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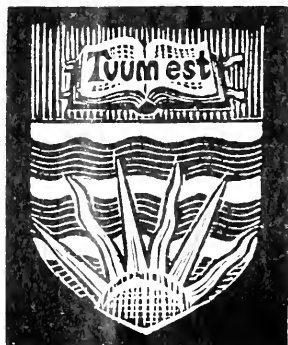


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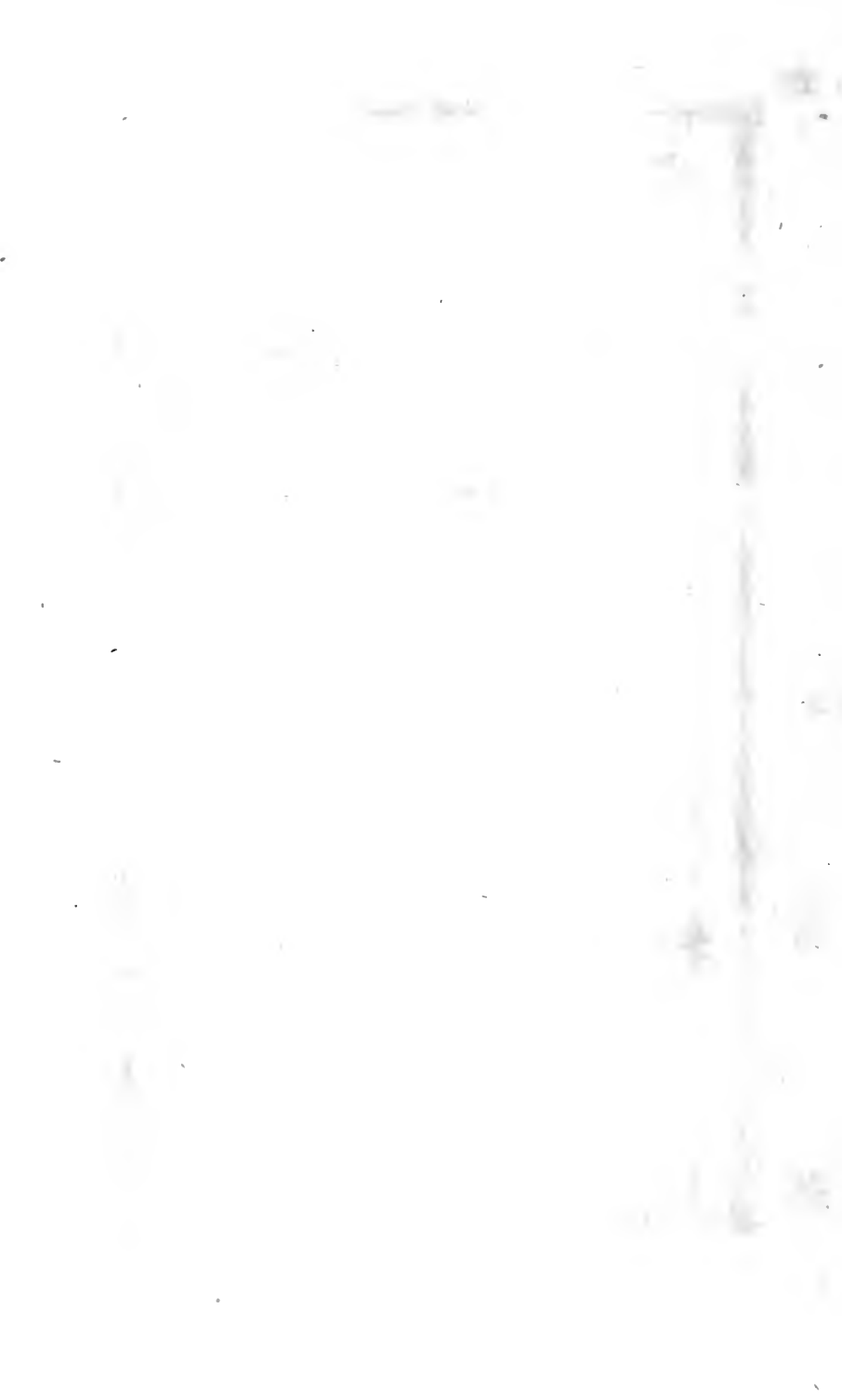


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GENERAL VIEW
OF THE
AGRICULTURE
OF THE
COUNTY OF KENT;

WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

DRAWN UP FOR THE CONSIDERATION OF
THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT,
FROM THE ORIGINAL REPORT TRANSMITTED TO THE BOARD;
WITH ADDITIONAL REMARKS OF SEVERAL RESPECTABLE
COUNTRY GENTLEMEN AND FARMERS.
TO WHICH IS ADDED,
A TREATISE ON PARING AND BURNING.

BY JOHN BOYS,
OF BETSHANGER, FARMER.

THE SECOND EDITION,
WITH AMENDMENTS AND ADDITIONS.

Kent, in the Commentaries Cæsar writ,
Is term'd the civil'st place of all this Isle;
Sweet is the Country, because full of riches;
The People liberal, valiant, active, wealthy.

SHAKSPEARE.

LONDON:
PRINTED FOR SHERWOOD, NEELY, AND JONES,
PATERNOSTER-RROW:
SOLD BY G. AND W. NICOL, PALL-MALL.


1813.

[*Price Eight Shillings in Boards.*]

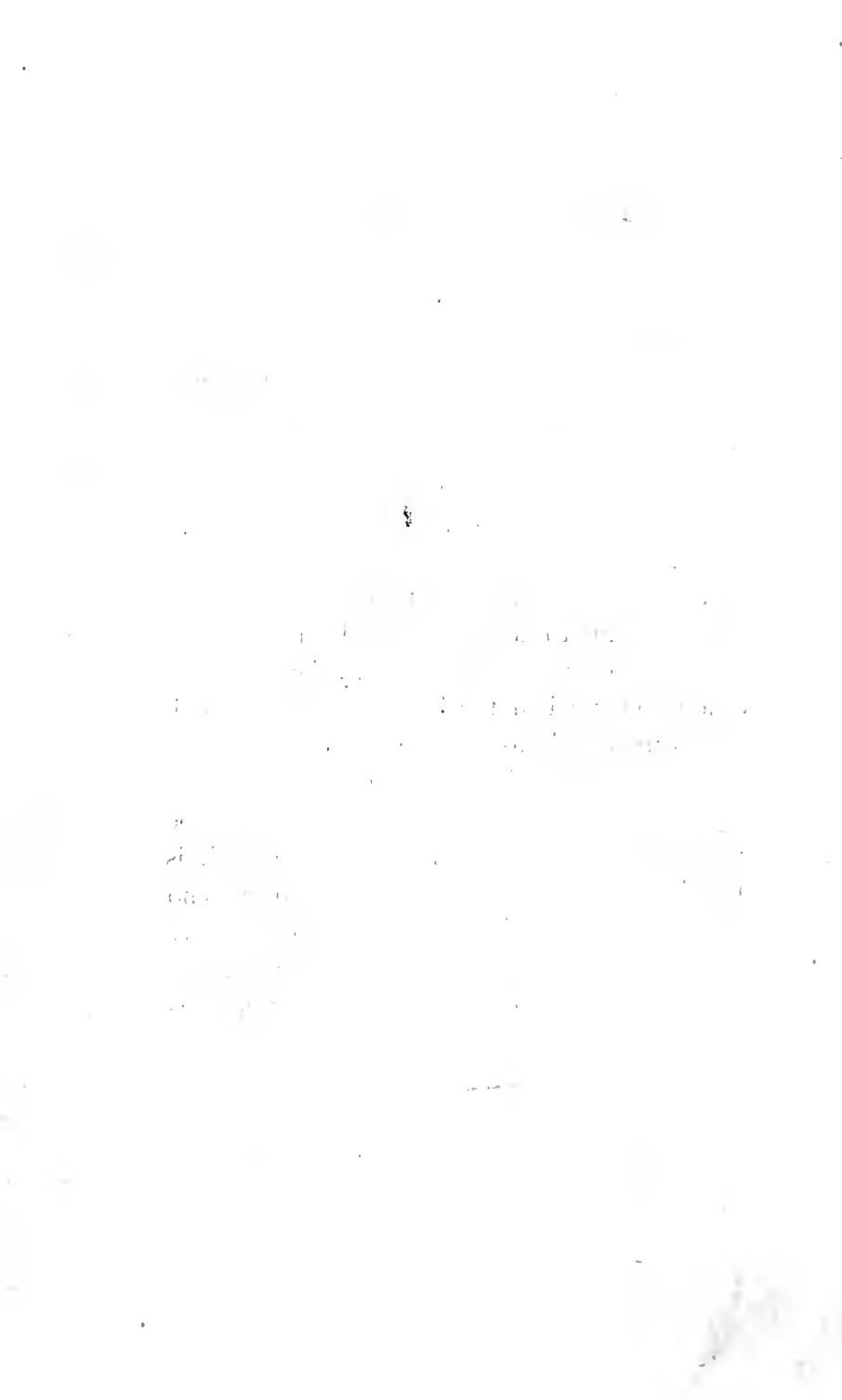
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ADVERTISEMENT.

THE great desire that has been very generally expressed, for having the AGRICULTURAL SURVEYS of the KINGDOM reprinted, with the additional Communications which have been received since the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE to come to a resolution of reprinting such as may appear on the whole fit for publication. It is proper at the same time to add, that the Board does not consider itself responsible for any fact or observation contained in the Reports thus reprinted, as it is impossible to consider them yet in a perfect state ; and that it will thankfully acknowledge any additional information which may still be communicated : an invitation, of which, it is hoped, many will avail themselves, as there is no circumstance from which any one can derive more real satisfaction, than that of contributing, by every possible means, to promote the improvement of his Country.



N. B. *Letters to the Board, may be addressed to Lord SHEFFIELD, the President, No. 32, Sackville-Street, Piccadilly, London.*



P L A N
FOR RE-PRINTING THE
AGRICULTURAL SURVEYS.

BY THE PRESIDENT OF THE BOARD OF AGRICULTURE.

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

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

Under

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

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

That the facts essential for such an investigation might be collected with more celerity and advantage, a number of intelligent and respectable individuals were appointed, to furnish the Board with accounts of the state of husbandry, and the means of improving the different districts of the kingdom. The returns they sent were printed, and circulated by every means the Board of Agriculture could devise, in the districts to which they respectively related ; and in consequence of that circulation, a great mass of additional valuable information has been obtained. For the purpose of communicating that information to the Public in general, but more especially to those Counties the most interested therein, the Board has resolved to re-print the Survey of each County, as soon as it seemed to be fit for publication ; and, among several equally advanced, the Counties of Norfolk and Lancaster were pitched upon for the commencement of the proposed publication ; it being thought most advisable to begin with one County on the Eastern, and another on the Western Coast of the island. When all these Surveys shall have been thus re-printed, it will be attended with little difficulty to draw up an

an abstract of the whole (which will not probably exceed two or three volumes quarto) to be laid before HIS MAJESTY, and both Houses of Parliament; and afterwards, a General Report on the present state of the country, and the means of its improvement, may be systematically arranged, according to the various subjects connected with Agriculture. Thus every individual in the kingdom may have,

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

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

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

PLAN OF THE RE-PRINTED REPORTS.

Preliminary Observations.

CHAP. I. *Geographical State and Circumstances.*

SECT. I Situation and Extent.

2. Divisions.
3. Climate.
4. Soil and Surface.
5. Minerals.
6. Water.

CHAP. II. *State of Property.*

SECT. 1. Estates, and their Management.

2. Tenures.

CHAP. III. *Buildings.*

SECT. 1. Houses of Proprietors.

2. Farm Houses and Offices, and Repairs.
3. Cottages.

CHAP. IV. *Mode of Occupation.*

SECT. 1. Size of Farms. Character of the Farmers.

2. Rent—in Money—in Kind—in Personal Services.
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CHAP. V. *Implements.*

CHAP. VI. *Enclosing—Fences—Gates.*

CHAP.

CHAP. VII. *Arable Land.*

SECT. I. Tillage.

2. Fallowing.
3. Rotation of Crops.
4. Crops commonly cultivated, such as Corn, Pulse, Artificial Grasses; their Seed, Culture, Produce, &c*.
5. Crops not commonly cultivated.

CHAP. VIII. *Grass.*

SECT. 1. Natural Meadows and Pastures.

2. Hay Harvest.
3. Feeding.

CHAP. IX. *Gardens and Orchards.*

CHAP. X. *Woods and Plantations.*

CHAP. XI. *Wastes.*

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

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

In general, the same heads will suit the following grains :

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

Vetches — **Application.**

Cole-seed — { Feeding, }
 { Seed. }

Turnips	—	{ Drawn, Fed; Fed on grass, — in houses.
---------	---	---

CHAP. XII. *Improvements.*

- SECT. 1. Draining.
2. Paring and Burning.
3. Manuring.
4. Weeding.
5. Watering.

CHAP. XIII. *Live Stock.*

- SECT. 1. Cattle.
2. Sheep.
3. Horses, and their Use in Husbandry, compared to Oxen.
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5. Rabbits.
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7. Pigeons.
8. Bees.

CHAP. XIV. *Rural Economy.*

- SECT. 1. Labour—Servants—Labourers—Hours of Labour.
2. Provisions.
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CHAP. XV. *Political Economy, as connected with, or affecting Agriculture.*

- SECT. 1. Roads.
2. Canals.
3. Fairs.
4. Weekly Markets..
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6. Manufactures.
7. Poor.
8. Population.

CHAP. XVI. *Obstacles to Improvement; including General Observations on Agricultural Legislation and Police.*

CHAP. XVII. *Miscellaneous Observations.*

- SECT. 1. Agricultural Societies.
2. Weights and Measures.
3. Supply of London.
4. Experimental Farm.

CONCLUSION. *Means of Improvement, and the Measures calculated for that Purpose.*

APPENDIX.

PERFECTION in such inquiries is not in the power of any body of men to obtain at once, whatever may be the extent of their views or the vigour of their exertions. If LOUIS XIV. eager to have his kingdom known, and possessed of boundless power to effect it, failed so much in the attempt, that of all the provinces in his kingdom, only one was so described as to secure the approbation of posterity*, it will not be thought strange that a Board, possessed

* See VOLTAIRE'S *Age of LOUIS XIV.* vol. ii. p. 127, 128, edit. 1752.

