resources than that of penurious parish allowance. Instances of this kind I have myself known; and such members, upon account of their numerous families, prior to the dissolution of their club, have had almost constant assistance from their parish.

"Sir F. M. EDEN, in his late publication on this subject, says, "that friendly societies have now established, "on the broad basis of experience, one great and funda- "mental truth, that, with very few exceptions, the "people, under all circumstances, with good manage- "ment, are perfectly competent to provide for their own "maintenance. These societies consist of persons in all "the inferior stations of life; of persons who, excepting "their merit in subscribing to their clubs, are, in other re- "spects, by no means distinguished from their neighbours "by superior wisdom or better morals; and yet I do not "find (though probably such instances must have occurred "in times of great dearth), that any parish has been bur- "thened with the maintenance of a member of any "friendly society; nor are the instances numerous, of the "*families* of members becoming chargeable. It is there- "fore evident, that a country bound by law to provide "for its poor, must have saved a considerable sum, per- "haps millions, by these voluntary associations."

"It would give me singular pleasure to be able to admit these assertions, and to acquiesce in these conclusions. But it is impossible so to do, while they appear to me replete with fallacy and misapprehension. Had Sir FREDERICK duly attended to all the circumstances above sug-

gested, I flatter myself he would have formed sentiments somewhat different. Upon a member's falling sick, supposing him to have a wife and four or five small children, I have seldom known an instance in which, besides what he has received from his club, he has not also had additional assistance from his parish (not only *in times of great dearth*, but at all times), perhaps altogether as much as would have been given him had he subscribed to no club at all; for it not uncommonly happens, that his parish knows nothing of his subscription, and if it does, to use the softest terms, is it proper or becoming to take advantage of it? His membership, therefore, though it doubtless augments his present comforts, seldom does, and never *ought*, to diminish the parochial expenses.

" With respect to the *families* of members, in the common course of things, agreeably to what I have already observed, they have parish assistance in common with others in similar situations, without the smallest distinction. What then becomes of Sir FREDERICK's conclusions, " that these voluntary associations have saved the " country millions?" What becomes of the great fundamental truth, established by these societies upon the broad basis of experience, " that, with very few exceptions, the " people, under all circumstances, are, with good manage- " ment, competent to provide for their own mainte- " nance?" It is extremely clear, that this conclusion could not be drawn, even were the members never to quit, or be dismissed from their society. But how different this is from the fact, we have already seen. We have seen that great numbers are successively excluded, from mere inability to continue their subscriptions; and we have also seen, that many of these have probably fallen heavier burdens upon their respective parishes, than they would have done had they never been members at all. I will not,

not, however, further repeat what has already been sufficiently urged; but proceed to my general summary conclusions, from the whole of what I have advanced in the course of this discussion.

"And these conclusions are, *that benefit clubs, holden at public-houses, increase the number of those houses, and naturally lead to idleness and intemperance; that they afford commodious opportunities to foment sedition, and form illegal combinations, which they have sometimes actually done; that as far as I have heard, read, or observed, there is not the smallest probability, in their general extensive application, that they ever have, or ever will diminish our poor-rates, but just the contrary; and that, finally, their chief, if not sole, recommendation is, that they occasionally relieve the incidental distresses, and augment the domestic comforts, of some few individuals.*

"*Female benefit clubs* are probably not subject to all the objections above suggested; still less so are public *insurance offices*, instituted for similar purposes, and stationed in provincial towns and villages to receive the subscriptions of such of the lower classes as may thus choose to provide for some comfortable future relief under sickness, and the infirmities of age. But even these would fail of the desired beneficial effects, until the general industrious earnings of these classes were adequate to the price of provisions. Without this, discontinuance of subscription must inevitably happen, as already noticed respecting the members of benefit clubs, and, consequently, a discontinuance of all hopes of future advantage.

"There are still, however, some individuals amongst the poor, as I have before repeatedly observed under different subjects, of uncommon industry, care, and economy, who would submit to almost any the severest hardship, rather than be reduced to this necessity of final wretched disappointment.

pointment. To such as these, public insurance offices are even now very desirable, and might be highly beneficial.

" After all, however, the only general remedy, the only universal relief of the hardships and distresses of the married labouring poor, would be the adequacy of their industrious earnings to the provision of necessaries. This was much more the case 60 years ago, than it is at present. Then their condition was comparatively comfortable; then were they better fed, better clothed, as well as more moral and religious; though, at least by the generality of our country agricultural labourers, such things as benefit clubs, or any of those numerous schemes for bettering their condition which have since been adopted, were scarcely known or heard of. Restore the same correspondence between wages and necessities, and what imaginable reason can be assigned why the same comfortableness, the same sufficiency of food (times of uncommon scarcity excepted, when the beneficence of the rich and wealthy may find ample employment), the same decency of apparel, the same goodness of moral conduct, the same general attendance upon religious worship and religious instruction, should not be restored likewise? But how this correspondence is to be effected, is the grand difficulty. *Hic labor, hoc opus est.*

" Having no inducement, in any of my researches, but the discovery and establishment of important truth, and yet fearing that self-partiality might incline me to place too great reliance upon my own reasonings and conclusions, I submitted the perusal of the preceding papers upon benefit clubs to the same respectable person who so exactly coincided with me in opinion respecting the allowance of land to cottagers. I am not so fortunate as to obtain the sanction of his concurrence on the present subject.

ject. He appears, indeed, to differ from me entirely. The letter, however, with which he has indulged me in answer to my request of his sentiments, is so extremely candid, and expressed with such polite and modest civility, and although he does not directly meet and contest any of my arguments, yet as the observations and experience of so judicious and sensible a man must always deserve respectful attention, I cannot deny myself the pleasure of here inserting it for general consideration.

" Notwithstanding the very sensible arguments you pro-
" duce (which probably I am not equal to combat with suc-
" cess), I cannot forego the favourable opinion I have
" always entertained of benefit clubs. The rules and
" orders of such as I have any knowledge of, are of public
" notoriety, and seem calculated to be beneficial to so-
" ciety. The members, in general, as far as my observa-
" tion has led me, are the most decent and orderly of that
" class from which they are composed. The design is to
" promote industry and good order, and I am not ac-
" quainted with their having had a contrary effect. They
" certainly, in some instances, have lessened parochial
" burthens, and are, I think, calculated to keep alive
" that laudable spirit of independence, which, it is to
" be lamented, is almost extinct among the lower ranks of
" society.

" I presume it is not sufficient cause of censure, that
" they may be, and frequently are, abused; it is not con-
" sistent with the frailty of human nature to form a perfect
" code of laws, and I apprehend there are no institutions
" but might be rejected on the ground of the possibility
" of their being perverted; therefore, I think candour
" should induce us to suppose the effect of such institu-
" tions is congenial to their original intention and design,
" unless it is certainly proved that their operation has na-

" turally

" turally a contrary tendency, which, in this instance, as " far as I am informed, does not appear to be the case; " therefore, on the whole, I cannot avoid a partiality in " favour of them."

" This handsome letter I leave to its natural influence; only observing, that it has not made any change in my general sentiments on the subject.

" Should it be said that my reasoning to prove the inutility of benefit clubs holden at public-houses, are principally applicable to the abuses of them, I would ask, are not such abuses the very natural consequence of such association of persons in the inferior orders of society? and if so, are not my reasonings conclusive? I would also ask, can the most zealous advocates of these clubs point out any two districts of any considerable extent, and in circumstances perfectly similar in every other respect, the one abounding in these combinations, the other entirely without them, in which, during the last 40 years, there has been any perceivable difference in the advance of the poor's-rates? In all the instances above adduced, their progression has been as rapid as in any other parts of the kingdom.

" I have expressed my preference of insurance offices, or other depositories independent of public-houses, to receive the subscriptions of such of the lower ranks as are competent to it, and approve of such provision. A circumstance in the preceding discussion suggests, methinks, an illustration of their superior advantage. In the account of the Dunmow benefit club, it appears, that 312*l.* 12*s.* 3*d.* had been spent at the public-house in the compass of 30 years. Supposing only 200*l.* of this had been spared, which is surely the least that can be supposed, had the several subscriptions been placed in deposits similar to those in question, there might now have been not only

200*l.*

200*l.* in the 3 per cents. as at present, but 500*l.* the accumulation of the interest of which would have formed a capital, affording a more ample future relief to the subscribers."