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

“ LOUIS had no COLBERT, nor LOUVOIS, when, about the year 1698, for the instruction of the Duke of BURGUNDY, he ordered each of the intendants to draw up a particular description of his province. By this means an exact account of the kingdom might have been obtained, and a just enumeration of the inhabitants. It was an useful work, though all the intendants had not the capacity and attention of Monsieur DE LAMOIGNON DE BAVILLE. Had what the King directed been as well executed, in regard to

sessed of means so extremely limited, should find it difficult to reach even that degree of perfection which perhaps might have been attainable with more extensive powers. The candid reader cannot expect in these Reports more than a certain portion of useful information, so arranged as to render them a basis for further and more detailed inquiries. The attention of the intelligent cultivators of the kingdom, however, will doubtless be excited, and the minds of men in general gradually brought to consider favourably of an undertaking which will enable all to contribute to the national stores of knowledge, upon topics so truly interesting as those which concern the agricultural interests of their country ; interests which, on just principles, never can be improved, until the present state of the kingdom is fully known, and the means of its future improvement ascertained with minuteness and accuracy.

every province, as it was by this magistrate in the account of Languedoc, the collection would have been one of the most valuable monuments of the age. Some of them are well done ; but the plan was irregular and imperfect, because all the intendants were not restrained to one and the same. It were to be wished that each of them had given, in columns, the number of inhabitants in each election ; the nobles, the citizens, the labourers, the artisans, the mechanics ; the cattle of every kind ; the good, the indifferent, and the bad lands ; all the clergy, regular and secular ; their revenues, those of the towns, and those of the communities.

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

P R E F A C E.

THE original Report having been printed by the Board of Agriculture, and circulated for the purpose of procuring additional remarks, was returned to me by the Board, with a variety of useful hints, observations, and corrections; of which I have endeavoured to avail myself in this publication, to the advantage, I trust, of those who may take the trouble of perusing it. It is still, however, not so complete as could be wished for; but a generous and candid Public will excuse any imperfections to be found in it, however numerous, and will consider them as almost unavoidable, when it is known that it was originally the work of one individual, unlettered, and immersed in the cares of a numerous family, and an extensive business.

Neither pains nor expense have been spared to procure information; and the result is faithfully detailed. Having been brought up under

a father who had the reputation of being a good practical farmer, and having been all my life engaged in the cultivation of different soils, and in grazing, I presume to think myself qualified to form opinions on the various systems of husbandry; but when I recommend any practice, my readers may be assured that I do so, not from theory only, but from my own experience.

If the wealth and population of this island may be expected to increase with the improvements that may be made in the cultivation of its soils to the utmost point of perfection, what glorious prospects are opened to our view by the establishment of a Board of Agriculture, whose great object it will be to collect facts, diffuse knowledge, and reward excellence, in the department over which it is appointed by the wisdom of Parliament to preside !

This *Second Edition* has been prepared at the particular request of the Noble President of the Board of Agriculture.

The additional experience of nine years in cultivation of thirteen hundred acres of land, with a zealous attention to every kind of Rural Economy,

mony, has enabled me to make several additions to this Survey, which I trust will be received by the Public with the same candour and indulgence the former Edition experienced.

☞ Such passages as are included within brackets [], are in addition to the former Publication; the rest, except a few amplifications, is in substance, and nearly in words, the same as originally communicated in 1796.



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ERRATA.

Page 16, line 13, for deep *on*, read deep *in*.

19, line 18, for *wnich*, read *which*.

45, last line but one, for 9215/. read 9218/.

129, line 1, for *main*, read *permain*.

135, line 14, for *in* the branches, read *on* the branches.

142, In the Table of increased value of a cord of wood, for 5*d*. read 5*s*.

for a hundred of best bavins, the same.

159, line 1, for, no kind use, read no kind *of* use.

257, line 11, for sur de la Trechémens, read Memoir sur les de friche-
mens.

AGRICULTURAL SURVEY

OF

K E N T.

CHAP. I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I.—SITUATION AND EXTENT.

THIS county forms the south-east angle or corner of the kingdom, and probably derives its name from that circumstance. Its figure is quadrilateral; and it is bounded on the north side by the river Thames, the county of Essex, and the German Ocean; on the south by the county of Sussex; on the east by the British Channel; and on the west by the county of Surrey.

It is about sixty-three miles in length, from Deptford to the point of the North Foreland, comprehending between these extremities, about one degree and twenty-nine minutes of longitude; and measures on the east side, in a direct line from the North Foreland to Dengeness-Point, nearly forty miles, between the latitudes of 50° , $54'$, and 51° , $23'$, $20''$, north.

SECT. II.—DIVISIONS.

THE county is divided into two grand districts, West and East Kent; the former containing the Lath of Scray; the other comprising the Laths of St. Augustine and Shepway, with the upper division of Scray.

The county contains about fourteen hundred square miles, or eight hundred ninety-six thousand acres*, sixty-three hundreds, four hundred and thirteen parishes, two cities, twelve corporate towns, thirty-nine market towns, nine thousand freeholds, forty thousand houses†, and two hundred thousand inhabitants.

It sends eighteen members to parliament, pays nearly a twenty-fourth part of the land-tax, and provides nine hundred and sixty men for the national militia.

Two chains of hills run through the middle of Kent, called the upper and lower; or the chalk and gravel hills. The northern range, and whole north side of the county, are composed principally of chalk and flints; the southern, of iron and ragstone; more westerly, towards Surrey, clay and gravel prevail upon the eminences.

Below this last range lies the Weald; an extensive and nearly level tract of land, rich and fertile at some places; where fine pasturage and timber are produced.

The north part of Shepey is high ground; but it is

* By measuring all the sinuosities of the coast, I make the circumference of Kent 165 miles; but the proper boundary for ascertaining the contents cannot be more than 150 miles; which, reduced to a square of four sides, gives 1406,25 square miles, or 900,000 statute acres: from which should be deducted all the public waters, equal perhaps to ten square miles; which reduces the measure to 893,600 acres.—*Note by the late William Boys, Esq.*

† By accounts lately transmitted to me by the surveyors of taxes, I find that the total number of houses is now 45,000; and the population, of course, supposing five to a house, must be 225,000.

mostly

mostly low and marshy on the south side, where two streams, running into the Swale, form the islets of Elmley and Harty.

Thanet had a full claim to the title of an island when the Rutupine Port was in its prosperity; but its pretension to the appellation is now barely kept up by a small sewer communicating with the Stour and the sea. The bed of that once famous harbour now forms valuable tracts of marshes, comprehending above twenty-five thousand acres. Thanet, including Stonar, contains nearly forty-one square miles, or about twenty-seven thousand acres.

The Rother rises in Sussex, and empties itself into the sea at Rye, forming the harbour of that port. It had formerly another outlet at Romney, the dry channel of which is still visible. From Rye it proceeds to Aplemore, and then, by a curvature, forms the Isle of Oxney, which is about ten miles in circumference, and consists of a ridge of upland, running through its middle, and of low fertile marshes towards the river.

The Weald of Kent, before mentioned, was formerly covered entirely with woods—a wild desert*. It has now many small towns and villages; but is more thinly inhabited than the other parts of the county†, and, of course, much less cultivated.

Romney-

* As a proof of this, the manors above the hill, which separate the middle of Kent from the Weald, have many of them a long slip of land each, reaching ten or twelve miles into the Weald; which farms pay quit-rents to them.—*Note by a Middle Kent Farmer.*

† I do not think it less populous than the best cultivated parts of East Kent; which, consisting of large farms, are assisted in the harvest-work, hoeing, &c. by labourers from other parts; whereas, in the Weald it is otherwise; for being parcelled out generally into small farms, the whole work is done by the resident labourers, and the farmers themselves: and this, of course, is in favour of its population.—*Note by the same Middle Kent Farmer.*

The public are much obliged to this gentleman for a great number of very

Romney Marsh is an extensive tract of rich marsh-land, at the south corner of the county, originally enclosed from the sea by a strong wall, thrown up between the towns of Romney and Hythe.

Much of the Isle of Thanet was naturally very thin light land; but the greater part of it having belonged to the religious, who were the wealthiest and most intelligent people, and the best farmers of the time, no pains or cost were spared to improve the soil. The sea furnished an inexhaustible supply of manure, which was brought by the tides to all the borders of the upland, quite round the island, and most likely was liberally and judiciously applied by the monks and their tenants: their successors to the present time have not neglected to profit by their example. Owing to these circumstances, Thanet always was, and most likely always will be, famous for its fertility; and the monkish tale of Thanet's deriving its superior fruitfulness from its having been the asylum of St. Augustine, is not so far from the truth as it may at first appear. Old historians said, "*Felix tellus Tanet sua fecunditate*;" and modern writers of husbandry speak of it as one of the finest gardens in the kingdom.

In short, is there another district in Great Britain, or in the world, of the same extent, in such a state of cultivation; where the farmers are so wealthy and intelligent, where land, naturally of so inferior a quality, is let for so much money, and produces such abundant crops?

The whole island consisted formerly of ten parishes, viz. 1. St. Giles, *alias* Sarre, now united with 2. St. Nicholas at Wade; 3. Monkton; 4. Birchington; 5. Wood-

sensible and pertinent remarks; but in this instance, respecting the population of the Weald not being less than the best cultivated parts of Kent, he is certainly mistaken.—*Editor.*

church; 6. Minster; 7. St. John the Baptist; 8. St. Peter the Apostle; 9. St. Lawrence; and, 10. Stonore; and it contains about 3500 acres of excellent marsh land, and 23,000 acres of arable: all the lower part of the latter bordering upon the marshes, and some parts of the hill, where there is a good depth of earth, are exceedingly productive; and the principal part of the remainder, although naturally a poor, thin, light, mould on a chalky bottom, is made exceedingly fertile by the excellence of the system under which it is cultivated. By an exact account taken of Minster, in Thanet, January 1, 1774, there were found to be in that parish 149 houses, 696 inhabitants, viz. 359 males, and 337 females: of these, in sixteen farm-houses, were 110 males, and 57 females; and in 133 houses inhabited by tradesmen, labourers, and widows, there were 249 males, and 280 females. The average number of inhabitants, male and female, to each farm-house is 10.4375; to each of the other houses, 3.9774; and to the whole number of houses, 4.67711. And by another account, taken in 1773, of St. Lawrence, including Ramsgate, which contains more than two-thirds of the houses and inhabitants of the whole parish, there were found in that parish 699 houses, and 2726 inhabitants. And again, in 1792, there were found 825 houses, and 3601 inhabitants: which is an increase of 126 houses, and of 875 inhabitants, in that parish, in nineteen years. The population, in the latter period, 4.369 per house.

That part of the county usually called East Kent, is of two kinds; one very open and dry, the other much enclosed with woods and coppices. The open part lies between the city of Canterbury and the towns of Dover and Deal; and the enclosed part of the tract extends from Dover, by Eleham and Ashford, to Rochester in length, and from the Isle of Shepey to Lenham, &c. in breadth.

The chief of the woodlands of East Kent are dispersed between the great road from Rochester to Dover, and the chalk-hill that runs from Folkstone, by Charing, to Detling.

These woods furnish the country with fire-wood, tilers for husbandry uses, and the dock-yards with timber for ship-building; but the most material part of their produce is the immense quantity of hop-poles cut out for the neighbouring plantations.

All that part of East Kent which lies within the vicinity of the towns of Faversham, Sandwich, and Deal, is mostly arable, extremely fertile, and under the most excellent system of management; which will be described in its proper place.

The Isle of Shepey is separated from the rest of the county by an arm of the sea, called the Swale, navigable for ships of 200 tons burthen. It is said to have derived its name from the number of sheep that were continually feeding on it. It is about eleven miles in length, and eight in its greatest breadth, and contains the parishes of

1. Minster, with the ville of Sheerness;
2. Queenborough, which sends two members to parliament;
3. East Church;
4. Warden;
5. Leysdown;
6. Elmley, and its Isle;
7. Harty, and its Isle.

“ The land of this island rises from the shores of the
 “ rivers, on the south-east and west bounds of it, towards
 “ its centre; but on the north side, it seems, by the
 “ height of its cliffs, to have once extended much farther.
 “ The cliffs are in length about six miles, and gradually
 “ decline at each end; the more elevated parts continuing
 “ about

“ about two-thirds as far as they extend ; and they are
 “ at the very highest of them about Minster, not less
 “ than ninety feet in perpendicular height above the
 “ beach or shore ; and consisting of clay, and being
 “ washed at their basis by the tides which beat against
 “ them, more especially when driven by strong north-
 “ east winds, they are continually wasting and falling
 “ down upon the shore : and so great is the loss of land
 “ at the highest parts, that sometimes near an acre has
 “ sunk down in one mass, from that height, upon the
 “ sea-shore below. Some farms have lost many acres
 “ within these few years.”—*Hasted's Kent*.

About four-fifths of this island consists of grass land, of two sorts ; namely, marsh-land, and upland pasture : the former has a very liberal share of rich and good fatting land ; but great part of the latter is very poor breeding land, that will hardly support an ewe and an half per acre. Most of the arable land is exceedingly fertile in wheat and beans, especially towards the north side, in the parishes of Minster and East Church.

“ The enclosures on the hills are small, and are sur-
 “ rounded with thick hedge-rows of elm ; and the whole
 “ of the country is exceedingly pleasant in fine weather,
 “ being interspersed with hill and dale, and frequent
 “ houses and cottages. The roads throughout the island
 “ are very good all the year, owing to the great plenty
 “ of gravel and beach, and but little wear in it. The
 “ prospects are very pleasing and extensive on every
 “ side.

“ There is hardly any coppice-wood throughout the
 “ whole of it. There are some small furze grounds and
 “ bushy shaws on the hill, which afford shelter for many
 “ hares, and a few pheasants and partridges. Good fresh
 “ water is very scarce in most parts of the island : be-

“ between East Church and Minster there are a few springs,
“ and notwithstanding they rise very near the sea, the
“ water is perfectly good and fresh.

“ The air is very thick, and much subject to noxious
“ vapour, arising from the vast quantity of marshes in
“ and near it, which makes it very unwholesome; inso-
“ much, that few people of substance live in it, especi-
“ ally in the low land marshy parts, where the inhabi-
“ tants are few indeed, and consist chiefly of lookers*.

“ The garrison and dock of Sheerness, its environs,
“ and town of Queenborough, the reader, however, will
“ except from this observation; where there are many
“ gentlemen of property and substance constantly resi-
“ dent.”—*Hasted's Kent*.

The cliffs on the north side of this island belong to the three manors of Minster, Shurland, and Warden; the owners of which let them out to the proprietors of the copperas works, who employ the neighbouring poor to collect the pyrites, or copperas stones, from the shore, which they deposit in heaps on the cliff, at the rate of one shilling per bushel for their labour, until a sufficient quantity is procured to load a vessel, to take it away. The liberty of collecting the copperas on the sea-shore, is let by the lords of the manors for sixty pounds per annum.

The western part of this county, comprehending the Weald before-mentioned, a great part of the ragstone shelf between the Weald and the chalk-range, together with all the district situate between the towns of Westerham, Deptford, Rochester, Maidstone, and their vicinities, forms a great variety of country; having upon it

* Men so called, from their appointment to look after the stock in the Marsh.

soils and features of almost every description, with many most varied and beautiful prospects.

Near Maidstone are some lands well managed, and in the highest state of cultivation : nothing can exceed the farm of Sir CHARLES MIDDLETON, at Teston, nor the fine hop-garden, and beautiful woodlands, of Lord ROMNEY.

Along the north side of the county, by the road from Rainham to Dartford, is a tract of four or five miles in breadth, of well-cultivated good loamy, and in some places gravelly, soil.

Between this tract and the summit of the chalk range, is a space, from five to ten miles in breadth, of high land. This is generally, especially on the summit of the hills, a flinty clay soil, exceedingly cold, and so stiff as frequently to require six horses to plough it. It is interspersed with some small vales, with side hills of very poor chalky lands and flinty bottoms.

This range of high land runs through the county, from the sea by Folkstone, to the borders of Surrey, near Westerham, and is by some authors called the Hog's Back of Kent. It is of much inferior value, on account of the vast expense of cultivation, as well as from its general deficiency of produce, and would, perhaps, be more advantageous to individuals, as well as to the public, if the greater part of it were converted to pasture ; for although the quality of the herbage would be inferior, yet great numbers of South Down sheep might be reared upon it, as well as fat calves, pigs, &c. to which may be added, the profits of dairies ; while the same labour that is now expended upon it would return double, and perhaps triple, the produce of corn in the rich vales that are now under grass.

Between this hill and the borders of the Weald, is the
ragstone

ragstone shelf of land, running through the middle of the county. This tract is chiefly enclosed, with much gentle hill and dale; the hills shelving in many directions, but mostly across the ragstone shelf; so that the little brooks of the vales are collected into a rivulet that runs along nearly the middle of the range; those arising eastward from Lenham discharging themselves into the Stour, passing through Ashford; and those westward of Lenham, into the Medway, passing through Maidstone.

Great quantities of hops and fruit, with some corn and grass, are produced from this western district. It likewise abounds with many coppices of timber and underwood: great part of the latter goes to the metropolis in different kinds of faggots. The corn and hay that are not consumed in the neighbourhood go likewise, for the most part, to London.

The Weald.—This district of the county was in ancient times an immense wood or forest, inhabited only by herds of deer and hogs, and belonged wholly to the king. By degrees it became peopled, and interspersed with villages and towns; and by piece-meal was for the most part cleared of its wood, and converted into tillage and pasture. There are, however, some woodlands still in their original state.

The reputed boundary of the Weald begins at the margin of Romney Marsh, and runs along the top of the ragstone hill, above the churches of Kingsnorth, Great Chart, Pluckley, Sutton, Linton, Hunton, Yalden, across the Medway by Teston and Watlingbury. From thence it proceeds by Hert's-hill, River-hill, Idle-hill, to Wellestreet; on the borders of Surrey, and then, in union with the boundary lines of the county of Sussex, taking in the Isle of Oxney, goes on to Aplemore, and the borders of Romney Marsh. It is somewhat remarkable,

able, that the sloping part of the stone hill, which separates the Weald from the ragstone shelf above, should be so thickly covered with villages, whose churches stand about half way up the slope of the hill; while the neighbouring chalk-hill ridge, which separates the ragstone shelf from the hill above it, has not a single village or church upon it *. The stone hill, in the extent of between twenty and thirty miles, has ten or twelve parish churches upon it.

Romney Marsh is a spacious level of exceedingly rich land, lying at the south corner of the county. Its shape is nearly that of a parallelogram, whose length from the foot of the hill at Aldington to the sea-shore, between Dengeness and Rye, is about twelve miles; and breadth, from the borders of the Weald of Kent by Warchorn, to the sea-shore, between Romney and Dimchurch, is nearly eight miles. It contains the two corporate towns of Romney and Lydd, and sixteen other parishes. The quantity of land contained in this level, that is, within the county of Kent, is about forty-four thousand acres. The greater part of the adjoining level of Guilford Marsh, is in the county of Sussex.

It is divided into three separate districts; viz. Romney Marsh, which contains about twenty-four thousand acres; Walland Marsh about twelve thousand, and Dengeness Marsh about eight thousand acres †. HARRIS, in his History of Kent, in speaking of Romney Marsh, observes, “ that it was the first land which was inned or gained from the sea in Britain. For the laws, statutes, and ordinances, for the conservation of this Marsh, are

* This is accounted for by the great fertility of the soil on the one, and the want of it on the other.—*Note by a MIDDLE KENT Farmer.*

† Vide CHAUS. 35 K. H. 3. D. inter M. 6 and 7, in the Tower Records; also, Dugdale on Embankment.

“ (like our common laws) without any known original ;
“ being at first constitutions, probably made by some,
“ even by the old British Kings, or rulers in Kent, as
“ well as by the Saxons during the Heptarchy. For in
“ the thirty-fifth year of the reign of HENRY the Third,
“ they are called ancient and approved customs.” This
Marsh is defended from the sea by an immense bank of
earth (called Dimchurch Wall) of more than three miles
in length. The face next the sea is covered with com-
mon faggot-wood, and hop-poles fastened down by oak
piles and overlaths, which prevent the sea from washing
away the earth. The support of the wall, and the
drainage of this Marsh, amount to the sum of four thou-
sand pounds per annum ; which sum is raised by a scot
per acre, on the whole level of Romney Marsh. The
other two districts of Walland and Denge Marsh, are
each scotted separately, to defray their own expenses of
drainage, &c.

The land is not all equally good ; some, chiefly near
the sea-shore, is a poor sandy gravel, which bears a little
grass in the spring, that soon burns up in the summer ;
and some, along the foot of the hills which surround the
land side of the Marsh, is wet and poor, for want of
being drained. But the great mass of land, the centre
of the whole Marsh, is wonderfully rich and fertile.

There are but few oxen fed here, compared with what
other rich marsh lands usually keep ; but the number of
sheep bred and fed, exceeds, perhaps, any district of the
like extent in the kingdom.

The scattered inhabitants of the Marsh are chiefly
lookers and bailiffs, whose employers reside in the upland
parts of the county, or in the neighbouring towns.

The fences are either ditches, or oak posts and rails ;
there being but very few hedges or trees in the Marsh,
except

except a few in the neighbourhood of some of the villages. Immense quantities of oak posts and rails are annually brought out of the woodlands of the Weald of Kent, for the repairs of the fences.

SECT. III.—CLIMATE.

THE proximity to the German Ocean and British Channel, renders this county very subject to cold sea-winds, which often, near the shore in the spring of the year, injure the tender shoots of corn, and herbage of every kind; especially when, after a few days of fine warm weather, a north-east wind succeeds.

The prevailing winds of this county are north-east and south-west. When the former sets in, and continues for any length of time, which is often the case in winter, a severe frost is always the consequence: the air is then exceedingly keen and sharp; ponds are frozen to the depth of ten or twelve inches; and turnips are destroyed. The south-west part of the county is more enclosed; and, being under shelter of the ridge of hills running from Folkstone-hill to Wrotham, &c. is somewhat warmer as to climate; but the soil in this part being much of it a cold moist clay, the harvest is later than in those parts of the county which are more exposed to the winds before-mentioned.

The effect of the climate on agriculture will perhaps be best shewn, by stating the time when the wheat harvest commences; which, in the most early parts of the county (viz. the Isles of Shepey and Thanet) is, in a very forward harvest, by the 20th of July, and in general in the last week of that month; in East Kent, be-

tween

tween Canterbury and Dover, about six or seven days later, according to soil and situation ; and still later, by ten or twelve days, on the cold hills which run through the middle of the county.

SECT. IV.—SOIL AND SURFACE.

ISLE OF THANET.

THE bottom soil of the whole island, or what modern writers in husbandry call the sub-soil, is a dry, hard, rock chalk. The tops of the poor chalky ridges are about sixty feet above the level of the sea, and are covered with a dry, loose, chalky mould, from six to eight inches deep : it has a mixture of small flints, and is, without manure, a very poor soil. The vales between the ridges, and the flat lands on the hills, have a depth of dry loamy soil, from one to three feet, with less chalk, and of much better quality.

The west end of the island, even on the hills, has a good mould, from one to two feet deep, a little inclining to stiffness ; but the deepest and best soil is that which lies on the south side of the southernmost ridge, running westward from Ramsgate to Monkton : it is there a deep, rich, sandy loam. The low lands are mostly dry enough to be ploughed flat, without any water-furrows. The soil of the marshes is a stiff clay, mixed with sea-sand and small marine shells.

EAST KENT.

The open part of the district between Canterbury, Dover, and Deal, is of various soils, no one parish or farm

farm being perfectly similar in all its parts. The principal soils are, 1st, chalk; 2d, loam; 3d, strong cledge; 4th, hazel mould; 5th, stiff clay. Besides these, there are some small tracts of flints, gravel, and sand.

The chalk-soils are of various depths; from three to six or seven inches of loose chalky mould, on a rock chalk bottom, and are mostly found on the tops and sides of the ridges of this district. At some places there is a little mixture of small flints, and at others, of black light mould, provincially called black hover. This last, in an unimproved state, is the worst land in this district. The whole of these chalky soils are much neglected, and, consequently, of little value; but where they happen to be improved, by paring and burning, destroying the charlock, with good manure afterwards, they become very good land for turnips, barley, clover, and wheat; and some parts produce tolerable crops of sainfoin.

The loamy soil is a very dry, soft, light mould, from six to ten inches deep, on a red soft clay, which is good brick-earth, and lies in a stratum of from three to seven feet deep, under which is generally a layer of chalky marl, and then the rock chalk. This soil is very good, ploughs light, and may be worked at all seasons; producing good crops, if well managed, of all sorts of corn and grass.

The strong cledge is a stiff tenacious earth, with a small proportion of flints, and, at some places, small particles of chalk: it is from six to ten inches deep, on a hard rock chalk, and is found on the tops of the hills. When wet, it sticks like birdlime; and when thoroughly dry, the clods are so hard as not to be broken with the heaviest roll. It is very difficult to work, except when it is between wet and dry. This land, when well managed, and the seasons are favourable for the work, produces

produces good crops of wheat, clover, beans, and oats; but when unkindly seasons happen, and dry summers succeed, it is very unproductive.

The hazel mould is a light soil on a clay bottom, more or less mixed with flints and sand. It is dry, and forms very kindly land for barley and wheat upon clover lays. Beans are sometimes blighted on this sort of land, as is wheat, also, on bean or pea stubble, but more particularly the latter; for which reason, wheat is very seldom sown after pease.

The stiff clay lies on the tops of the highest hills. This soil is generally wet, which arises only from the rains in winter; for the springs are above 300 feet deep on the rock chalk. It has at some places a layer of a yellow coloured clay between the surface mould and the rock.

Flints.—This land, or rather surface of stones, occurs only in small tracts, in the vallies about Dover and Stockbury, near Maidstone. It consists of beds of flints, with hardly any mould to be seen. This is very expensive to plough; but, under good management, with plenty of manure, is very productive in wheat, barley, and beans. There is very little gravelly soil, and not much sand, in this district; a little of the latter, however, is seen in the vicinity of Hythe and Folkstone. This is very light land to work, and excellent for turnips, barley, clover, wheat, pease, and potatoes.

The flat rich lands in the vicinity of Faversham, Sandwich, and Deal, consist of two sorts of soil; namely, rich sandy loam, with a greater or less mixture of sand; and stiff clay, some of which, in the lower parts, is rather wet. The surface of the first is seven or eight inches deep, with a sub-soil, varying in depth, of strong loam, clay, or chalk. This soil is always ploughed with four horses;

horses; is very dry and kindly to work at all seasons, and no ridges or water-furrows are required. It produces great crops of wheat, beans, barley, oats, and pease, and sometimes canary and radish.

The stiff wet clay is that which has a strong clay bottom, or any substance that holds water. It lies low, and is not subject to land springs; but being of close texture, will not admit a quick filtration of water.

This, when properly drained, and kept cleaned from weeds, and otherwise well managed in favourable seasons; is excellent land, and produces good crops of wheat, beans, and canary; but is generally very expensive to keep in good order.

ISLE OF SHEPER.

Almost the whole of this isle is a deep, strong, stiff clay. Some parts are so very sticky in the winter time, that the plough wheels get loaded with dirt in one mass, so as to form the shape of a grindstone, and are often overturned with the great weight of mould collected unequally upon the wheels; on which account, foot-ploughs are sometimes used. The horses' shoes are frequently torn off, by the hinder foot striking its shoe against the heel of the fore one, before it can disengage itself from the soil. The best time to plough these soils, it is said, is when they are thoroughly wet. Some of the upper parts of the island have a few gravelly fields; but those are very wet in winter, and are rather stiff. The chief part of the upland pasture is a stiff clay, covered with ant-hills; it is very wet in winter, subject to burn in a dry summer, and to split open to a great depth. The soil of the marshes is also a stiff clay underneath: originally a sediment of the sea. Its surface, for an inch or two in depth, is a vegetable mould, much enriched

from the land having been thickly covered with sheep for a long series of years.

WEST KENT.

The varieties of soil in this part are, 1. chalk ; 2. loam ; 3. clay ; 4. gravel ; 5. sand ; 6. hassock ; 7. pinnock ; 8. coomb ; 9. hazel mould.

The chalky soils are found on the sides of hills, and at different places along the borders of the Thames, between Dartford and Rochester : they are from five to seven or eight inches thick, of a loose chalky mould, on a rock chalk bottom. Those of the greatest depth of surface, that are well cultivated with a due proportion of manure, are very productive in corn and seeds, and yield great crops of sainfoin.

The loamy soils are found at different places, chiefly in the vallies. This land is of light tillage ; and, when well managed, is very productive of corn, seeds, and hops ; and is of various depths.

The clay soil is of two sorts. That which lies at the top of the chalk-hills is much mixed with flints, is a cold soil, and so very tenacious, as to require six strong horses to plough an acre per day in winter ; and when left unploughed till dry in the summer, it is hardly practicable to get through it with eight horses ; and sometimes, in very dry weather, impossible. This sort is from eight to fourteen inches deep on the rock chalk, and at some places, a stiff yellow clay lies between.

The other sort of clay is a cold, wet, stiff kind, with a small inixture of ragstone, and is chiefly found in the low grounds of the western part of the country. Both sorts are of small value, being very expensive to cultivate ; and, except the seasons are very favourable, they produce but poor crops. It sometimes happens, that this
land

land yields a great crop of wheat ; which, like a prize in the lottery, tempts the fortunate adventurer to try his luck again, with great loss of labour, and waste of substance.

Gravelly soils are chiefly found about Dartford and Blackheath, which produce early green pease, turnips, winter tares, rye, pease, oats, and some wheat. These gravels are from five to eight inches deep, with a sub-soil of rocky gravel or sand. There are other soils, called gravel, in the lower part of this district, which are a mixture of the small pieces of Kentish rag, sand, and loam ; the small particles of stone predominating, give it the title of gravel. This sort produces, when well cultivated, good crops of turnips, oats, clover, and wheat.