Result of the Returns to Parliament relative to the Poor in the County of Essex, 43d of the King.

I. Returns from four hundred and fifteen parishes or places in the county of Essex have been received, and are entered in the abstract. Returns from four hundred and ten parishes or places are entered in the abstract of the returns of 1785: four hundred and four returns in the abstract of the returns of 1776.

II. One hundred and seventy-seven parishes or places maintain all, or part of, their poor in work-houses. The number of persons maintained, during the year ending Easter 1803, was 2969; and the expense incurred therein, amounted to 40,680*l.* 12*s.* 3¼*d.* being at the rate of 13*l.* 14*s.* 0½*d.* for each person maintained in that manner. It appears from the abstract of the returns of 1776, that there were then 142 work-houses, "capable of accommodating" 4313 persons.

III. The number of persons relieved out of work-houses was 35,368, besides 6780 who were not parishioners. The expense incurred in the relief of the poor not in work-houses, amounted to 136,459*l.* 15*s.* 6*d.* A large proportion of those who were not parishioners appears to have been vagrants; and therefore it is probable that the relief given to this class of poor could not exceed 2*s.* each, amounting to 678*l.* This sum being deducted from the above 136,459*l.* 15*s.* 6*d.* leaves 135,781*l.* 15*s.* 6*d.* being at the rate of 3*l.* 16*s.* 9¼*d.* for each parishioner relieved out of any work-house.

IV. The

IV. The number of persons relieved in and out of work-houses, was 38,337, besides those "who were not parishioners." Excluding the expense supposed to be incurred in the relief of this class of poor, all other expenses relative to the maintenance of the poor, amounted to 183,582*l.* 5*s.* 1¼*d.* being at the rate of 4*l.* 15*s.* 9¼*d.* for each parishioner relieved.

V. The resident population of the county of Essex, in the year 1801, appears from the population abstract to have been 226,437; so that the number of parishioners relieved from the poor's-rates, appears to be seventeen in a hundred of the resident population.

The number of persons belonging to friendly societies appears to be six in a hundred of the resident population.

The amount of the total money raised by rates, appears to average at 19*s.* 1½*d.* per head on the population. The amount of the whole expenditure on account of the poor, appears to average at 16*s.* 3¼*d.* per head on the population.

VI. The expenditure in suits of law, removal of paupers, and of overseers, and other officers, according to the present abstract, amounts to 7287*l.* 19*s.* 9½*d.* The amount of such expenditure, according to the abstract of the returns of 1785, was then 3958*l.* 8*s.* 2*d.*

VII. The expenditure in purchasing materials for employing the poor, according to the present abstract, amounts to 2410*l.* 9*s.* 4¾*d.* The amount of such expenditure, according to the abstract of the returns 1785, was then 436*l.* 1*s.* 6*d.*

VIII. The poor of twenty parishes or places in this county are farmed or maintained under contract.

IX. The poor of nineteen parishes or places in this county (including the sixteen parishes in the borough and liberties of Colchester), are maintained and employed under the regulations of special acts of parliament.

X. Two

X. Two hundred and thirty-eight friendly societies have been enrolled at the quarter sessions of this county, pursuant to the acts of 33d GEO. III. c. 54, and 35th GEO. III. c. 3.

XI. The clerk of the peace states, that "it is now pretty generally usual to rate as near the rack as may be, at least in all towns, and other considerable places; and I should think that the proportion throughout the county might fairly be taken at four-fifths at least of the rack rents.

In eight parishes or places in this county (as duly noticed), the rate in the pound is stated on the rack rental. The amount of money raised by rates in those parishes or places is 6722*l.* 8¾*d.* The amount of the rack rental, as computed there from, is 32,015*l.* 11*s.* 6¼*d.* consequently the average rate in the pound on this rental amounts to 4*s.* 2¼*d.*

XII. The area of the county of Essex (according to the latest authorities) appears to be 1525 square statute miles, equal to 976,000 statute acres: wherefore the number of inhabitants in each square mile (containing six hundred and forty acres) averages at one hundred and forty-eight persons.

SECT. VIII.—POPULATION.

"IN the abstract of the returns to the Population Act, 41st GEO. III. the population is stated to be 226,638, and the return is said to be complete. This means, I suppose, that there is not a single parish omitted to be returned; but I have good reason to believe that some, indeed many, of the returns, were considerably deficient. It is to be hoped that they will be more correct; which I con-

I conceive may be easily effected by some little improvements in the Act, and more minute and specific directions. However, I do not apprehend that the utmost correctness in the late survey would have raised the total amount to above 230,000; which is about 10,000 less than my previous estimate*."

SECT. IX.—WEIGHTS AND MEASURES.

"WEIGHTS and measures, I believe, are now tolerably uniform throughout this county. Until a very few years, our wheat was sold by weight or measure, according to the agreement of buyer and seller. The measure was eight gallons and a half the bushel; the weight, what is usually called peck weight, being the medium of what eight and a half of good wheat would weigh. It is now almost universally sold by measure, and that the statute eight gallons to the bushel Winchester measure sure.

"Before this legal and judicious regulation, all other grains were sold by measure, but measure very different in different places, and for different sorts of corn. Thus the bushel of barley, malt, oats, &c. was frequently nine gallons; other grains in different districts was eight gallons and a half, and eight gallons and three pints, &c.

"Most kinds of seeds, as clover, carrot, rape, &c. are generally sold by avoirdupoise weight; as are also butter, cheese, hops, &c. bread I believe, and metals by troy weight. Medical drugs by apothecary's. Various articles go by tale; some by the dozen, some by the score,

* Howlett.

and

and some by the hundred of six score, as hop poles, faggots, &c. Pit or sea coal we purchase by the chaldron, containing thirty-six heaped bushels; apples, turnips, carrots, potatoes, &c. in the same precarious indefinite manner.

"It might perhaps be no unuseful disquisition, to inquire how far it might tend to facilitate commercial intercourse, to reduce all our weights, measures and tales to decimal proportions. But this I presume not now to enter upon*."

SECT. X.—PRICE OF LAND.

About Colchester, very small farms, and fields near the town excepted, thirty years purchase.

At the sale of the late Mr. Rigby's estate, Walton-hall, of 326 acres, 60 of them marsh, with 750 acres of salting, over which the tides flow, were sold to Mr. Bernard, the tenant, for 18,000*l.*; this is, the 386 being worth 31*s.* per acre at thirty years purchase, and the 750 acres given in for nothing.

Hare-hall, near Romford, one hundred and sixty-six acres, seventy-eight of them grass, the rest arable, for which 3*l.* per acre was offered, sold, with a good stone house, for 14,500*l.* sterling—twenty-eight years purchase.

To multiply the cases would be needless; I found throughout the county, that the value of the soil, fairly rented, was in 1805 from twenty-eight to thirty years purchase.

* Howlett.

Now it is remarkable, that in 1770 I noted and published the price, which was thirty years purchase.

This fact, and the same has been found throughout the kingdom, appears to me a very extraordinary one, supposing it to run parallel with a great depreciation in the value of money. The same fact appeared in the price of labour rising very little through England before the scarcity of 1795; and as to corn, it did not on a fair average of years, and through the whole kingdom, rise at all. But I shall attend merely to the price of land.

The common observation, and a true one, is, that the decline in the value of money is to be seen, not in the price, but in the rent of land, though the years purchase remain the same, the rent is greatly risen.

Where many causes contribute to an effect, it is a common error to attribute the whole effect to that cause only which best suits the purpose of an argument. Rent rises, not only from a depreciation of money (supposing the fact), but from the exertions made in cultivation, and by various other circumstances. While the depreciation of money unquestionably must have operated more than other causes, that is, from American metals first becoming general in Europe, the rise in the years purchase of land held some proportion with the rise of rent. In the fifteenth century, ten years purchase; in the beginning of the seventeenth fourteen and a half; the latter part of the same twenty-two and a half; and continued rising to the accession of His present MAJESTY. In 1767-8 and 1770, I found it from thirty-one and a half to thirty-three and a half. During the American war it fell to twenty, and had the whole kingdom at that time been examined, I do not think it would any where have been found more than twenty-four. If these circumstances, which

which form a double experiment of the price rising with the depreciation of money, and falling with its scarcity, be combined, it must at least suggest a reasonable doubt whether money has been depreciated for the last thirty or forty years in the degree commonly supposed.

Respecting the rent being taken as the only criterion: it should be considered, that there are in all modern periods very considerable investments made in land, entirely or partly free from the motive of the interest it returns; such as the purchase of residences in the country; all acquisitions with a view to game, rural beauty, parliamentary interest, and a multitude of other motives, which should, as national wealth increases, raise a competition in the general demand for land, and consequently the price of it. All this portion, and it is not a small one, is quite free from the objection founded on rent.

There is another circumstance to be considered: the national wealth, as marked by the circulating medium, whether money or paper, may be doubled, if the transactions of industry be doubled, and yet without the smallest depreciation of its value. This appears extremely clear, without entering into details; and if so, to prove an immense addition to circulation, without proving that there has not been an equal increase in the commerce, manufactures, and other branches of industrious exertion, is in fact nothing to the purpose of proving a depreciation in value of the medium.

SECT. XI.—SOCIETIES.

A SOCIETY of Agriculture has been established for about fifteen years in this county, which meets at Chelmsford.

IMPORTANCE OF AGRICULTURAL SOCIETIES.

" The general utility and expediency of agriculture, in all places where the spontaneous productions of the earth are insufficient for the support of the inhabitants, is too evident to need any laboured proof. It is no less clear, that this utility and expediency must increase in some proportion to increased population. If 100,000 people, for instance, are advanced to 150,000, either the same extent of soil must be rendered more productive, or a greater quantity of it be brought into cultivation, as many of them must otherwise be reduced to the necessary alternative either of emigration or famine.

" If to increased population be added an increase of wealth and riches, with their usual attendants, increased luxury, increased extravagance and refinement, followed by their numerous train of artificial wants, giving birth to new species of the arts of mechanism, and new species of trade and manufacture, to supply the demands and multiply the indulgences of advanced civilization; all these will draw a larger proportion of men from the culture of the land, and the remainder will have the greater encouragement to the labours of husbandry; and hence will arise a more alert and spirited, a more improved and extended cultivation.

" This seems to have been precisely our own case. During the first forty or fifty years of the last century, our population was nearly stationary; at best its advance was extremely slow. Sometimes perhaps it was even retrograde. Our wealth, and of course our luxury, our trade, manufactures, and commerce, were comparatively little augmented, and our agriculture was, as it were, in a state of torpor, for want of more lively and powerful incite-

incitements; the produce of its most moderate exertions being more than adequate to our domestic necessities. But what a reverse has taken place within the compass of the last fifty or sixty years! Our population has increased by more than one-third of its present total amount; our wealth has risen in a still higher proportion; our luxury, our trade, our commerce, in a ratio higher still: all have given life, activity and vigour to our agriculture, never known before. The produce of our old enclosures, by more judicious and skilful management, has been astonishingly augmented; and new enclosures, in prodigious numbers, have taken place, both of open fields, and of wastes and commons. Hence the desert and the wilderness have become fruitful fields, abundant in corn or pasturage, as best suited their respective soils, or their respective situations and circumstances. In the mean time the intercourse and mutual communication of every part of the kingdom, and the reciprocal conveyance of the necessaries as well as the conveniences, comforts, and more elegant accommodations of improved social life, have been greatly and rapidly facilitated by the increase of turnpike roads and navigable canals.

"But notwithstanding these great and numerous improvements, our wealth, our prosperity and luxury have so greatly got the start of them, that during the last thirty years our agricultural produce has gradually fallen so far short of our consumption, that, upon the unfortunate occurrence of a few deficient crops, we have experienced considerable distress, notwithstanding the enormous unparalelled importation of corn from abroad, aided by unusual domestic economy, especially among the higher ranks of the community.

"All these circumstances furnish additional proofs of the expediency of a still further improvement and wider

extent of cultivation; at the same time they hold out additional incitements to a more eager and vigorous exertion, in order to accomplish these desirable purposes. For as the demands for the fruits of the earth increase, the profits arising from their production will be increased in a similar proportion. And as self-interest is the grand spring that sets mankind in motion, some persons have hence concluded that all artificial measures for the encouragement of husbandry are needless; that Societies, Institutions, and Boards of Agriculture, may serve indeed for parade and ostentation, but in every other view are quite insignificant. And it has been thought that great plausibility is given to this idea by the ill success of such establishments in France, Italy, and other countries.

" And thus much may safely be conceded, that no encouragement given by agricultural institutions, can counterbalance the obstructions arising from certain situations, from inclement seasons, and a thousand other circumstances. If a country be in a state of decline, if its population, its trade, its commerce, its manufactures, are decreasing, its agriculture will decrease and decline likewise; and inclement seasons alone may defeat the utmost efforts of human ingenuity; and these may be much more considerable than we have recently experienced. It must also be allowed, that if agricultural institutions be founded upon false principles; or supposing their principles ever so just, yet if their measures and regulations are injudiciously conducted, instead of answering beneficial purposes, they may produce effects the most pernicious and destructive.

" How far any of these considerations apply to the British Board of Agriculture, it may not be amiss to inquire.

" The time of its institution was when the produce of the

the country was growing more and more inadequate to its consumption, notwithstanding every motive which private interest could suggest for the increase and improvement of our cultivation. It was therefore expedient to try what a more general combination of human ingenuity could do towards furnishing new incitements and new advantages for the achievement of this necessary object. Hence arose the Board of Agriculture, consisting of persons of the first rank and consequence in the kingdom, and of numerous other individuals, some of whom were well skilled in the theory of husbandry, and others not a little conversant in the practice.

"The Board being once established, the next requisite was to collect information of the state of agriculture in every county: the difficulties and obstructions it had to encounter, what were the various and different kinds of soil in different places, what their peculiar management, with innumerable other particulars connected with the general subject.

"To acquire this intelligence, it was justly deemed expedient to employ some experienced person in every quarter, giving him directions as to the general and leading objects of inquiry.

"Upon this plan a vast variety of useful and important information from, I believe, every county in Great Britain, was obtained, and the Reports of the several surveys were respectively printed. These Reports, though the sentiments of some of the Reporters are manifestly absurd, and warped by their prepossessions and prejudices, yet contain a much more complete representation of British Agriculture than was ever before presented to the world.

"To render this information, however, still more complete, these Reports were dispersed through each county respectively, to such persons as were deemed competent

judges of the subjects treated of, requesting them to insert in the margin, which was left sufficiently spacious, such objections and observations as might occur to them upon an attentive and candid perusal. Accordingly returns were soon made from every quarter. Upon these returns, were published, enlarged, amended, and improved Reports; the Board, however, very judiciously premising that they were not to be considered as sanctioning all the sentiments contained in them, but that they left them for future free and full discussion, meaning finally to collect from them all, what might appear of the greatest and most essential importance, and give it to the world in one entire publication, arranged and distributed under a variety of heads any way related to the general object of inquiry.

"I mention this, because the declaration of the Board, that they by no means sanctioned every thing advanced either in the primary or secondary Reports, has been considered as extremely absurd, and highly reprehensible. But nothing can be more unjust than such an imputation; For, generally speaking, have not the Surveyors published their own reports? Who therefore but themselves are answerable for their contents? Nay, when published by the Board, have they not been published as the report of the Surveyors, and not of the Board? Who therefore but the Surveyors are responsible for what they contain, at least as far as their own contributions extend?

"When the secondary and improved reports were required, the instructions given to the several reporters were much more full, minute, and particular, than those given for the first, as well as arranged and digested in a much more regular, connected and dependent order. This could not but greatly facilitate the labour of the persons applied to, as I have myself very sensibly experienced.

Besides,

Besides, it was highly expedient that the plan should be uniform for every County in the kingdom, that the final aggregate publication of the Board might be the more easily and completely digested.

"This so manifestly useful and judicious a measure, one would have thought must have met with universal approbation. But this seems to be far from the fact. It has, on the contrary, been censured as meant to influence and bias the judgment of the reporters or surveyors, the more effectually to promote the sinister purpose of the Board.