The sandy parts of this district are, in general, very poor, being mostly of the black sort, and are chiefly found on commons and heaths. There are some, however, in cultivation, which produce excellent turnips and corn.

Hassock, or stone-shatter, is a soil, the surface of which is a mixture of sandy loam, with a great portion of small pieces of light coloured Kentish ragstone. It is from six inches to a foot or two deep ; the sub-soil, a solid rock of stone. This land produces great quantities of hops, apples, cherries, filberts ; and likewise good turnips, potatoes, seeds, and corn ; also much excellent hay on old grass lands. It abounds with much calcareous substance in a state fit for vegetable production, and has the peculiar property of protecting fruit-trees from the mildew. Mr. RANDAL, of Maidstone, has a large nursery of fruit-trees in this soil, amongst which, he assures me, that the mildew has never yet made its appearance ; even peach trees, of the most delicate sorts, grow here with the greatest luxuriance, free from blight.

Pinnock. This land is very bad to till, and extremely poor. It is a sticky red clay, mixed with small stones; but although it is deemed poor for cultivation of grain, &c. yet it produces very fine chesnut-wood, and filberts likewise grow well upon it. This sort of land also lies upon the rock.

The coomby soil of West Kent is an extreme stiff moist clay, mixed with stones and flints of different sorts. It ploughs so heavy as always to require six horses, and sometimes, when dry and hard, eight are necessary; even then, frequently not more than half an acre is ploughed in a day. This sort of land is found in the parts about Seal and Wrotham, and is nearly the same as described under the title of clay.

A fine hazel mould is found on the sides of the hills, and in the vallies, at different places throughout the whole district.

THE WEALD.

The Weald of Kent has the reputation of being an entire mass of clay; but, on examination, it is found to contain the following varieties of soil: namely, 1. clay; 2. hazel mould; 3. sand; 4. ragstone gravel.

The clay is either stiff and exceedingly heavy, or a wet sort, which ploughs somewhat lighter. The first is chiefly found on the eminences, or their sloping sides. The surface is about seven or eight inches deep, under which is a stratum of stiff yellow clay, about a foot or two thick, with a sub-soil, in some parts, of excellent marl. The second sort of clay lies in the lower parts, is extremely wet after showers of rain, and a long time in getting dry; which often occasions a late sowing, and a backward harvest, and frequently the wheat season is totally lost. The surface of this land is seven or eight
inches

inches deep ; the sub-soil is, at some places, a yellow clay, and at others, a soft sandstone rock, which is often used for mending roads. Four horses with difficulty plough an acre per day in these soils. In some parishes bordering on Sussex, the ploughing work is done by oxen ; four or five pair are generally fixed to a plough, and do about the same quantity a day as four horses.

The hazel mould is a clay soil of a drier nature, from having a considerable mixture of sand ; it ploughs light, and is the best land in the Weald.

Sandy soils are of two sorts, black and white ; the black is little regarded, but the white is much improved by marl and lime. The little there is of this soil in the district, produces turnips, barley, clover, and wheat ; and the sub-soil is the soft sandstone.

The ragstone gravel is found only in small patches ; and is of little value in its present state, being covered with furze, heath, and broom.

ROMNEY MARSH.

Almost the whole surface of this spacious level of fine marsh-land, is the sediment of the sea. It consists chiefly of a soft loam and clay, with a greater or a less mixture of sea-sand ; there are, however, near the sea-shore, some small tracts of blowing sand, and some sea-beach, which are of very little value.

The principal part of the soil, being a fine soft loam, with a mixture of sea-sand, and having lain time out of mind in grass, covered with sheep in winter and summer, its turf is wonderfully thick and fine ; and the grass it produces is of a fattening quality, equal, if not superior, to any in the kingdom. The other parts, which are in-

ferior, are those which have a less portion of sea-sand, and are a stiff clay; or those which have too much sand, or gravel, and are in consequence apt to burn in dry summers; and these are the lands which are used as breeding grounds.

The sub-soil is frequently seen in alternate layers of clay and sand, and sometimes beach and sand,

SECT. V.—MINERALS.

I CANNOT give a better account of this subject, than by copying the words of the very ingenious historian* of this county, who has diligently sought for every species of information.

“ On the top of Shooter’s-hill, in the parish of Eltham, is a mineral spring, which is said constantly to overflow, and never to be frozen in the severest winter. In the parish of Bromley is another, which rises at the foot of a declivity, at a small distance eastward from the Bishop’s palace. The soil through which it passes is gravel, and it issues immediately from a bed of pure white sand. The course of the spring seems to be about north north-east and south south-west from its aperture; its opening is towards the latter; and as Shooter’s-hill bears about north north-east from its aperture, it probably comes from thence. The water of this spring being found to be a good chalybeate, was, by the Bishop’s orders, immediately secured from the mixture of other waters, and enclosed,

* Edward Hasted, Esq.

“ in hopes that it might prove beneficial to such as should
 “ drink it. Since which, numbers of people, especially
 “ of the middling and poorer sort, have been remarkably
 “ relieved by it from various infirmities and diseases,
 “ which were not only afflicting, but some of them dan-
 “ gerous. Above Well-place, which is a farm-house in
 “ Penshurst-park, there is a fine spring, called Kidder’s
 “ Well, which, having been chemically analyzed, is
 “ found to be a stronger chalybeate than those called
 “ Tunbridge Wells.

“ The parish of Penshurst, as well as the neighbouring
 “ ones, abounds in veins of iron ore, and most of the
 “ springs in them are more or less chalybeate.

“ The whole neighbourhood of Tunbridge Wells
 “ abounds with springs of mineral water; but as the
 “ properties of all are nearly the same, only those two,
 “ which at the first discovery of them were adjudged the
 “ best, are held in any particular estimation.

“ These two wells are enclosed with a handsome stone-
 “ wall. Over the springs are placed two convenient ba-
 “ sons of Portland stone, with perforations at the bot-
 “ tom, through which they receive the water, which,
 “ at the spring, is extremely clear and bright. Its taste
 “ is steely, but not disagreeable; it has hardly any smell,
 “ though sometimes, in a dense air, its ferruginous ex-
 “ halations are very distinguishable. In point of heat,
 “ it is invariably temperate; the spring lying so deep in
 “ the earth, that neither the heat of summer nor the
 “ cold of winter affects it.

“ When this water is first taken up, its particles con-
 “ tinue to rest till it is warmed to nearly the heat of the
 “ atmosphere; then a few airy globules begin to separate
 “ themselves, and adhere to the sides of the glass, and
 “ in a few hours, a light copper-coloured scum begins to

“ float on the surface ; after which, an ochreous sedi-
 “ ment settles at the bottom. Long continued rains
 “ sometimes give the water a milky appearance, but do
 “ not otherwise sensibly affect it. From the experi-
 “ ments of different physicians, it appears, that the
 “ component parts of this water are steely particles, ma-
 “ rine salts, an oily matter, an ochreous substance,
 “ simple water, and a volatile vitriolic spirit, too subtle
 “ for any chymical analysis. In weight, it is, in seven
 “ ounces and a quarter, four grains lighter than the
 “ German Spa (to which it is preferable on that account),
 “ and ten grains lighter than common water. It re-
 “ quires five drops of *oleum sulphuris*, or elixir of vitriol,
 “ to a quart of water, to preserve its virtues to a distance
 “ from the spring. This water is said to be an impreg-
 “ nation of rain in some of the neighbouring eminences,
 “ which abound in iron mineral ; where it is further en-
 “ riched with the marine salts, and all the valuable in-
 “ gredients which constitute it a light and pure chaly-
 “ beate ; which instantly searches the most remote re-
 “ cesses of the human frame, warms and invigorates the
 “ relaxed constitution, restores the weakened fibres to
 “ their due tone and elasticity, removes those obstructions
 “ to which the minuter vessels of the body are liable,
 “ and is consequently adapted to most cold chronical dis-
 “ orders, lowness of spirits, weak digestions, and ner-
 “ vous complaints.

“ At Sydenham, in the parish of Lewisham, there are
 “ some springs of medicinal purging water, which, from
 “ their nearness to Dulwich, in the county of Surrey,
 “ bear the name of Dulwich Wells ; though there are
 “ some of the same kind in that parish, but they are
 “ of an inferior quality, and not so plentiful in quan-
 “ tity.

“ These

“ These springs in this hamlet are at the foot of a hill, about twelve in number. The hill and ground adjoining is a stiff clay, with some wood upon it. These are next to those of Epsom, being discovered about the year 1640:

“ The hole dug is about nine feet deep, and the water about half a yard deep; being emptied every day. The bottom is a loam, as is the hill; and where the water issues in, is found the *lapis lutoso-vitriolicus*, which glitters with vitriolic sparkles, and is divided into parcels by the *trichitis*.

“ This water purges very quick; it is bitter, like the Epsom waters; it curdles with soap or milk, equally to them, and much more than those at Richmond.

“ Dr. ALLEN published his account of these wells in the year 1699; though there had been before, in 1681, a treatise on them published at London, in 12mo. by Dr. JOHN PETER, physician, under the name of Lewisham, vulgarly called Dulwich Wells, in Kent, in which were shewn the time and manner of their discovery, the minerals with which they are impregnated, and the several diseases experience has found them good for, with directions for the use of them; and in No. 461, p. 835, of the Philosophical Transactions, is an account of a new purging spring at the Green Man at Dulwich, 1739, by Mr. MARTYN.

“ Near the west end of the bridge, opposite the store-keeper's house of the royal powder-mills at Faversham, there is a strong chalybeate spring, which, on trial, has been proved to be nearly equal to those of Tunbridge Wells.”

SECT. VI.—WATER.

THIS county possesses advantages superior to any other in point of navigation, from its extensive range of sea-coast, and the two great navigable rivers, the Thames and Medway, besides those of less note, the Stour and the Rother. The two former are navigable for the largest ships to Woolwich and Chatham, and for small craft to a very great distance. “ The Stour and the Rother admit coasting vessels to Sandwich and Rye. The Ravensborn, the Cray, and the Darent, are small creeks, or streams, that fall into the Thames; the first at Deptford, the others in one channel at Longreach. Most of the marsh-land of this county is along the margin, or at the mouths of these rivers, or has been formerly covered with the waters of ancient havens and ports, now in a great measure obliterated. These rivers, likewise, have formed islands towards their mouths. Thus the Thames and the Medway, at their extremities, contributed their waters jointly to the separation of the Isle of Grain from the main land, but the channel is now filled up. The Swale, one of the mouths of the Medway, in like manner cuts off Shepey from the continent of East Kent. Grain is throughout low and marshy, and is about three miles and a half long, and two and a half wide.”—*Hasted's Kent*.

CHAP. II.

STATE OF PROPERTY.

SECT. I.—ESTATES.

THE property in land in this county is very much divided, there being few extensive possessions but what are intersected by other persons' property ; and, according to Mr. HASTED, " this distribution of freeholds ce-
 " ments a good understanding between the gentry and
 " yeomen ; their lands being every where so much inter-
 " mixed one with the other, obliges them to a mutual
 " civility for their own interest and convenience ; nor
 " are the latter so much dependent on the gentry as the
 " inhabitants of most other counties, by copyhold, or
 " customary tenures, of which there are very few in it ;
 " which state of freedom is productive of good will and
 " kindness from the one sort to the other ; there being
 " no part of the kingdom where the people are more
 " quietly governed, or submit with more pleasure to the
 " laws and magistracy of the country."

The number of yeomanry of this county seems annually on the increase, by the estates which are divided and sold to the occupiers. There is no description of persons who can afford to give so much money for the purchase of an estate, as those who buy for their own occupation. Many in the eastern part of this county have been so sold, within these few years, for forty, and some for fifty years purchase, and upwards.

[A remark-

[A remarkable instance of this change of property has occurred, in my own vicinity, since I began the farming business in the year 1771 ; at that time the following ten farms around me, viz.

West Street,	Undown,
Marley,	Stoneheap,
Little Betshanger,	West Studdall,
Cold Harbour,	Vine,
Ham,	North Court,

were all severally occupied by tenants ; but now, 1803, the whole, except the last, are in the hands of their respective purchasers, among which are two only of the old tenants. This occupancy by the proprietors has a great effect upon the improvement of the soil, as every man spends his money with the confidence of enjoying the fruits of his own labour in perfect security : it is not so with tenants at will, or under short leases.]

“ The number of freeholds in the county of Kent are supposed to be about nine thousand ; which is sur-
 “ prizing, considering the large possessions which the
 “ two episcopal dioceses, the two cathedrals of Canter-
 “ bury and Rochester, and several of the colleges of Ox-
 “ ford and Cambridge, and other bodies corporate, are
 “ entitled to in it ; which, at a rack-rent, are computed
 “ at upwards of 80,000*l.* per annum, besides parsonages
 “ and portions of tithes.”—*Hasted.*

SECT. II.—TENURES.

“ THE socage tenures of ancient demesne, and gavel-
 “ kind, prevail over this county ; the former of which
 “ consist of those lands and manors which were the
 “ ancient

“ ancient inheritance of the crown, and actually in the
“ hands of it in the time of King EDWARD the Confessor,
“ or WILLIAM the Conqueror; and which appear to
“ have been so by the great survey of Doomsday, in the
“ Exchequer, in which they are entered, under the title
“ of *Terra Regis*.

“ Most of these have been, from time to time, granted
“ out to private subjects, but the tenants of them under
“ the crown, were not all of the same order and degree;
“ some of them continued for a long time in absolute
“ villanage, dependent on the will of the lord; and those
“ that succeeded them in their tenures, now differ from
“ common copyholders in only a few points. Others
“ were in a great measure enfranchised by the royal fa-
“ vour, holding their lands by the better sort of villain
“ services; all which are now changed into pecuniary
“ rents; in consideration of which they had many im-
“ munities and privileges granted to them; such as to
“ try the right of their property in a peculiar court of
“ their own, called a court of ancient demesne; not to
“ pay toll, or taxes; not to contribute to the expenses
“ of the knights of the shire; not to be put upon juries,
“ and the like.

“ The latter of these, the socage tenure of gavelkind,
“ prevails in general over this county; to which, within
“ the bounds of it, there are certain special customs in-
“ herent, called anciently *Consuetudines Kantia*, being
“ the common law of Kent.

“ Various are the opinions of our antiquaries concern-
“ ing the etymology of the word gavelkind; but that
“ which is most natural, and best supported both by
“ reason and authority, is drawn from the nature of the
“ services.

“ According to this exposition of the term, it is de-
“ rived

“ rived from the Saxon word GAFOL, or GAVEL, which
“ signifies rent, or a customary performance of husbandry works; and, therefore, they called the lands
“ which yield this kind of service, gavelkind; that is,
“ the kind of land that yields rent.

“ If this is the true etymology, it is plain that gavelkind, taken in the strictest sense of the word, denotes
“ the tenure of the land only; and that the partibility,
“ and other customary qualities, are rather extrinsic
“ and accidental to gavelkind, from the customary laws
“ of the place, than necessarily comprehended under
“ that term.