"As far as I am myself immediately concerned, I have the strongest presumptive evidence that the charge is totally groundless. The Board, prior to the request with which they honoured me to draw up the Essex Report from the materials previously provided me, together with such observations and facts as might occur to myself, and to arrange the whole in the order prescribed, very well knew that my sentiments, respecting many particulars, were very different, not only from those of some of the Surveyors, but even of several Members of the Board. If this be not a satisfactory indication of impartiality and candour, and of a real sincere desire to collect useful information, and finally to apply it to the highest advantage and benefit of the kingdom at large, I know not what is or can be. But whatever may have been the intention of the Board, I must here take the liberty most solemnly to declare on my own part, that they have not thrown the smallest bias on me. I feel not myself in the smallest degree influenced by the sentiments of any man or any body of men whatever. I form my own free unfettered opinion to the best of my ability; I hope, however, always to keep my mind open to future conviction upon the appearance of adequate evidence, and to shew that

that regard to the judgment of others, which induces a fair and attentive examination.

" Before I finish this digression, I must ask pardon of the Board for having attempted to vindicate any of their measures. I am fully persuaded that if any vindication be thought necessary, they are themselves infinitely more competent to the undertaking than I can pretend to be.

" I now return to the principal purpose of this introduction, which is, to shew the general utility of institutions for the encouragement of Agriculture, and of the recent British Establishment in particular.

" I have already observed, that profit and private interest, real or imaginary, is the grand spring that sets mankind in motion. But this principle may be well or ill-directed, according to the extent and correctness of the knowledge and information by which it is governed. Ignorance may pursue its imagined interest to great disadvantage, and even entire ruin. But this necessary correctness and extent of information, in a large community, can in no way be so easily and expeditiously obtained, as by a public central institution for the general collection of intelligence from every quarter respecting the object in question. Hence it will soon be known what are the different soils in every district; what their state of culture, improvement and produce; and how far the more forward advancement in some may most easily be communicated to, and take place in others, and all be made more rapidly to advance nearer and nearer to perfection.

" These seem the natural consequences of public institutions for the extension and improvement of Agriculture, when properly conducted.

" With regard to the recent British Establishment for this purpose, as far as I am competent to judge, nothing can be conceived more judicious and excellent than its *general*

neral plan, nor do I know that it has been materially deficient in its gradual execution. And should it be said, as indeed it repeatedly has been said, that its beneficial effects have not yet been discernable, it is rather to be ascribed to inevitable contingencies, especially to a very unusual succession of unfavourable seasons, which no human wisdom could foresee, nor human prudence guard against, than to any other cause. It is also to be remembered, that its utility requires time for full decisive manifestation. This great advantage it has certainly already produced. It has excited an anxious attention to agricultural subjects amongst persons of property, rank and talents, in every, even the remotest quarters of the kingdom. This, operating upon that vast body of information already collected, cannot fail of giving rise to an almost unbounded variety of useful improvements. For my own part, I am so deeply persuaded of this, that I indulge the most sanguine expectation, that this great and laudable institution will finally be crowned with the most distinguished and happy success*."

SECT. XII.—COMPARISON OF TIMES.

THE Board of Agriculture having, in consequence of a requisition from the Corn Committee of the House of Commons (1804) procured returns from the several counties, of the expenses on arable land in 1790 and 1804, I am permitted to insert here the result of their inquiries in the county of Essex, which will be seen in the following tables:

* Howlett.

DAY-WORK.

Communication.	Price in Winter, 1790. Per Week.		Price in Winter, 1804. Per Week.		Price in Summer, 1790. Per Week		Price in Summer, 1804. Per Week.		Price in Harvest, 1790. Per Week.		Price in Harvest, 1804. Per Week.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
No. 1. C. Kortright, ...	8	0	12	0	....		....		15	0	22	6
2. J. Rogers, ...	8	0	12	0	9	0	13	0	15	0	21	0
3. G. Pung, ...	6	0	9	0	6	0	9	0	12	0	21	0
4. Lewis Majendie, ..	7	0	9	0	7	0	9	0	18	0	31	6
5. John Sewell, ...	7	0	9	0	7	0	9	0	18	0	30	0
6. J Griggs, ...	9	0	10	0	10	0	12	0	22	0	31	6
7. T. L. Tweed, ...	9	0	12	0	9	0	12	0	21	0	26	3
8. T. Isaac, ...	7	6	12	0	10	0	15	0	21	0	30	0
9. Montague Burgoyne,	8	0	10	6	9	0	12	0	15	0	21	0
10.	7	0	9	0	7	0	9	0	8	0	10	6
Average, ...	7	11	10	$5\frac{1}{4}$	8	$2\frac{1}{2}$	11	4	16	6	24	$6\frac{1}{4}$
Per cent.			$42\frac{15}{35}$				$38\frac{14}{167}$				$48\frac{19}{25}$	

WAGES.

Communication.	Head Man's Wages, 1790. Per Annum.	Head Man's Wages, 1804. Per Annum.	Second Man's Wages, 1790. Per Annum.	Second Man's Wages, 1804. Per Annum.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
No. 1.....	....	....	....	....
2.....	8 8 0	12 12 0	6 0 0	10 0 0
3.....	0 6 0 per week.	0 9 0 per week.	0 6 0 per week.	0 9 0 per week.
4.....	0 9 0 per week.	0 12 0 per week.	0 8 0 per week.	0 10 0 per week.
5.....	0 9 0 per week.	0 12 0 per week.	0 8 0 per week.	0 10 0 per week.
6.....	0 12 0 per week.	0 15 0 per week	0 10 0 per week.	0 12 0 per week.
7.....	10 10 0	12 12 0	8 8 0	10 10 0
8.....	0 10 0 per week.	0 14 0 per week.	0 9 0 per week.	0 13 0 per week
9.....	0 12 0 per week.	0 16 0 per week.	0 9 0 per week.	0 13 0 per week
10.....	0 9 0 per week.	0 10 6 per week.	0 7 0 per week.	0 9 0 per week
Average, ...	9 9 $9\frac{1}{4}$	12 18 $2\frac{1}{4}$	7 18 $6\frac{1}{4}$	10 14 $5\frac{1}{4}$
Per Cent. ..	$36\frac{1}{2}$		$35\frac{1}{4}$	

PIECE-

PIECE-WORK.

Communication.	Reap Wheat, 1790. Per Acre.	Reap Wheat, 1804. Per Acre.	Mow Barley, 1790. Per Acre.	Mow Barley, 1804. Per Acre.	Thrash Wheat, 1790. Per Quarter.	Thrash Wheat, 1804. Per Quarter.	Thrash Barley, 1790. Per Quarter.	Thrash Barley, 1804. Per Quarter.	Filling Earth, 1790. Per Yard.	Filling Earth, 1804. Per Yard.	Filling Dung, 1790. Per Load.	Filling Dung, 1804. Per Load.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
No. 1...	5 0	10 6	1 8	3 0	2 6	4 4	1 4	2 6	0 5	0 6	0 3½	0 4
2...	5 0	8 0	1 4	2 0	2 0	3 6	1 4	2 0	0 1¼	0 1¾	2 10 per score.	4 0 per score.
3...	5 0	8 0	1 6	3 6	2 0	3 0	1 0	1 6	0 1¼	0 2¼	11 6 per score.	2 3 per score.
4...	..	..	..	..	2 2	3 6	1 3	1 8	0 3	0 3½	0 1	0 1¾
5...	..	..	..	..	2 0	3 3	1 3	1 10	0 3	0 4	0 0¾	0 1½
6...	6 0	8 0	3 8	5 3	2 4	3 9	1 10	2 3	0 3	0 4	0 1½	0 2¼
7...	7 6	10 6	2 0	3 0	3 0	4 0	1 8	2 6	0 3	0 3½	0 1¾	0 2¾
8...	7 0	10 6	1 4	2 4	2 2	4 0	1 6	2 6	0 0	..	0 1½	0 2½
9...	6 0	9 0	1 6	2 0	2 6	4 0	1 6	2 0	0 1¼	0 1¾	1 9 per score.	2 6 per score.
10...	5 0	7 0	..	..	2 0	3 0	1 6	8 0	0 0	..	..	..
Average,	5 9½	8 11½	1 10¼	3 0	2 3	3 7¼	1 5	2 0½	0 2¼	0 3¾	0 1¼	0 1¾
Per Cent.	54 $\frac{24}{175}$		61 $\frac{1}{7}$		61 $\frac{1}{7}$		44 $\frac{1}{9}$		30		60	

BLACK-

BLACKSMITH.