“ Gavelkind lands are not peculiar to the county of
“ Kent; there are many instances of them in different
“ parts of this realm, which are said to partake of the
“ nature and custom of gavelkind; a style they have assumed since the disgavelling statute of the 31st of
“ King HENRY VIII.; before which they are never
“ mentioned as gavelkind land, but only that they were
“ such as were partible, and had been parted; and so
“ peculiar is this tenure esteemed to be to this county,
“ that whereas, in all other places, the claimant is obliged
“ to set forth particularly the custom whereon he founds
“ his right to the lands, as being of the nature and tenure
“ of gavelkind; in this county it is sufficient to shew the
“ custom at large, and to say that the lands lie in Kent,
“ and are of the nature of gavelkind; of which all lands
“ lying in the county are presumed to be, till the contrary be made to appear. And this is the reason why
“ the books call gavelkind in this county by a higher appellation than is given to any other custom, viz. the
“ common law of Kent.”—*Hasted's Kent*.

CHAP. III.

BUILDINGS.

SECT. I.—HOUSES OF PROPRIETORS.

THERE are between twenty and thirty noblemen's seats in this county, besides many elegant and large mansions of the gentry, and abundance of modern built houses of great value belonging to merchants, and other wealthy tradesmen of the metropolis, &c. To give a particular description of every seat and mansion, will very far exceed the limits of this work, and take more time than is allowed for completing it. I hope, therefore, that I shall be excused in referring the Honourable Board, and reader, to HASTED's history of this county, where every seat, mansion, and park, are ably and elegantly described.

SECT. II.—FARM-HOUSES AND OFFICES.

THERE are some few instances of modern built houses for the use of the farmers; but the chief part are very old, large, and ill-contrived, the upper stories generally projecting over the under ones. These old houses are, in many parts of the county, built with chesnut, where now no chesnut-timber is to be seen: the offices about them are as badly contrived as the houses themselves.

This

This part of the rural economy of this county stands much in need of a reform. On most of the middle and small-sized farm-houses and offices, thatch is the common covering; which is put on, particularly in the eastern part, much worse than in any other part of the kingdom that has fallen under my view. The stubble of wheat is raked up for this purpose; which being often done in the winter, when, by rainy seasons, it is become half rotten, of course, cannot last a long time on a building. The farm-houses in the Isle of Thanet are, in general, exceedingly neat and convenient; and from some of them are seen the most beautiful prospects of East Kent, the Downs, and coast of France.

[Within these few years, I am happy to add, great improvements have been made in many parts of the county, both in altering and re-building many farm-houses, as well as in extending, and rendering more convenient, the offices. The first example of the latter that I have seen, is in the new-erected offices of Sir CHARLES MIDDLTON, at Teston; consisting of a granary, stables for ten horses, hay-room, oil-cake room, stalls for thirty oxen, weighing-rooms for fat cattle and sheep, cart-lodges, &c. all under one roof. The estimate for this building was fourteen hundred pounds, but it cost near two thousand.

The stalls for fattening oxen are in pairs, each having three troughs; the centre one being lined with lead, to hold water for both beasts; the others are for the cake, and other food. Each water-trough is supplied, by pipes of lead, from a pump in the centre of the building. The double stalls are eight feet wide. The machine for weighing fat oxen alive, cost about seven pounds, and that for weighing sheep, between four and five pounds. Sir CHARLES has stalls for fifteen more oxen, at another place

place near the above. Likewise a new erected piggery, with eight pens. The whole of these buildings are contrived with the greatest skill and judgment, having about them every possible convenience.]

SECT. III.—COTTAGES.

The cottages are of such various kinds; that it is impossible to give any other account of them, than to say that they are in general comfortable habitations for farming labourers. They are built, some with bricks and tiles; but the greater part, especially of the oldest, with plaistered walls, and are covered with thatch. There are very few but what have a sufficient plot of land annexed to them for the growth of vegetables; and a great many in some parts of the county afford keep for a cow. Those, which have a garden of from twenty to thirty perches, usually let from 2*l.* to 3*l.* per annum, some more and others less, according to situation and other circumstances: those which have land enough to keep a cow, let from 4*l.* to 5*l.* per annum.

[These rents are increasing in proportion to the increase of labour; few good cottages, with a garden, letting now under four pounds; and where a cow can be kept, they are worth from five to eight pounds per annum.]

Some writers on this subject have taken considerable pains to shew, it would be a great advantage for every cottager to have two or three acres of land, that they might each keep a cow and two or three hogs, and raise plenty of potatoes: but gentlemen who recommend this, in their humanity to the individuals who are to be benefitted, lose sight of what would be the mischievous effects to the community, by the loss of their labour. I will

venture with great confidence to predict, that if every farming cottager, or in other words, every farmer's labourer in the kingdom, could be so accommodated, a famine would inevitably be the consequence in a short space of time; for experience has taught me to observe, that few men will labour hard any farther than necessity compels them to do so; and it is clear, that any cottager who has two or three acres of land, keeps a cow and two or three hogs, and grows plenty of potatoes, is not much necessitated to labour for others.

[Since the publication of the former edition of this Report, much has been written and said upon this subject by various authors, and by some noblemen and gentlemen of the greatest respectability in the united kingdom. The foregoing observations of mine have subjected me to some, rather severe, reprehensions from a very respectable surveyor (and estate agent) of one of the County Reports, who contends that every cottage should have two or three acres of land annexed to it. The more I consider this subject, and the more experience I have, the more I am convinced, that were it possible to put every cottager in such a situation, the consequences would be ruinous to the community at large. It is now a very difficult matter, in many parishes in this county, to get the corn thrashed out before much of it is destroyed by vermin; although three pence per bushel is frequently paid for barley, and sixpence for wheat, and much other labour is often omitted for want of hands to do it. If every farming labourer had two or three acres of land, a cow, and a few hogs, some would be employed cultivating their land in a wasteful manner, with respect to time, by hand; and afterwards running about the country retailing small articles of the produce; idling much of their time in public-houses and gin-shops.

shops. Some would keep a horse or two, and commence a trade injurious to the revenue: a great many, by industry, and a very penurious mode of living, would upon these spots intirely support their families without any other labour. Hence would the most material part of the husbandry labour be lost to the public. Beans, pease and turnips, &c. must go unhoed, grass for hay unmowed, corn unharvested, and if by an extra price harvested at an enormous expense, unthrashed in the winter, and destroyed by rats and mice in the barns in the summer: thus might a famine, as before-mentioned, be the consequence. Far be it from me to harbour a wish to limit improperly the means of any poor man's subsistence; but the situation of the labourer in a country under full culture like this, contrasted with that of the lower order of people in every other department, stands not in need of such anxious attention. I have even the boldness to assert, that I do not believe he would be rendered happier or richer by the measure. In grass-land counties, indeed, where there is little demand for agricultural labour; or where there is so great a population, that workmen have a difficulty in finding employment to earn a living, two or three acres of land may with great propriety be added to every cottage; in such cases it may with safety be recommended: but gentlemen ought to be very cautious how they advise measures that have a tendency to diminish the agricultural labour of the people, on which the main strength and wealth of the country depends.*]

* See Adam Smith on the Wealth of Nations.

CHAP. IV.

MODE OF OCCUPATION.

 SECT. I.—SIZE OF FARMS, AND CHARACTER OF
THE FARMERS.

THE size of farms is generally greatest in the poorest parts of the county. Many small farms, of from ten to fourteen acres each, are found in the richest soils, and few there exceed 200 acres; but where land is poor, there are many as large as 300 acres, and some 600, or more. Many writers on agriculture have condemned the practice of adding small farms together, under an idea that it tends to increase the price of provisions, and decrease population; but from all the observations that I have made for the last twenty years, I am persuaded that the large farmers, generally speaking, make the land more productive in the gross than the smaller farmers do, because they generally make greater exertions in improving their land; and of course, large farms must have a tendency to lower the price of provisions. It is very true, that a number of small farmers on a given tract of land, will rear more poultry and eggs, and perhaps make more butter, than one farmer on the same quantity; but the one farmer will raise more mutton, wool, beef, and pork, and grow most corn; and will employ a much great number of labourers than the small farmers on the same tract of land; and consequently population will be increased rather than be diminished
by

by large farms. At any rate, there ought to be no restraint, as some writers have recommended, in the letting of farms; for if it were so, men of large capitals could not be accommodated: by which many of the most spirited improvers in agriculture would be driven perhaps out of the kingdom; and if not, their money would either lie idle, or be employed in some other pursuit with much less advantage to the community.

The occupiers of the small farms in general, work themselves, much harder, and fare worse than other labourers, or many journeymen mechanics. Those of the higher class, the large occupiers and principal yeomanry, are a very respectable class of society, and have a great weight in the political scale of the county.

Mr. Hasted says, "The yeomanry, which in most other parts of the kingdom is confined to the common people only, as indeed the name shews, for it is so called from the Saxon word GEMEN, which signifies common, is extended much higher in Kent; for it here likewise comprehends the principal farmers and landholders, who, either from their education or intercourse of life, are not esteemed by the gentry of equal rank with themselves; and yet, in point of wealth and possessions, they are frequently superior to many of them, who, though they write themselves Yeomen, yet are usually and very properly styled Gentlemen-Farmers; for besides the largeness of their holdings, which are from 400l. to 1200l. per annum, they have, in general, good estates and freeholds of their own, and some, even to the amount of what they hire."

Besides the yeomen, before mentioned, there is an infinite number of farmers, not having or possessing a freehold, who occupy from 40l. to 300l. or 400l. a year. The smaller farmers are in general a very industrious

and sober set of men, fare hard, and live with great frugality. The great occupiers, who have property in stock of from 1 to 2, or 3000*l.* live, as they ought, more at their ease; but as to making fortunes by farming, there is no such thing that ever came to my knowledge; the competition is too great to admit of it; instances have been known of great wealth being left by old farmers, who have never had any other occupation; but then they have, perhaps, had a small family, or scarcely spent any thing beyond the expenses of a common labourer, so that the fortune has been, in great measure, saved by the simple operation of compound interest; or, perhaps, these persons have held their farms for a long series of years, at a rent of great favour.

SECT. II.—RENTS.

THERE are many farms which let as low as 5*s.* per acre; and others, at every other price between that sum and 30*s.*; while some particular fields of rich land, in the vicinity of great towns, as pasture, garden, hop-ground, &c. may let as high as 3, 4, or 5*l.* per acre.

The rent is, I believe, invariably paid in money; all ancient customs of paying in kind, and personal services, being abolished or compounded for, except in some trifling cases; where a landlord stipulates for a load or two of straw annually, or the carriage of a few coals, the keep of a young hound, or some such thing of little consequence.

The payments are usually made half-yearly; that which is due at Lady-day, at Midsummer; and that due at Michaelmas, at Christmas; generally allowing the tenant one quarter's credit. In some few instances, a half

half year is given them, paying one half year under another. Perhaps I may not be very wide of the truth, if I state the average rent of the county to be 15s. per acre; which will make for the whole, 896,000 acres, 672,000l.

[Since the publication of the former edition of this work, rents have much increased, and in some instances have experienced an enormous advance; particularly in rich soils, and in the neighbourhood of market towns. The late extravagantly high prices of corn operated as a bounty upon its production, by encouraging an enlarged cultivation; which, together with two succeeding tolerably good crops, has so filled the markets, that prices for some sorts of grain are reduced below what they ought to be, to give the farmer a reasonable profit. Rents will therefore most probably in their turn experience a depression, and the eagerness for hiring farms subside. The additional increase of taxes too, and consequent increase of the price of labour, must powerfully contribute to this end.]

The value of the land of the county may now perhaps be stated at twenty shillings per acre. One million per annum for the whole may be nearer the truth.]

SECT. III.—TITHES.

IN many parts of this county, the tithes are collected in kind; in others, they are compounded for, on terms which will be hereafter mentioned.

In the Isle of Thanet, the whole of the rectorial tithes are collected, but the vicarial are chiefly compounded for; part of the latter is neither collected nor compounded for at present, nor has been for some years, owing to a litigation about the right to the tithe of turnips, &c. In

the eastern part of the county, the rectorial are almost invariably paid in kind, and the vicarial mostly compounded for, excepting in some instances, where there are disagreements between the vicars and their parishioners.

The rich lands about the towns of Faversham, Sandwich, and Deal, have their tithes chiefly collected. In the Isle of Shepey, the same. There have been some disagreements respecting the vicarial tithes in the parish of Minster, which are now settled, by paying 2s. per pound on the rent, and an addition of 6d. per acre for uplands; 9d. for marsh lands; and 1s. for mowing meadows: by which, an acre of upland, that lets for 5s. per acre, pays 1s. to the lay-impropriator; an acre of marsh land, that lets for 10s. pays 1s. 9d.; and an acre of meadow, that lets for 11. pays 3s. or, reduced to a fraction,

The poor land pays	8-40ths	} of its rent, in lieu of vicarial tithe.
The middling	- 7-40ths	
The best	- 6-40ths	

About Maidstone, the tithe of corn is generally compounded for; wheat, from 6s. to 7s. per acre; and Lent-corn, from 4s. to 5s. per acre.

In the Weald of Kent, tithes are compounded for; wheat from 5s. to 6s. per acre; oats 3s.; beans, pease, and barley, from 3s. to 4s.; seeds and meadow, 2s. In Romney Marsh, the grass-lands (except in the parish of Lydd *) pay a modus in lieu of tithe; some of 4d. some 8d. and others 1s. per acre; and corn-lands pay a composition of from 4s. to 6s. Some parishes paying the low modus of grass, if it be mown, pay 1s. per acre. A fair commutation for tithe, I think, would oc-

* The modus for this parish was destroyed some years since, owing to the parishioners desiring to have it lowered; to which the vicar consented, and afterwards recovered the tithes.

occasion a great number of improvements in agriculture; for even in the Isle of Thanet, where the land in general is cultivated in the most superior stile, there are some improvements yet to make; for there are several fields of poor thin chalky lands, on the hills, in the vicinity of Margate and Ramsgate, that were never known to have any manure carried on them; which, doubtless, would pay very well for improving, after a few years, if the occupier had the whole of the produce to himself; but the mischief is, that if he is at a great expence in purchasing town-dung, or getting sea-weeds up the cliffs for this land, he is probably a considerable loser the first two or three years by his industry; when at the same time, the tithe-gatherer, who is at no part of the expense, trouble, or hazard, gets corn each year, perhaps equal in value to two or three years purchase of the land in its unimproved state: hence it is, that some of the poor lands lie neglected. If a fair commutation for tithe could be devised, so as to satisfy all parties, there can be no doubt but that the product of this island, great as it already is, would be much increased * † ‡.