Communication.	Tire. 1790. Per lb.	Tire. 1804. Per lb.	Plough-Irons, 1790. Per lb.	Plough-Irons, 1804. Per lb.	Chains. 1790. Per lb.	Chains. 1804. Per lb.	Shoeing. 1790. Per Shoe.	Shoeing. 1804. Per Shoe.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
No. 1.	0 4	0 7	1 0	1 5	0 0	0 0	0 5	0 7
2.	0 4	0 6½	0 5	0 6	0 7	0 8	1 8*	2 0*
3.	0 3¼	0 4¼	0 4½	0 6	0 4½	0 6	0 4½	0 6
4.	0 3¼	0 4	0 4½	0 6½	0 5	0 7	0 4½	0 6
5.	0 3½	0 4	0 4½	0 6	0 5	0 7	0 4½	0 6
6.	0 3½	0 4	0 6	0 8	0 6	0 8	0 6	0 7
7.	0 3	0 3½	0 6	0 8	0 5	0 6	0 5	0 6
8.	0 0	0 0	0 0	0 0	0 0	0 0	0 5	0 7
9.	0 3	0 4	0 4½	0 6	0 6	0 8	0 5	0 7
10.	0 0	0 0	0 0	0 0	0 0	0 0	1 4†	2 0†
Average,	0 3¼	0 4½	0 5¾	0 7¾	0 5½	0 7	0 4¾	0 6½
Per cent.	38 6/17		31 15/23		27¼		30 16/17	

* Per set. † Per set.

ARTISANS.

Communication.	Carpenter. By Day, 1790.	Carpenter. By Day, 1804.	Mason. By Day, 1790.	Mason. By Day, 1804.	Thatcher. By Day, 1790.	Thatcher. By Day, 1804.	Collar-Makers' Work. 1790.	Collar-Makers' Work. 1804.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
No. 1.	2 0	3 0	2 0	2 10	0 0	0 0	0 0	0 0
2.	2 0	2 8	2 0	2 8	2 3	3 6	0 0†	0 0†
3.	1 6	2 0	1 6	2 0	0 0	0 0	0 0	0 0
4.	2 0	2 4	2 0	2 4	0 0	0 0	0 0‡	0 0‡
5.	2 0	2 4	2 0	2 4	0 0	0 0	0 0§	0 0§
6.	2 3	3 0	2 3	3 0	2 0	2 6	1 8	2 0
7.	2 6	3 6	2 6	3 6	2 6	3 6	1 0‖	1 6‖
8.	2 6	3 6	2 6	3 6	2 6	3 6	0 0	0 0
9.	2 0	3 0	2 3	3 6	2 6	4 0	2 0	3 6
10	2 0	2 6	2 0	2 6	2 0	2 6	0 0	0 0
Average,	2 $0\frac{1}{4}$	2 $9\frac{1}{4}$	2 1	2 $9\frac{1}{2}$	2 $3\frac{1}{2}$	3 3	1 $7\frac{1}{4}$	2 $7\frac{1}{4}$
Per cent.	$36\frac{4}{13}$		34		$41\frac{9}{13}$		$62\frac{36}{77}$	

† Increased one-third. ‡ Doubled. § Doubled. ‖ With board.

RENT, TITHE, AND PARISH TAXES.

Communication.	Rise of Rent, from 1790 to 1804.	Tithe.		Parish Taxes.	
		Per Acre. 1790.	Per Acre. 1803.	In the Pound. 1790.	In the Pound. 1803.
		s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
No. 1.	. . . . .	2 6	4 6	4 0	7 0
2.	Increased one-third	3 0	5 9	4 3	6 6
3.	14*s.* to 21*s.*	4 0	6 0	3 0	9 0
4.	20 per cent.	3 6	4 9	5 6	9 6
5.	20 per cent.	4 0	4 6	7 0	11 9
6.	20 per cent.	3 9	5 0	4 0	7 6
7.	15*s.* to 21*s.*	3 6	5 6	4 0	7 6
8.	75 per cent.	1 6	4 6	2 0	3 6
9.	25 per cent.	3 3	4 6	4 0	6 0
10.	12*s.* to 29*s.*	0 0	0 0	3 6	8 9
Average,	. . . . .	3 $2\frac{3}{4}$	5 0	4 $1\frac{1}{2}$	10 $8\frac{1}{4}$
Per cent.	$38\frac{8}{9}$	$54\frac{1}{4}$		$165\frac{15}{17}$	

MANURE.

Communication.	Expense of Manure.	
	1790.	1804.
	£. s. d.	£. s. d.
No. 1. ..	0 1 0	0 2 6
2. ..	0 14 0	1 1 0
3. ..	1 10 0	2 10 6
4. ..	.....	.....
5. ..	.....	.....
6. ..	.....	.....
7. ..	.....	.....
8. ..	.....	.....
9. ..	8 0 0	15 0 0
10. ..	0 2 6	0 5 0
Average, ..	0 2 $3\frac{1}{5}$	0 4 $3\frac{1}{4}$
Per cent. ..	$88\frac{9}{109}$	

In order to render the information as complete as possible, and to supply deficiencies in the preceding account, the Board ordered a second inquiry into the charges of 100 acres of arable, under the following heads:

	1790.	1803.
Rent, ...		
Tithe, ...		
Rates, ...		
Wear and tear, ...		
Labour, ...		
Seed, ...		
Manure purchased, ...		
Team, ...		
Interest of capital, ...		

Unfortunately, two answers only were received from Essex. If any species of jealousy was the occasion of this, it

it was extremely ill-judged. The inquiry originated with the House of Commons, then employed in arranging the export and import scale of the corn bill; and it was consequently necessary to shew in what degree the expenses of husbandry had increased since the former corn law of 1790.

The following two answers only were received.

Communication.	Rent.						Tithe.						Rates and Taxes.					
	1790.			1803.			1790.			1803.			1790.			1803.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
No. 1. L. Majendie, Esq	75	0	0	90	0	0	18	0	0	20	0	0	22	10	0	45	2	6*
2. J. Ambrose, ..	100	0	0	125	0	0	20	0	0	25	0	0	20	0	0	37	10	0
Average, ...	87	10	0	107	10	0	19	0	0	22	10	0	21	5	0	46	6	3
Per cent.	$22\frac{9}{17}$						$18\frac{8}{19}$						$94\frac{21}{51}$					

* In calculating this item, a great difference appears between 1790 and 1803, if we take the increase of all public and parochial taxes; for what is borne by the farmer in common with other classes, ought not to be reckoned: the whole of the horse tax is placed to the increased expenses. The farm of 100 acres will employ four horses, the tax on which will be 1*l.* 17*s.* 6*d.* on three, and 2*l.* on the fourth, as a riding horse. Poor-rates differ in every parish, but in the aggregate the increase is great, during the interval in question; a growing evil, the consequence of which is much to be feared.

Communication.	Wear and Tear.						Labour.						Seed.					
	1790.			1803.			1790.			1803.			1790.			1803.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
No. 1. L. Majendie, Esq.	22	0	0	31	0	0	92	16	0	120	0	0*	31	0	0	31	0	0†
2. J. Ambrose, ..	20	0	0	25	0	0	113	11	0	140	0	9	48	0	0	58	0	0
Average, ...	21	0	0	28	0	0	103	3	6	130	0	4½	39	10	0	44	10	0
Per cent.	33⅓						26⅕						12					

* Four men 48 weeks, in 1790, at 8*s.* per week, and harvest at 4*l.* each. In 1803, 10*s.* per week, and 6*l.* the harvest month.

† As the farmer produces his own seed, no difference seems necessary to be noted; the additional expense of growing it is charged in the expense of other articles. In May 1790, wheat sold for 14*l.* to 14*l.* 10*s.* per load at Halstead-market, and barley at 24*s.* Seed was dearer in 1790 than in 1803.