There

* Having sent a manuscript copy of this Report to an ingenious friend in Thanet, he returned it with the following remark:

"Whatever may be the ill effects of tithe taken in kind, or whether any, I shall not here inquire into, but only remark, that the thin chalky lands on the hills, in the vicinity of Margate and Ramsgate, are not indebted to the tithe-gatherer for their little produce, but to the inability of the occupiers, who are, generally speaking, in mean circumstances; carters, machine-drivers, &c. &c. who plough, &c. when they can, in season or out of season. The same kind of land in the occupation of the wealthy farmers, exhibits a very different appearance to the eye of the spectator; and produces a more ample return to the pocket of the occupier."

This is most certainly the case in some measure; but there is a much greater quantity of poor unimproved land occupied by farmers, than by carters and machine-drivers. Nash Court Farm, near Margate, has several score acres, which in all probability would have been manured before this time, had they been tithe-free.—*Editor.*

[Nash

There would be another very considerable advantage to the public, in the saving of labour in harvest, by the corn being carried into the occupier's barns in much less time than it can be carried into those of the parsonage; the latter being frequently at a great distance from some part of the parish, much time is spent in getting the corn home. The value of the difference of the labourer, between carrying the tithe-corn into the parsonage and farmer's barn, is just so much loss to the public; and if rightly calculated for the whole kingdom, would amount to an immense sum*. Among the disadvantages to the public

[Nash Court, before-mentioned, having been, for a few years past, in the occupation of the tenant of the parsonage, has, in effect, been tithe-free; in consequence of which, the poor part above alluded to has been greatly improved by sea-weed, town-dung, &c. which have been brought to it at a great expense, and five crops of several sorts of corn have been reared upon it. This improvement would hardly have taken place, had the farm continued in the occupation of the old tenant paying tithe in kind.]

† What is meant by a fair commutation for tithe, I know not. An equivalent, or a commutation that would satisfy all parties, is perhaps impossible. The public good, however, certainly requires, that the most equitable one that can be devised should take place, whether the parties immediately concerned are satisfied or not. The surveyor's reasonings are undoubtedly just and conclusive, and the objections of his correspondent, however plausible they may appear to the superficial observer, are of no weight as to the main object in question.—*Note by an unknown Gentleman, transmitted to the Honourable Board of Agriculture.*

‡ All the great, or corn tithes, are in lay lands (excepting a small portion of Minster), and are all taken in kind; and this Report states agriculture in a very flourishing state in Thanet. It would, perhaps, enlighten the question, if a fair comparison could be made with strict impartiality between a tithe-free farm, and some of the best cultivated and managed farms subject to the tithe-gatherers in Thanet and East Kent. The local advantage of an inexhaustible supply of manure from the sea, is sufficient to counterbalance the disadvantage of payment of tithe in kind, and seems to be the true reason why so much of the poor land has been improved.—*Note by a Clergyman in Thanet.*

* To this may be added, the loss by wether, and the depredations of cattle, &c. to which the tithe-gatherer is particularly subject in a wet harvest.—*A Note by H. G. Fauisset, Esq.*

The Author is a tithe-gatherer to a considerable amount, and, of course, interested

public in the collection of tithe in kind, the quarrels between neighbours, who perhaps would otherwise be very good friends, is a very material one; and more particularly where the tithe-gatherer happens to be the clergyman; but this is seldom the case in the Isle of Thanet, the tithe there being mostly in lay hands.

There are immense quantities of poor land in East Kent, which experience has proved, might be made to produce good crops of turnips and clover, that never yet have produced either; but the expense is so great to the occupier, with the idea before him that another may reap the greatest benefit, that hardly any person is willing to set about improving his lands on such terms. Crops of wheat and barley have been lately produced upon some of the chalky downs, by means of improvements from turf-burning, that were worth more than the fee-simple of the land on which they grew: but they were raised on lands that paid no tithe; and that circumstance was the principal inducement to make the exertion. Let tithes be compounded for, if it were only for one term of twenty years, and turnips, clover, mutton, and wool, would increase in an astonishing degree. Farmers then would have the satisfaction of reaping the fruits of their own labour; and would set about turf-burning, and every scheme they could devise, to mend that land which they now care but little about.

terested in the collection of tithe; but seeing, as he does, the many obstructions to all agricultural improvements, together with many other inconveniences and losses to the public, by means of tithes: and being called upon for his opinion, he feels it his duty to give his sentiments.

As this Note is intended to give weight to the Author's observations on tithe, his candour would have been more conspicuous, had he stated the proportion of land he pays the tithe of, and what he collects, and left the public to judge how far he is interested in the collection.—*Remark by a Clergyman.*

He collects full three times as much tithe as he pays.—*Editor.*

SECT. IV.—POOR-RATES.

THE expences of the poor vary so exceedingly in the different parishes throughout this county, that it will be impossible for me to make any exact report on this subject. Some parishes expend no more than 6d. in the pound on their rents, while many others exceed even 5s. or 6s. It is a general complaint, that these expenses are annually on the increase. There are, however, several corporations lately erected, under Mr. GILBERT's act of parliament, which are yet in their infancy; but, even in this early stage, they afford a fair prospect of answering the intention of reducing the poor-rates*: at all events they discourage idleness, and bring up poor children in habits of virtue and industry. The exact expenses of the poor, for the last three years, in the ten parishes of the Isle of Thanet, I have been favoured with by the different parish-officers, and are as follows:

	£.
Sarre, about - - - - -	300
St. Nicholas, - - - - -	733
Monkton, - - - - -	973
Birchington, - - - - -	899
Woodchurch, - - - - -	252
Minster, - - - - -	1449
St. John Baptist, - - - - -	3786
St. Peter the Apostle, - - - - -	1972
St. Lawrence, - - - - -	4019
Stonore, - - - - -	34
	<hr/>
	3)14417
	<hr/>
Average of 3 years, - - - - -	£. 4805

* [They have since been found, in most cases, to be reducing their debt which was originally contracted for the erection of buildings, &c.]

or annual expense of maintaining the poor of the Isle of Thanet.

[I have again been favoured with an account of the expense of maintaining the poor of this island for the three years ending at Easter, 1803, which is as follows :

	£.
Sarre, - - - - -	455
St. Nicholas, - - - - -	1695
Monkton, - - - - -	1509
Birchington, - - - - -	1642
Woodchurch, - - - - -	668
Minster, - - - - -	2950
St. John Baptist, - - - - -	8907
St. Peter the Apostle, - - - - -	3822
St. Lawrence, - - - - -	5918
Stonore, - - - - -	90
	<hr/>
	3)27656
	<hr/>
Average of three years, - - - - -	9218
Ditto former period, - - - - -	4805
	<hr/>
Average increased expense of maintaining the poor in seven years, - - - - -	4413
	<hr/>

Hence it appears, that the expense of maintaining the poor of this island, consisting of 27,000 acres of land, is now the average annual sum of 9215l. and that it is nearly doubled in the last seven years*.

In

* One very great impediment to any effectual reform in the management of the poor in Thanet, arises from the different jurisdictions of the county, of Sandwich, and of Dover within it.

In the former edition, an estimate was made of what might then have been the expense of the poor-rates of the whole county, grounded on that of this island; but as a correct account of that expense, under the authority of parliament, is now, or very shortly will be, laid before the public, any calculations on uncertain grounds are now become unnecessary.]

SECT. V.—LEASES.

THERE are many estates in Kent held by lessees, under the churches of Canterbury and Rochester; and some under the crown; others under the colleges of the universities of Oxford and Cambridge. Many are held on three lives, under fines of renewal as they drop; others under twenty-one years, renewable every seven, on paying a fine as may be agreed upon by the parties, and subject to a small annual rent.

The value of these leases varies much, according to local circumstances; but it is generally estimated at about fourteen years purchase.

*In the jurisdiction of
the County.*

St. Lawrence,
only part;
Minster, all;
Monkton, all;
St. Nicholas,
only part.

Of Sandwich.

Ramsgate,
The remainder of
St. Lawrence,
Sarre,
The remainder of
St. Nicholas.

Of Dover,

The whole of
Birchington,
Ditto of Margate,
Ditto of St. Peter*.

Note by a Friend in Thanet.

* These local jurisdictions are very inconvenient, both to the county at large, and to the places themselves. The power of magistrates is rendered of small effect; and many a sturdy rogue escapes the punishment he deserves.—

Note by H. G. Faussett, Esq.

The

The leases granted to the occupying tenants are always for years; from seven to eleven, fourteen, and twenty-one: fourteen is the most usual term: the time of entering is generally on the 10th of October. The barns, and farm-yard for foddering cattle, are always reserved to the outgoing tenants until May-day following.

The usual covenants are for the landlord to repair all buildings, gates, stiles, and bridges; also timber-fences, and the lead of glass windows; and to pay the land-tax, quit-rents, and wall-scots, where there are any. The tenants covenant to find carriage for all materials for repairs, with straw for thatch, and beer for workmen.

In some cases the tenants pay half the workmanship of repairs; and they are generally restrained from selling straw, and in some parts of the county, hay, except on the condition of buying for every load of hay sold, a certain quantity of dung; which is an excellent covenant for both parties, because it has a tendency to prevent an estate being injured by carrying away its produce without a suitable return. Many of the leases of the present time are mere copies of old ones, that have been handed down through several generations, with covenants very inconsistent with modern improvements. Some farmers are bound to sow wheat after beans, on land not fit to produce beans; to leave a quantity of podware gratten* for a wheat tilth on farms, where some sorts of podware are the worst tilth known to sow wheat upon; and on dry upland farms, where turnips and clover are known improvements, there is not the least mention of these articles, not even a covenant to leave an acre of either at

* A local term for stubble.

the end of the term, nor to destroy wild oats, charlock, or thistles.

For want of a reform in this department of farming business, estates are often much injured, and incoming tenants half ruined in getting their farms in good order. It is the interest of every tenant, having a term of years in his farm, not only to keep it in a good condition, but to improve it till within the last two or three years; and, consequently, not many restrictions are necessary during that period. It is requisite, therefore, only to make it equally his interest to keep the farm in good condition during the remainder of the term; which would be most effectually done, by compelling him or his heirs to allow for damages, as the clergy do for dilapidations.

Leases of twenty-one years, for all parties concerned, are, in my opinion, preferable to shorter ones: under the security of such a term, the tenant can afford to give more rent for his land; he can spend his money on improvements with confidence of reaping the benefit of them; and, by the consequent increase of the produce of his crops, his profits will be advanced in proportion: considerations in which the landlord, tenant and public are all interested.

SECT. VI.—EXPENSE AND PROFIT.

As no statement can be depended upon, to give a particular and accurate account of the expense and profit of the agriculture of this county, I shall forbear the attempt, as impracticable, and aim only at giving a general idea of the subject.

The

The prevailing opinion, for a great length of time, has been, that the average expenses of a farm, in the common routine of management, are twice the rent; but in reality the expense is much more, often amounting to three, four, and sometimes, five times the rent.

The expense of stocking a farm, and carrying on the business of the year, is from three to four, and in some cases 5l. per acre; and always highest when in the hands of the most skilful and spirited cultivators. The ignorant, timid, and penurious farmer, is at the least expence in cultivating his land; but, for that reason, he has the least produce from it. Individuals and the state are most benefited by a spirited cultivation.

[Lately some farms have taken near 10l. per acre to stock them.]

With regard to profit, ten or twelve per cent. is usually made on the capital employed; more or less in proportion to the skill, spirit, and industry of the agriculturist.

Supposing the opinions heretofore stated, as to the rent, stock, and produce, to be nearly the truth, then the account of the whole county will stand thus:

Rent for 896,000 acres, at 15s.	£672,000
Average produce (say thrice that sum)	2,016,000
Capital employed, at 3l. per acre*	2,688,000
Profit, stated at the average produce, of eleven per cent. on the capital employed	} 295,680

* Too little for arable farms; but taking grass-land, wood, waste, &c. may perhaps be near the truth.

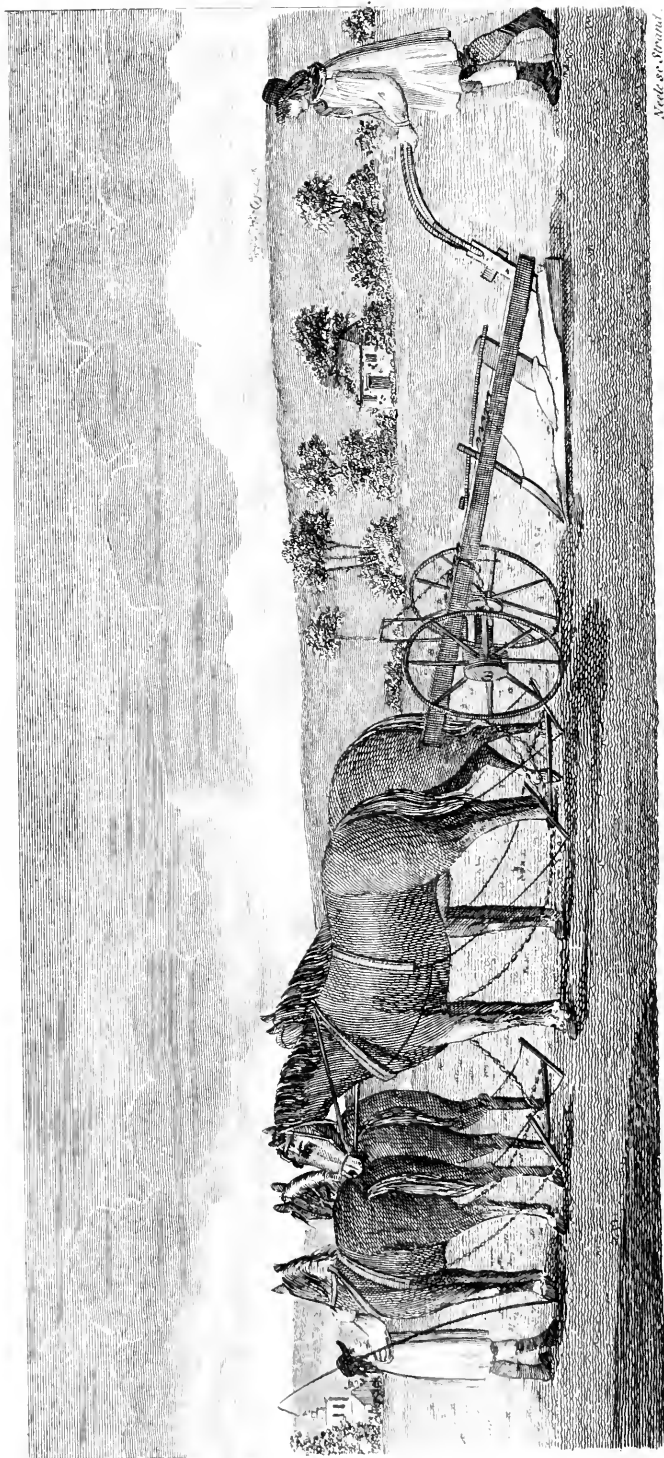
[The above estimate was made in the year 1795. Now (1803), it may be stated as under, (viz.)

Rent, say	-	-	-	£.1,000,000
Produce	-	-	-	3,000,000
Capital at 5%. per acre	-	-	-	4,480,000
Profit stated at eleven per cent. on } the capital employed				492,800]

Allowing the farmers five per cent. each for their capital (the value, if it were not employed in agriculture), then the value of the agricultural industry of the farmers of this county will be six per cent. of the capital, or 161,280/. in the former period, and 268,800/. in the latter.

Where gentlemen take farms into their own hands, generally speaking, their produce and profit must be stated at considerably less; for, from a want of practical knowledge of the subject, and not condescending to stoop to the minutiae of the business, they are subject to various impositions from their tradesmen and labourers; which occasion much loss of time and profit. Some instances, however, occur of spirit and great application producing effects creditable to the owners, and beneficial to such of their neighbours who are wise enough to follow good examples.





Woodcut by Wood

KENTISH TURN-WREST PLOUGH.

CHAP. V.

IMPLEMENTS.

THE Kentish turn-wrest plough is almost the only one used or known in this county. Some few instances of trials of the Suffolk ploughs, which go with two horses abreast, and are driven by the ploughman, occur, but they have not been found to answer the purpose of the farmers of this county, and are in consequence laid aside for the native implements; which, for all sorts of soils, and all required depths of ploughing, is the best I have ever seen and tried. It consists of a beam of oak ten feet long, five inches deep, and four broad: behind which is a foot, five inches by three and a half, and three feet and a half long; on the top of which the handles are placed; the foot is tenoned to the end of the beam, and mortised at the bottom to the end of the chep. Through the beam, at two feet five inches distance from the foot, is a sheath of oak seven inches wide, and one and a half thick, which is mortised into the chep in an oblique direction, so that the point of the share is twenty-two inches distant from the beam. The chep to which the share is fixed is five feet long, four inches wide, and five inches deep. The share is of hammered iron, weighs about thirty-two pounds, is twenty inches long, and from four inches and a half to seven inches wide at the point.

The upper end of the beam rests on a carriage with two wheels, three feet two inches high. On the axle-

tree is a gallows, on which is a sliding bolster, to let up and down. Through the centre of the axle is a clasp-iron, to which is fixed a strong chain, called a tow, that comes over the beam, so fixed, as by means of notches (or a pin called a check) to let the whole plough out a greater length from the axle, thereby letting it down to a greater depth.

This implement, altogether, is most certainly a very heavy one, and, from its construction, must be made very stout; as otherwise either the beam or chep will break with the force of four strong horses, when it comes suddenly against a rock, or any stiff place in the soil, a hard beaten path, or root of a tree, &c. It is remarkable for going well among flints and rocks. With these ploughs the soil may be turned up a great depth, and laid quite flat, without any kind of furrow being left open; which is a great advantage in a dry soil. They cost, with every kind of tackle fixed for drawing them, entirely new, about 5*l.* 5*s.* each*.

With these ploughs four horses are generally used in East Kent; but in light lands, three, or even two, are found to be sufficient, and an acre and a half is the common day's work; a little more or less, in proportion to the stiffness or lightness of the soil: but in the western part of the county, from the tenacity of the soil, it is necessary to make the ploughs much stouter, and to use six horses, the plough there being drawn by a long large iron link, called a tow, which comes from the axle of the carriage round the heel of the plough. In that part of the county they seldom plough more than an acre in a

* This, and the succeeding prices throughout this chapter, it must be observed, are given as they were in the year 1796; since that period, the expense of all implements in husbandry is increased, from forty to fifty percent.

day, and sometimes not half so much, even when six horses are employed.

In the Weald of Kent they have a foot-plough with a turn-wrest, for breaking up lays. They cost 2*l.* 15*s.* each.

A double plough from a Gentleman in Suffolk has been sent to me, and I have spared no exertion or attention in giving it a fair trial; but it has not succeeded. The many flints which lie fast in the stiff soils, are continually throwing the plough out of the land; added to which, the deep open furrows and the uneven surface left by this instrument, are insurmountable objections, especially where drill machines are much used.

A great variety of ploughs and machines for drilling every species of grain is used in this county. The best by far for drilling wheat, barley, oats, pease, tares, &c. are made by Mr. WELLARD, of Deal. They are drawn by two horses abreast, in a double pair of shafts; drill five or seven rows at a time, each seven inches apart, and are so contrived as to drill any quantity required per acre. They are very simple in their construction, and not liable to get out of order. They cost 14*l.* 10*s.* each*.

Harrows consist of four beams of ash, each four feet and a half long, and two inches and a half square, framed together so as to be four feet and a half wide behind, and four feet before: there are six or seven teeth of iron in each beam, which when new are eleven inches long, and weigh about a pound and a quarter each. One boy usually leads a pair of horses, each horse drawing one harrow. They cost, with a strong iron chain, called here a harrow-strap, about a guinea.

* The price now is 15*l.* 15*s.* which is an exception to the foregoing note.

The carriages used for carrying corn to market, &c. are called hutches, drawn by four horses; generally loaded with from seven to twelve quarters of corn, according to its weight and the distance it is carried. They are thirteen feet long, are made crooked at the sides, that the width cannot be positively ascertained; but are generally three feet wide before, and four behind at the bottom; and about six or eight inches wider at top, and twenty deep: they are boarded at the sides and ends close enough to carry sand. If made with wooden axletrees, they cost about twenty guineas; if with iron, twenty-five.

The dung-carts are of various dimensions, but mostly about seven feet long, and twenty inches deep; four feet broad behind, and three feet ten inches before; are usually drawn by two horses, and with broad wheels; and with every thing new and well made, cost about eight guineas.

Rolls of various sizes are used for breaking the clods; they are made nine feet long, and from fourteen to twenty-four inches in diameter; cost from 3*l.* to 10*l.*

Wheat is reaped with a toothed sickle; barley and oats are mown with a long scythe and cradle; they are then bound into sheaves, being drawn together on one foot till the bundle is of size sufficient for a band made of two lengths of the corn twisted together.

Horse-rakes are used for dragging together the loose barley left by the binders; they are made of oak, twelve feet long, with iron teeth fourteen inches in length and five apart; the beam is cut four inches by three. These rakes are drawn by one horse led by a boy, with a man behind to lift it up every time it is filled with the corn. Price from 18*s.* to 1*l.* 4*s.*

Wheat stubble-rakes are used to drag that article together, made on the same principle as the last mentioned, but

but much heavier, and two feet shorter : the beam is five inches by four, drawn by two horses. Cost about 2*l.* 2*s.*

On the stiff soils the West Kent double harrows are used, each of which requires two horses; they have six beams, each with six teeth projecting ten or twelve inches from the wood. They cost 2*l.* 10*s.* each.

Rollers of stone are sometimes used to break the stiff soils, drawn by six horses: they cost from 12*l.* to 14*l.* each.

Near Maidstone, hutches are made to contain two chaldrons of coals; and cost 30*l.* In most other parts they carry a chaldron and a half; and cost about 25*l.* each.

In the Weald of Kent, carriages, called bavin tugs, are chiefly used for faggots; and many use them for corn and hay. They carry 150 faggots; each four feet long, and three girt. The hind and fore wheels are fourteen feet apart; by which the carriage is so much lengthened, that the load lies very low, and is thereby less liable to be turned over; which otherwise would often be the case in the roads of the Weald. This implement costs about 15*l.* or 16*l.*

IMPLEMENTS AND APPENDAGES TO THE HOP GROUNDS.

Every hop-plantation of four or five acres, requires an oast about sixteen feet square, which, built substantially with the requisite stowage room, costs from 150*l.* to 200*l.*

This is furnished with a set of picking baskets, about twelve in number, which cost about 5*s.* 6*d.* each; also a good scale-beam, with weights and scales; which, together, cost about 5*l.*

A shim, made with a frame like a wheelbarrow, is esteemed the best sort; it costs about 2*l.* 2*s.* This implement is a very useful and convenient one likewise for tearing up weeds on summer-fallows.

A harrow to be drawn by one horse, with a small wheel in front, to go round at the ends of the plantation,

and a pair of handles to be holden by the man who follows it, in order to keep it from bruising the binds. This implement costs about 1*l.* 15*s.*

A large iron peeler to make holes in the land for the poles, costs 6*s.* or 7*s.* A hop-dog, to wrench up the poles, costs 5*s.*

The first, and I believe the only thrashing-mill in the county, is at Betshanger, which I erected about three years ago*. By a number of improvements, and after many alterations, I have the satisfaction to find it answers my purpose extremely well. It requires four horses, about eight men and four boys to remove the corn from a distant part of the barn, feed the mill, attend a winnowing-fan, and stack the straw. With this assistance, when the corn yields well, it will thrash and half-clean three quarters of wheat, or four of barley, or five of oats, per hour; by which I find there is a saving of nearly one half of the expense of thrashing, besides the advantage of getting the corn out cleaner from the straw. There is, however, no small inconvenience attending it in so large a quantity of straw, chaff, &c. being got out at one time, when perhaps it is not wanted; and by that means, it is either wasted, or spoiled by neglect, before it comes to use.

EXPENSE AND PRODUCE OF A DAY'S THRASHING.

	£.	s.	d.
Eight men, at 1 <i>s.</i> 8 <i>d.</i> each - - - - -	0	13	4
Four boys, at 1 <i>s.</i> each - - - - -	0	4	0
Four horses, at 2 <i>s.</i> 6 <i>d.</i> each - - - - -	0	10	0
Cleaning and measuring 24 quarters of } wheat, at 3 <i>d.</i> each - - - - }	0	6	0
	£.1	13	4

* [Now there are several introduced in different parts of the county.]

which

which is about 1*s.* 4*d.* per quarter, or, as before stated, about half price.

	£.	s.	d.
Cleaning and measuring 32 quarters of } barley, at 3 <i>d.</i> - - - - - }	0	8	0
Other expenses, as above - - - - -	1	7	4
	<hr/>		
	£.	15	4

which is somewhat more than half price, barley being usually thrashed of late at about 1*s.* 6*d.* per quarter.

	£.	s.	d.
Cleaning and measuring 40 quarters } of oats, at 1 <i>d.</i> per quarter - }	0	3	4
Other expenses, as above - - - - -	1	7	4
	<hr/>		
	£.	10	8

which is a little more than half price, they being usually thrashed at about 1*s.* 3*d.* per quarter.

[The foregoing calculations, I have since found, were formed on too sanguine expectations; for although through unremitting attention, such as was at first given by me to a favourite scheme, from a strong prepossession of its utility, the quantity of corn before mentioned may be thrashed out in the given time; yet more experience has taught me since, that from unavoidable interruptions, the mill cannot, upon an average, be kept going more than seven hours in a day with the same horses, and that the fair average of the quantity of wheat thrashed in that time is seventeen quarters and a half. I now employ for the purpose of working the mill only six men instead of eight, and four boys; but when thrashing wheat I have found it necessary to employ an additional horse. The price of labour and keep of

of horses being considerably altered since 1796, it should stand 1803, thus:

EXPENSE AND PRODUCE OF A DAY'S THRASHING OF WHEAT.

	£.	s.	d.
Six men each a day, at 2s. - - - -	0	12	0
Four boys - - - 1s. 2d. - - - -	0	4	8
Five horses - - - 3s. - - - -	0	15	0
Cleaning and measuring seventeen and one-half quarters, at 4d. - - - }	0	15	10
	<u>£. 2</u>	<u>7</u>	<u>6</u>

which is about 2s. 9d. per quarter; the price by hand is from 3s. 6d. to 4s.

The average of a day's thrashing of barley is found not much to exceed twenty quarters; four horses are sufficient here, and the expense is about 1s. 9d. per quarter: it is done this year by hand for 2s. it must, however, be observed that the awns are left on the grain much more by the mill than when thrashed by hand.

Oats may be thrashed in vast quantities per day, and at a considerably less expense than by hand; particularly if they are reaped, having short straw to go through the mill.

Beans cannot be thrashed at much less expense by the mill than by hand.

Upon the whole, although the advantages of the mill from the above statement undoubtedly suffer some diminution; yet it will be remembered, that when there is a great demand for any kind of corn with high prices, a large quantity may be prepared for market in a short space of time. In the last great scarcity at the beginning of harvest, I was applied to by two neighbouring millers earnestly

nestly entreating me to let them have some wheat, alleging that they had neither corn nor flour, and that the bakers their customers, were quite out of goods. The mill was instantly set to work, and in one day twenty quarters thrashed, and ten sent next day to each miller, both of whom informed me afterwards that the wheat was ground and converted into flour in the night, delivered to the bakers from one of them to the town of Deal, and from the other to the town of Dover, the next morning, and they did suppose nearly consumed in bread by the following day.

There is another great advantage in the use of this mill, (*viz.*) that of employing all hands in rainy days and other bad weather, when both men and horses would otherwise be entirely idle.]

This mill will thrash every kind of corn cleaner than it is usually done by the common mode. To ascertain which, I sometime since got several neighbouring farmers to have thirty-six pounds of wheat straw thrashed perfectly clean in their respective barns, and then I had the same weight of straw thrashed after it came from the mill; I found by the experiment that the average produce of corn left in the straw, by the common mode of thrashing, was half a pint in every thirty-six pounds of straw, more than is left by the mill.

The horse-wheel is twelve feet diameter, in which there are 120 wooden cogs, which work into a cast iron nut, with fourteen cogs on the end of a horizontal shaft; at the other end of which, within side the barn, is a spur-wheel, with fifty-seven wooden cogs, which work into a nut, fixed on an iron spindle, in which are fourteen cogs. On this spindle the cylinder is placed; it is five feet long, and three feet in diameter, and it has four beaters lined with thin iron plate fixed upon it, each projecting from

from the face of the cylinder about two inches and a quarter.

When the horses walk a tolerable pace, the cylinder revolves upwards of 200 times per minute, making nine or ten hundred strokes in that space of time. The beaters, by the revolution of the cylinder, meet two fluted wooden rollers working in contrary directions, by a wheel fixed on the horizontal shaft; they are the same length of the cylinder, and five inches diameter, and revolve near thirty times per minute.

The corn is drawn in between these two rollers, from off a feeding-board, as broad as the cylinder is long.

The beaters strike the corn upwards, by which the straw and corn together are thrown over the cylinder, and drop down on a grating; through which the corn and chaff fall into a hopper, and from thence, pass away before a winnowing-fan, by which the chaff is separated from the corn. The straw is pushed off the grating by a person who stands by it, and from thence is by others conveyed either into the farm-yard, or stacked in the barn for future use. The corn, with the remaining chaff, &c. is then passed through a winnowing machine, and by that made perfectly clean.

CHAP. VI.

ENCLOSING.—FENCES.—GATES.