Communication.	Manure.						Team.						Interest.						Total.					
	1790.			1803.			1790.			1803.			1790.			1803.			1790.			1803.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
No. 1.* L. Majendie, Esq.	0	0	0	0	0	0	5	0	0	8	0	0	22	10	0	30	0	0	288	16	0	375	2	6
2. J. Ambrose, . .	20	0	0	30	0	0	70	0	0	105	0	0	25	0	0	37	10	0	436	11	0	593	9	0
Average, ...	20	0	0	30	0	0	37	10	0	56	10	0	23	15	0	33	15	0	362	13	6	484	1	$7\frac{1}{2}$
Per cent.	50						$50\frac{2}{3}$						$42\frac{2}{19}$						$33\frac{1}{3}$					

* Few arable farmers purchase manure in these parts. Chalk is at the same price as in 1790, as well as clay marl; but where manure is really purchased, an advance of one-third has advanced since 1790.

† What is intended by team, is not clearly comprehended, so as to induce a proper answer to this query, unless it respects the renewing a team. Suppose a horse bought at three years old, and that he lasts till he be fifteen, the proprietor keeping four horses, would want a horse every third year, which, in 1790, he might have bought for 16*l.* but in 1803 it would have cost 24*l.* being 3*l.* per annum nearly, in advance to keeping his team; but if he breeds and rears colts, this does not seem to apply.

RECAPITULATION.

LABOUR.

		Average.
Rise in the price in winter from 1790 to 1803,	42	
——— summer	38	
		40
——— harvest	48	
——— reaping wheat	54	
——— mowing barley	61	
		54
——— head man's wages	36	
——— second ditto	35	
		35
——— thrashing wheat	61	
——— barley	44	
		52
——— filling earth	30	
——— dung	60	
		45
Divide by	5)226	
General rise in husbandry labour	45	

ARTISANS.

Blacksmith rise in price of tire from 1790 to 1803	38	
——— plough irons	31	
——— chains	27	
——— shoeing	36	
Average,	33	
Carpenter	36	
Mason	34	
Thatcher	41	
Collar-maker	2	
Average of artisans	41	

RENT AND TAXES.

Rise of rent	38
——— tithe	54
——— rates	165

	Per cent. rise.
Labour	45
Artisans	41
Rent	38
Tithe	54
Rates	165
Manure	88
Average	71

In remarking on these particulars, I am, in the first place, to note, that the Board is not in the least committed, relative to this information thus arranged. That body simply ordered circular letters to be written; and every reply stands distinctly on the personal authority of the writer. There ends the authority of the papers as I received them. The calculations to draw them into one view, I have made for the satisfaction of such readers as might wish to know what such a general result would be.

It does not however follow, that, supposing the authority of the letters correct, the averages would be the same, when a certain rise per cent. is deduced from them.

In this sketch, for instance, which gives 71 per cent. every one of the six articles should be of equal importance, which is far from being the case. Manure, which, if bought, stands so high in the list, may in fact be the lowest, and in bad times, perhaps is so. Rates here stand for one,

one, and rent or labour for no more; but that article is of far inferior importance to either.

The same observation is applicable to the particulars from which these sums are drawn. In that of labour, servants' wages count with summer and winter labour, and filling earth and dung the same; but it is sufficiently obvious, that in fact, no such proportion holds. The same remark applies to artisans.

In order therefore to attain a nearer approximation to the real fact, we must divide the several objects of expense according to their proportionate importance, and in doing this, to form the calculation for 100 acres.

1790.	£.	s.	d.
Rent, by Mr. VANCOUVER's notes, 14s. 6d. per acre,	72	10	0
Tithe, at 3s. 2¼d.*,	16	2	9
Rates, at 4s. 1¼d.*,	20	12	6
Wear and tear†,	21	0	0
Labour†,	103	3	6
Seed†,	40	0	0
Manure‡,	20	0	0
Team‡,	70	0	0
Interest of capital‡,	25	0	0
	£. 388	8	9

* From the answers to the first letter.

† Average of the second letter.

‡ From second letter No. 2.

Rent,

1803.	£.	s.	d.
Rent, by my notes, 10s.	100	0	0
Tithe, 5s.	25	0	0
Rates, 10s. 8d.	53	6	8
Wear and tear rise 4l.,	29	10	0
Labour rise 45,	149	0	0
Seed,	40	0	0
Team*,	105	0	0
Manure*,	30	0	9
Interest*,	37	10	0
	£.569	6	8

Which is a rise of 46 per cent. And this I take to be as near the truth as these data will permit us to arrive at.

In Suffolk it was found to be 32 per cent†.

In Norfolk 33.

This distribution of the expenses of an Essex farm, may be applied to a very different inquiry; what, for instance, is the gross income derived from land, the rental of which is 100*l.*?

	£.	s.	d.
The landlord in rent,	100	0	8
The rector in tithe,	25	0	0
The non-industrious and other poor, in rates,	53	6	8
Artisans, suppose one-half the wear and tear,	14	10	0
The industrious poor in labour,	149	0	0
Capitalist, interest,	37	10	0
And suppose the farmer makes another 5 per cent. for himself,	37	10	0
The money payments of the farmer therefore yield an income of	£.416	16	8

* Second letter.

† See my Reports for those Counties.

But

But those who buy the produce of these 100 arable acres make an income by their respective trades. Let us examine this object. It will depend on the course of crops: if this be—1. Fallow; 2. Barley; 3. Clover or Beans; 4. Wheat; add to 569*l.* 6*s.* 8*d.* the total just given for 1803, the farmer's profit of 37*l.* 10*s.* it then makes 606*l.* 16*s.* 8*d.*; the produce of the land must therefore amount to this sum.

	£.	s.	d.
Barley, 25 acres, at 5 qrs. per acre, 125 qrs. at 30*s.*	187	10	0
Beans, 3½ qrs.—87½ qrs. at 40*s.*	175	0	0
Wheat, 3½ qrs.—87½ qrs. at 60*s.*	262	10	0
	£. 625	0	0

These crops and prices answer the object:

	Qrs.	*Bush.*		
Barley,	125	0		
Deduct seed,	9	0		
	116	0		
Suppose used at home	16	0		
To sell	100	0	at 30*s.*	150*l.*
Maltster, &c. 10 per cent. on that gum				£.15
Beans,	87	4		
Seed,	6	2		
	81	2		
Used at home,	11	2		
Sold,	70	0	at 40*s.*	140*l.*
Suppose 5 per cent. profit on this				7
Wheat,	87	4		
Seed,	6	2		
	81	2	at 60*s.*	244*l.*

Miller,

Miller, 10 per cent. on this	£. 24
Mealman, 10 per cent. on the half,	12
Baker, 5 per cent.	12
	70
Income on the farmer's money payments,	416
Trade in his products,	70
	486

Now suppose the *land* rental of England to be 30 millions, free from that of houses, mines, timber, &c. and that it yields income in the same proportion, it will give 145,800,000*l.* derived from land produce only.

APPENDIX.

Mark Hall, May 20, 1806.

MY DEAR SIR,

I WAS extremely sorry that I missed the pleasure of seeing you here, when you were on your Agricultural Survey of the County of Essex. I readily give you this sketch of my farm, and a few remarks on the agriculture of this part of the country. Without flattery I may tell you, that whether I consider myself as a landlord or tenant, I feel more obliged to you for the progress of agriculture, and the improvement of land, than to any individual in the British Empire. You, my good Sir, first promoted inquiry, you first set us at work, you first encouraged experiment, and, by collecting information, and combining your own good sense and experience with the communications of your correspondents, have so demonstrated the practicable improvement of all soils, that the original value of lands thus improved bears no proportion to their acquired value. Much, however, remains to be done; but whether the work be completed sooner or later, we shall, I hope, never forget the source from which it originated. I am sorry to observe, that your correspondents have one general defect. They report their brilliant successes, but not a word of their failures. If we wish to benefit our tenants and neighbours, and the public in general, we should faithfully report what has failed, as well as what has succeeded, on

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our farms. "*Hoc sequere, hoc tu Romane caveto.*" And when we communicate the result of experiments, we should confine ourselves to what we have seen with our own eyes, and not what has been reported to us by those we employ.

I have farmed, more or less, above thirty years; generally in rather an extensive way: but have always found myself actuated by a fondness of experiment, and an anxiety for discovery. In this pursuit, I have too often met with disappointment. The result of all agricultural experiments depends so much on weather, and other subordinate circumstances, that I have often had the mortification to discover, that what may be right in one season may be wrong in another. The life of man is almost too short to enable us to decide.

At present, I occupy about 300 acres of arable, and 200 of pasture. The greatest part of my farm was originally good land, and is become much better by improvement. Of the arable, about two-thirds may be called a heavy loam, and requires hollow-ditching, which, you know, we do in Essex to perfection. In this quantity are included about 40 acres, which I hollow-ditched and laid to pasture about twenty years ago. The plant of grass failing, and the land being almost covered by the *Ranunculus acris*, or meadow crowfoot, I was tempted to break it up in the spring of the year 1804; since which time, owing to my not paring and burning, I have lost every thing. The wire-worm, not content with his ravages on my oats the first year, attacked my pease and oats the second, whilst it was not in the power of my horse-hoe, in the last summer, to keep clean that part of the land which was sown with beans; in consequence of which, I am reduced to what you reprobate so much—a complete summer-fallow. You will start when I tell you, that of my

300 acres, I have 90 acres of fallow, about half of which only is intended for turnips and cabbages. You will start more when I tell you, that I ought to have fallowed 20 acres more. Say I am a bad farmer, but you will not deny that I am a candid correspondent. Fallows, perhaps, may not be necessary as often as our leases require; but I have just as much expectation of finding the philosopher's stone, as of discovering a mode of farming without fallows.

You ask me what plough I use. The common Essex swing-plough, made at Billericay by CLARKE, is, I think, the plough best adapted to our soil, and our natives, who have a strong prejudice against using any other. I have one of those ploughs, much improved and strengthened by that ingenious agricultural mechanic, Mr. MARK DUCKETT, whose various implements have afforded more benefit to agriculturists than to himself. I shall have much pleasure in shewing you the different tools contrived by him, at my Ploughing Competition, where, on the 27th and 28th June, I shall be much disappointed if I do not see you. I have certainly used them with much success, and shall be glad to shew you the drilling and horse-hoeing performed by them. I would, however, strongly recommend the utmost caution in the use of the latter. Last year I persevered too late in the use of the horse-hoe, and have reason to think that I injured my crops. In very light soils, less caution is necessary; but in those which are inclined to become stiff and hard, the time should be taken when the soil is in a proper state.

I am making several experiments on the distances of the drills, and cannot help entertaining some fond hopes, that the produce will be in favour of the eighteen inches over the nine. Last year I clearly ascertained that point on a rood of barley, where it was one in ten in favour of

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the eighteen inches. The sample of the eighteen inches was a trifle inferior to that of the nine inches, but the weight was considerably more. I find much advantage from horse-hoeing my red clover: it not only becomes stronger, but is equally productive the second year. I grow large quantities of tares, and have a difficulty in saying, whether they are more beneficial in their produce, or by their effects on the succeeding crops. If my land is tolerably clean, I have a crop of tares before my turnips, and often before wheat.

One melancholy piece of information I must give you: we are all converting our tillage to pasture as quick as we can I hardly meet with a farmer who is not doing this. The price of grain has certainly not kept pace with the increase of the farmer's expenses. The price of labour has increased beyond all bounds; and in proportion to the increase, the work is worse done. Good ploughmen are not to be had: many of those who used to plough prefer other work.

One of the first things in the management of a farm is a due attention to manures, and very few farm-yards are well adapted to this object. I cannot boast of mine being better than my neighbours': but to remedy the bad situation of my farm-yards, I have sespools on different levels, which receive all the dung-water. I have a small moveable pump, with which I empty it into a water-cart; and in case this should be neglected, I have pipes which convey this dung-water on a meadow. Having a mixture of heavy and light land, I carry my heavy on my light soil, and my light on my heavy.

I generally burn my headlands, and all my rubbish earth, weeds, &c. and find much advantage from their ashes. I have a large flock of South-down sheep, which have very much contributed to the improvement of my land.

land. I am not one of those enlightened farmers who have given up the folding their sheep: in the sharp winter weather, they have a littered fold, and are protected from the sharp winds. At other times of the year, except when the lambs are small, they are folded in the common mode.

One of the greatest drawbacks to us farmers is, the extravagant expense of horses, who eat up a very considerable part of the produce of the farm. This has driven me back to oxen, which I used about twenty years ago, and relinquished them. I remember that I gave you my reasons for so doing. Among others, one was, that my enclosures were small, and that I had no rough meadow or pasture to turn the oxen into. The case now is, that my enclosures are large, and I have good and convenient meadows to turn the bullocks into. Whoever attempts to work and feed bullocks like horses, will find himself disappointed; but if he wishes to work the animal which is gradually increasing in value, instead of that which is rapidly becoming less valuable; if he prefers the animal which can be supported at an expense of four shillings per week, to that which will cost him twelve; if he prefers giving twenty guineas for this animal in an improving state, to paying forty for one that is sure to decrease in value, besides being subject to many more accidents—I would recommend to him the use of oxen; and if he calculates on half the work done by horses, he will be a gainer.

I have thus given you a very hasty sketch of my agricultural opinions and practice: cut and slice it, and make what use of it you please.

You will perhaps expect one word concerning the drill, which is used by no person in this neighbourhood except myself. I have always had some broad-cast, but have

constantly found the superiority of the drill; though there are seasons when, on our wet lands, the drill should stop. On light soils, any fool can drill; but a good deal of preparation and management is necessary on a heavy soil. I prefer Mr. DUCKET's and Mr. COOK's drills. I like the former best on a light soil, and the latter on a heavy one. I think some improvement may be made on both of them. Neither of them go sufficiently deep into a stiff clover-lay. DUCKET's hoes are admirable. COOK's scarifying harrow is an excellent implement. I shall wish to shew you these tools in use, and also my thrashing-machine, made by BALL, of Norwich, which answers completely in thrashing all sorts of grain; and, by fixing M'DOUGAL's chaff-cutter and corn-bruiser, I have experienced the greatest advantage. I can with ease thrash two bushels of chaff in a minute, and grind a bushel of malt, or bruise one of corn, in five minutes. This expeditious mode of cutting chaff is of the greatest use, as I give no whole hay, but cut it all into chaff.

I have, I fear, long ago tired your patience, and will only assure you that I am, with much esteem and regard,

DEAR SIR,

Your very sincere

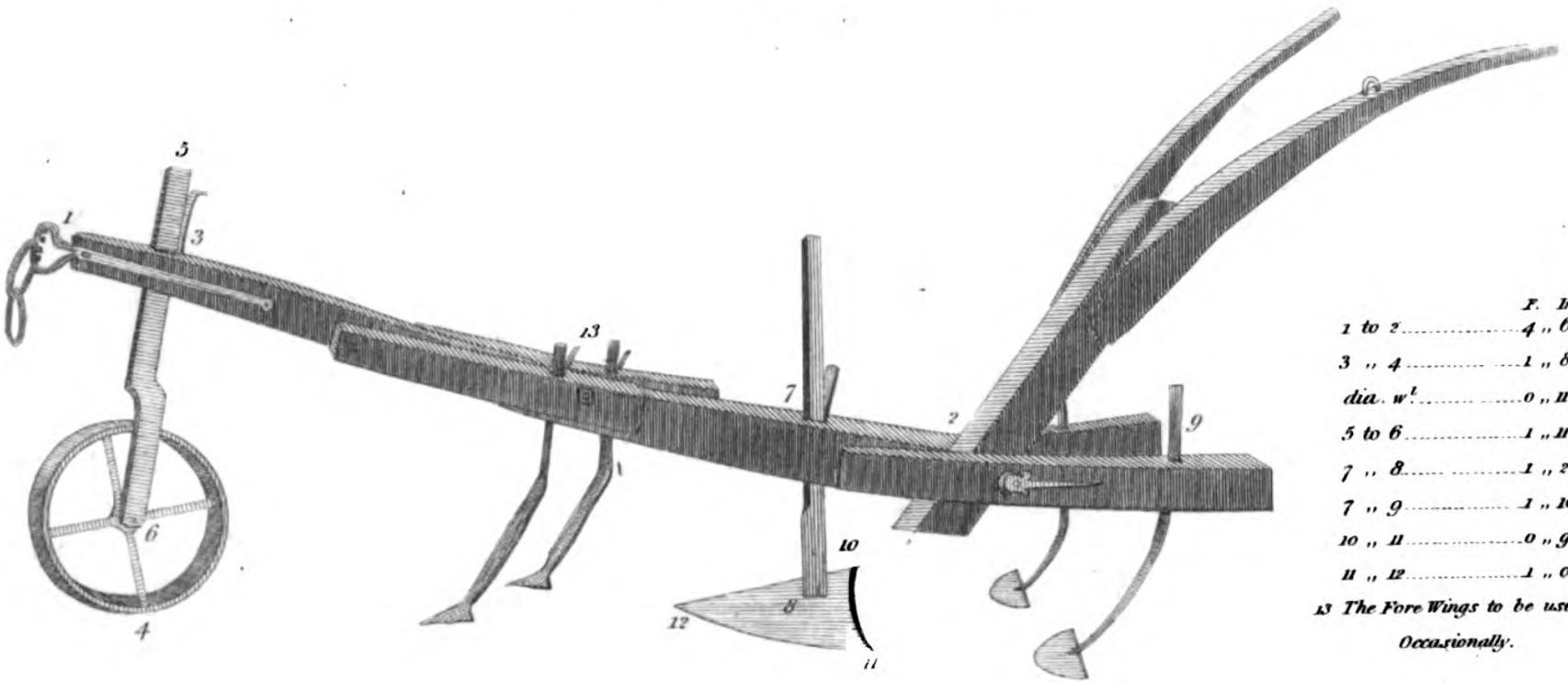
And faithful humble servant,

MONTAGU BURGOYNE.

THE END.

Printed by B. M'Millan,
Bow Street, Covent Garden.

Mr. Tweed's improved Horse Hoe.



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Maw-seed.
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Mustard. Brown.

Oats. Early Essex.
—— Dutch brew.
—— Tartarian.
—— Poland.
—— Potatoe.
—— Flanders.
—— Caspian.
—— Black.

Parsley. Plain.
Parsnip. Large thick.
Pea. Marlborough grey.
— Large grey rouncival.
— Early white.
— White boiling.
— Pearl.
— Blue Prussian.
— Maple.
Potatoes. Ox-noble.
——— Late champion.
——— Large red.
——— Nicholson seedling.
——— Bomb-shell.

Rib-grass. Lambs-tongue, or Upright plantain.
Rape, or coleseed.
Rye.

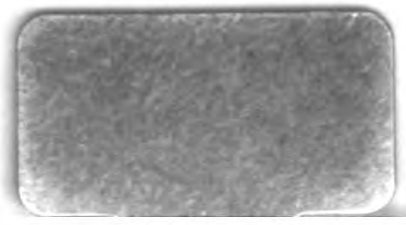
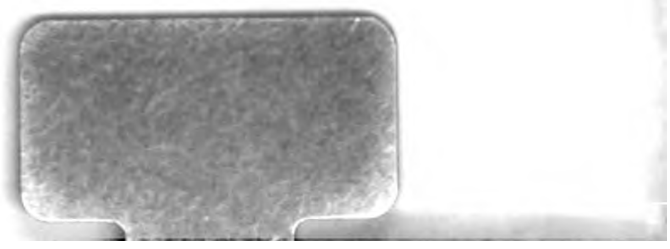
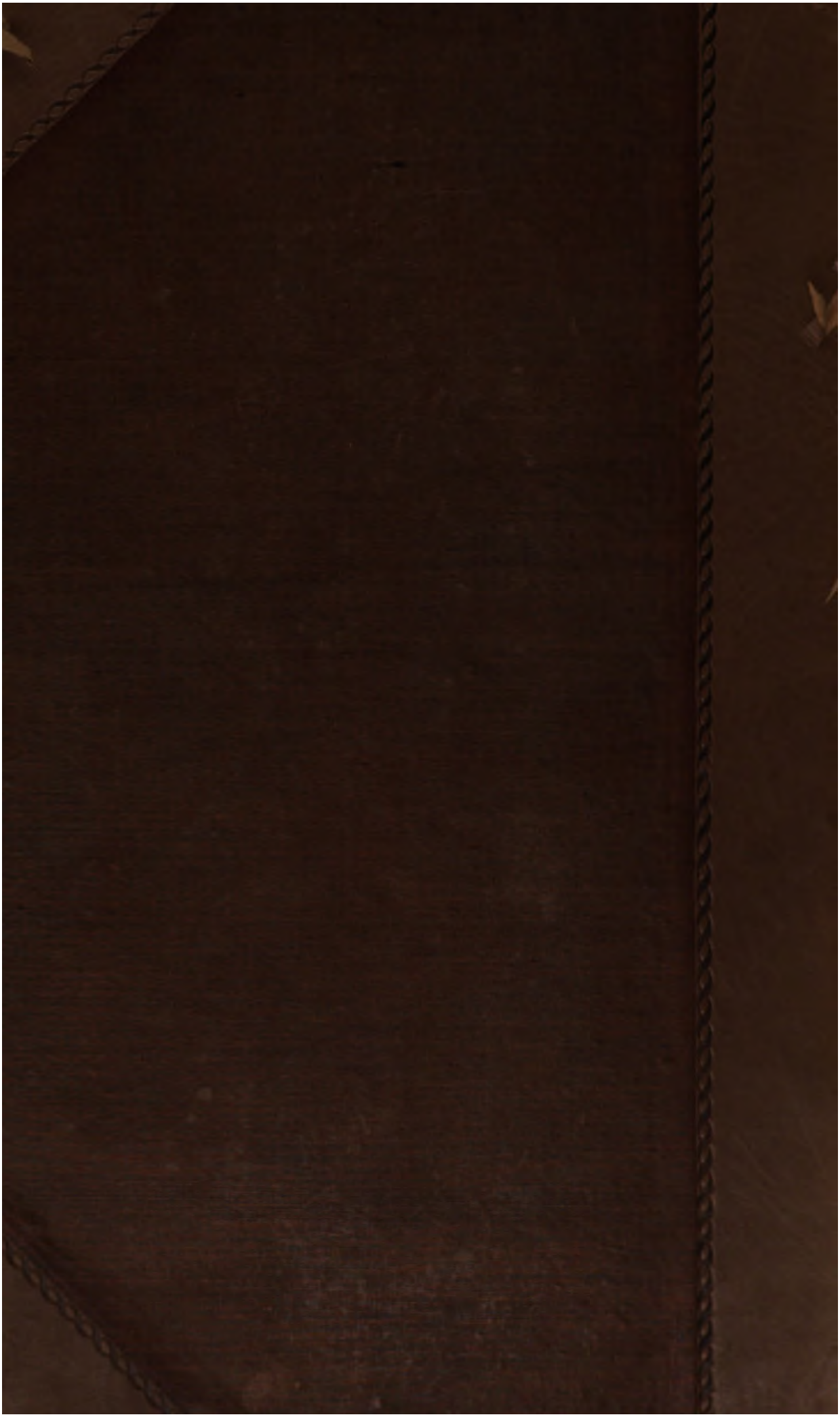
Sainfoin.
Saridella.

Tares. Spring.
—— Winter.
—— White.
—— Perennial
Trefoil. Birdsfoot.
——— Common, various sorts.
Turnip. Early stone.
——— White Norfolk.
——— Norfolk bell.
——— Stubble.
——— Green top.

Turnip. Red-top.
——— Large yellow
——— Globe.
——— White tankard.
——— Green ditto.
——— Red-top ditto.
——— Large Dutch.
——— True yellow Swedish, or ruta baga.
——— White Swedish.

Vetch. Kidney.
—— Chickling.
—— Pale-flowered.
—— Everlasting.
—— Great wood.
—— Six-flowered.
—— Tufted.
—— Bush.
—— Hoary.
—— Sainfoin.
—— Red-flowered.
—— Biennial.
—— Bastard.
—— Broad-podded.
—— Rough.
—— Single-flowered.
—— Narbonne.
—— Flat-podded.
—— Hairy ditto.
—— Narrow-leaved.
—— Streaked.
—— White-flowered.
—— White-seeded.
—— Horse-shoe.
—— Milk.
—— Liquorice.

Weld.
Wheat. Red Lammas.
Common white.
——— White hedge.
——— White Siberian.
——— Egyptian.
——— Sicilian.
——— Round African.
——— Zealand.
——— Cape.
——— Dantzick.
Woad.

Yarrow.

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