THERE is no portion of Kent that is occupied by a community of persons, as in many other counties. Our commons for live stock are generally much covered with furze, thorns, brakes, or heath, with a mixture of plots of poor grass-land; the cattle and sheep feeding upon them, are of course in a half-starved state. The total destruction of all commonable rights, by a general act of parliament for enclosing, would be an object, in my opinion, of the greatest magnitude to the interests of this kingdom in general, but not so much to this county as many others. There have been some exertions for accomplishing a division and enclosure of an extensive common in East Kent, within these few years; which failed for want of unanimity among the persons concerned.

The fences in the uplands consist of old hedges, such as Nature has formed; quickset hedges raised from the berries of the white thorn, and dead hedges, made from the spare bushes from the old hedge-rows. Turf banks and stone walls are not erected for fences in this county.

In Romney Marsh, an immense quantity of oaken posts and rails are used; which are brought ready prepared from the neighbouring woody part of the county. The old hedges, of natural growth, are usually cut down at from ten to twenty years old; and the fences

are

are then made anew at the expense of $3d^*$. per rod, if the hedge is bound; and $2d.$ without binding. Ten or eleven stakes, and the same number of binders, are generally allowed to every rod. If there is a ditch along the hedge, it is usually scowered out at the same time, for $3d.$ per rod, if about three feet wide, and two deep; but if wider and deeper, then a greater price is given in proportion.

Quickset hedges are planted on the bank, made by the mould, dug from out of a ditch three feet wide, and two feet deep; and an hundred plants are allowed to every three rods. The best plants are bought of the nurserymen, at $1s.$ per hundred. Sometimes plants are gathered out of the wood for $4d.$ per hundred, by the labourers; but they never succeed so well as good clean grown nursery plants. There are other methods used; some approving a broader and deeper ditch, while others prefer planting on level ground: but the method most in use is that above mentioned. The dead hedges are made with white and black thorn-bushes, at the expense of from $2d.$ to $3d.$ per rod for workmanship. Those made with black thorn only, and well staked and bound, will last five or six years.

The water ditches, as fences in the marsh lands, are from eight to fourteen feet wide; and from three to five feet deep, with sides somewhat sloping; they are emptied of the mud and rotten vegetable matter once in eight or ten years; the expense of which operation, for those of middling dimensions, is about $18d.$ per rod; for those of greater width, and being full of mud, $2s.$ per rod, or more. The post and rail fences in Romney Marsh are

* This and the succeeding prices are given as they were in 1795; the expense of labour is now much advanced, and in this particular instance doubled.

all made of oak, at the expense of 9*s.* per rod, if of three rails; but if of four, then 13*s.* per rod. The digging of new ditches costs about 2*d.* per cubic yard.

Gates.—Such as are in common use are made of oak, with five bars, at 16*s.* per gate, for the wood-work only; iron hangings at 6*d.* per pound. In those parts of the county where oak is most plentiful, the price is somewhat lower. The gates about gentlemen's seats are of various forms, materials, and prices, suitable to the purse or humour of the owner.

CHAP. VII.

SECT. I.—TILLAGE.

THE general method of cultivating the land is with the common turn-wrest plough, already described ; by which every kind of soil, however full of flints, is turned up to any depth, even to fourteen or fifteen inches, when necessary ; and the land, by its operation, is left as level as if it were dug with the spade ; which is a great advantage in dry soils : for such, admitting a quick filtration of the water, require neither furrows nor ridges, and, what is of the utmost importance, the moisture is thereby equally diffused over, and retained under the surface of the earth ; which cannot possibly be effected where it is laid in high ridges. The usual depth of ploughing for all corn crops, is from five to seven inches ; the poor light soils being generally turned up the shallowest, and the rich loams the deepest. Such parts of the low lands, or springy hills, which are wet, are ploughed with the turn-wrest plough, in flat ridges ; some half a rod, and others a rod in width ; the furrows between them, after the corn is harrowed in, are opened with an old plough, with a wrest at each side ; by which means the water in wet seasons passes off, and the land is covered with an even crop, so that the marks of the furrows are hardly to be perceived in the crop when the corn is out in ear :—a very different, and surely much more beautiful object to view, than the crops on high round

round ridges, where the tops are always the only good crop, and the lower parts generally a poor half-starved one. The even surface left by the turn-wrest plough, is particularly convenient to the operations of the mower; and is likewise very favourable to the laying land down to pasture.

[Besides the disadvantages of an uneven surface, so offensive to the eye of a nice observer, the open furrow, or space left between each ridge, by the two last furrows being turned from each other by the ploughs with fixed mould-boards, occasions a waste of land, by which a loss is sustained in the crop, perhaps, equivalent to the whole expense of ploughing the field.]

The ploughmen are generally as complete workmen as in any other part of the kingdom. They have a pride in making good work; but their natural fondness for the horses, frequently prompts them to take up their plough to a shallower depth when their master's back is turned, in order to ease their horses; which shews the necessity of a constant and vigilant attendance of the farmer to his ploughmen.

Upon the whole, the tillage of land is nowhere conducted in a better stile than in many parts of this county; and scarcely any where are to be seen such good crops on poor soils, or crops in general so clean and free from weeds.

[The argument used against the turn-wrest plough is, that it does not remove all the earth clean out of the furrow, nor turn it over so well as the ploughs with a fixed mould-board: in some respects it is so; but in stiff soils, and in such as are firm, and will cut well with the coulter, they turn the furrow over perfectly clean, and in loose shattery soils by putting on a wider wrest than common, these ploughs will turn the land out of the

furrow much cleaner; but the Kentish farmers do not consider it of any consequence if a few crumbs of loose fine mould drop over the wrest into the bottom of the furrow. No farmer, that ever I heard of, supposes that he shall have a single gallon of produce per acre the less for it; this objection therefore I must consider as frivolous, and I have no hesitation in pronouncing the turn-wrest plough to be upon all accounts by far the best of any in use. To this opinion I despair of obtaining many converts. Prejudice, from a strong provincial attachment to their own customs, is so deeply rooted in the minds of the farmers of every county, that most of them think their own implements, however awkward, to be the best; at any rate they prefer them to the risk of trial of those in use in other districts.

Mr. MARSHALL, one of our most distinguished writers on the subject of agriculture, in his *Rural Economy of the Southern Counties*, gives the following description of the Kentish plough: "To describe this extraordinary production, he says, were impossible. Its component parts, and the means assigned them, are nearly equal to those of the ship. A north of England farmer, who has never been south of the Thames, would little suspect the purpose for which it is constructed: he would conceive it to be a carriage rather than a plough. It has a pair of wheels, fully as large as the fore wheels of a Moorland waggon: and behind them is dragged a long thick log of wood, which slides upon the ground, as the hob or shoe of a sledge; with a beam rising high above it, which a small farmer of the north would be glad of as a gate-post: comprising in its various parts as much timber and other materials as would build a Highland cart."

If Mr. MARSHALL had spent as much time between
the

the handles of the different ploughs he has seen, as in writing about them, his experience as a ploughman would have made him think more respectably of a Kentish plough. He, however, notwithstanding its *monstrosities*, in the following page speaks of it thus: "For plough-
 "ing steep surfaces whose subsoils are absorbent, a plough
 "on this principle is obviously and admirably adapted;
 "and on lands of this description, the implement under
 "notice doubtless received its origin, either on the chalk
 "hills of Kent or Surrey, or elsewhere on lands of a
 "similar description. The value of a turn-wrest plough,
 "on such lands, is so obvious at sight, that I claim no
 "merit in having repeatedly recommended it for steep
 "surfaces, and absorbent subsoils." Then afterwards he
 adds, "but when we see this enormous implement, with
 "four extravagant horses, and two lazy fellows, attempt-
 "ing to turn over a light land fallow, and destroy the
 "weeds it contains, *without either share or mould-board!*
 "it would be a crime to suffer them to pass without cen-
 "sure." I will venture to affirm, that Mr. MARSHALL
 never saw a Kentish ploughman attempting, as he ex-
 presses it, to turn over a light land fallow *without either*
share or mould-board. It is impossible; and the absurdity
 of such a silly story so strongly confutes itself, that per-
 haps, in the opinion of many, it would have been deemed
 the wiser conduct in me not to have noticed it here. The
 probability is, that Mr. MARSHALL, in passing hastily
 through the county, observed some ploughmen at work
 with a plough, having upon it, in place of its own share,
 a broad share, perhaps twenty inches wide, as a scuffler;
 a common and good practice to destroy seedling weeds on
 a summer-fallow; and mistook the operation of scuffling
 for that of ploughing.]

SECT. II.—FALLOWING.

THERE is not any part of agriculture which has occasioned more discussion and controversy among writers on husbandry, than this subject of fallowing. By many, it is said to be too little practised ; and by others, too much so. By some, fallowing is condemned altogether ; and by others, it is strongly recommended as the only method to destroy weeds, and meliorate and enrich the soil. I shall merely report what is the practice of this county in general, make a few observations on the necessity and utility of it, and then give such instructions for making a good fallow, as my own experience, on a large scale, for thirty-five years past, has taught me to think the best.

It is to be understood, that by a fallow, or summer-fallow, is meant land that bears no crop whatever for one year ; and is well cultivated at proper intervals during the whole of that time ; for if a crop of turnips, tares, or rye, for green food for sheep, is produced, the land cannot be truly said to be a complete fallow. On the high lands of the Isle of Thanet, fallowing is the usual practice every fourth year for barley ; but, perhaps, not quite so much as formerly, because a greater quantity of turnips are sown ; and a crop of pease is sometimes substituted for a fallow.

On the cold stiff lands on the hills, running across the county, from Dover to Wrotham, fallowing for wheat every fourth year is the general practice. In East Kent, fallows are always made on poor lands, more or less, as occasion requires ; in some cases, to get the land clean from weeds ; and in others, where weeds do not abound, to make a good tilth for a crop of wheat, if a stiff, and
barley,

barley, if a light soil. On the very worst soils, where wheat is never sown, fallows are frequently made for oats or barley, and for getting land into fine tilth for rye-grass, or other seeds.

In the Isle of Shepey, fallows are made every six or eight years for wheat; and in the Weald of Kent, the farmers are bound by the covenants of their leases to make summer-fallows, and to lime for wheat.

On the clay and stiff soils of West Kent, fallows are usually made for wheat; and in all parts of the county where sainfoin is intended to be sown, a good summer-fallow is invariably made by the best husbandmen.

When any kind of soil has borne three or four crops of corn in succession, and is become full of weeds, a well made summer-fallow is certainly requisite, not only to destroy the weeds, but likewise to meliorate and invigorate the soil: it is the most certain remedy, the speediest, and, in the end, the cheapest.

There are many kinds of land which, no doubt may, by a proper succession of crops, and a vigilant attendance with the hoe and hand-weeding, be kept tolerably clean from weeds for a long series of years, without the intervention of a summer-fallow. But it must be admitted, that there are some untoward soils, which all the art and industry of man cannot keep perfectly clean and in good order for any length of time, without a fallow: and there are other soils, which, if they could be kept tolerably free from weeds for a long time, might perhaps be more improved, and more profitably managed by a fallow every four or five years.

The soils that are easiest kept clean without a fallow, are the dry sandy loams, chalk, and gravel, which can be worked almost at any time, however wet; and readily admit the operation of drilling and hoeing at all seasons.

Those which most require fallowing, are the stiff wet soils, that will not admit the operation of the ploughs and harrows but at certain intervals, when the land is between wet and dry : opportunities of working such soils are frequently lost by bad seasons ; in which case, weeds will undoubtedly increase, and it is then impossible to eradicate them but by making a good summer-fallow, or what is by some called a fallow-crop, viz. cabbages, or winter-tares ; neither of which will perhaps turn to so good an account in the end as a complete summer-fallow.

The cold wet clays of this county, even if they are tolerably clear from weeds, are subject, after two or three crops, to run together ; and they then become so exceedingly stiff and cold, that, without the intervention of a summer-fallow to meliorate the soil, very poor crops only are to be expected ; whereas, when a good fallow is made, an abundant crop of wheat, and two or three good crops of spring corn, are frequently produced. The constant practice of making summer-fallows in many counties for wheat, and sowing beans broad-cast after it, and then recurring to a fallow again, is most certainly a bad practice ; and for landlords to compel their tenants to make a fallow every third year on all kinds of soils, as is the practice in some other counties, is the height of absurdity ; and it is no wonder that so many writers are found who condemn fallowing altogether, when they see so frequently the mischievous effects of fallowing under such management.

To make summer-fallows on light land, such as hazel, loam, sand, gravel, or chalk, to sow wheat upon, is extremely wrong ; because experience teaches us, that wheat, under such management, is very subject to mildew, and to be root-fallen. All stiff soils, not full of
manure,

manure, nor very rich, may with safety be sown with wheat on a fallow; and all light soils are a fine tilth for barley after it.

A good summer-fallow is the best preparation for a crop of clover; and a clover-lay, of all the tilths known, is the best for every other crop. But to sow clover on most soils, without a previous fallow, is a certain method of running the land to couch-grass.

To make a good fallow, all kinds of soils should be ploughed about five inches deep before Christmas; and as soon as the land is tolerably dry in March, it should be cross-ploughed about six inches deep. Stiff soils must be left rough, until meliorated by rain, and then worked fine when between wet and dry; and all light soils immediately harrowed close after the plough, in order to promote the vegetation of seedling weeds, that they may be destroyed by subsequent ploughings, which must be repeated two or three times more, at intervals, as opportunities occur, during the months of May, June, and July; every time reducing the land fine immediately after each ploughing, while the land is moist, for the purpose before mentioned, of promoting the vegetation of weeds. Particular care should be taken not to touch the land either with the plough or harrows, when it is the least wet, as that only kneads it together, and creates more work to reduce it; besides locking up many of the seeds of weeds within the hard clods, and thereby preventing vegetation; by which such seeds are reserved for mischievous effects in the following crops of corn.

Some farmers in this county, and many in some others, never plough their fallows until they have finished their barley-sowing in the spring; and then, perhaps, not again until the land is overgrown with weeds. I have sometimes seen dung carried out, in other counties, and

spread on such fallows, among green thistles, and other weeds many inches in height.

Fallows had better never be made at all, than be done in such a slovenly manner.

SECT. III.—ROTATION OF CROPS.

ISLE OF THANET.

THE general system, or plan of management, in the Isle of Thanet, on all the thin light soils, has been hitherto one of four courses, viz.

Fallow,
Barley,
Clover, or beans,
Wheat ;

but subject to several variations, which have much increased of late. The soil having been greatly improved during the last fifty years of excellent management, it is found that the course may be extended to advantage by substituting pease for fallow, thus :

Pease,
Barley,
Beans,
Wheat ;

and then return to a fallow as before ; and sometimes, though but seldom (and then generally considered as bad management), a crop of barley is taken after the wheat, thus :

Barley,
Beans,
Wheat,
Fallow, &c.

It is to be understood here, that the foundation of all good management, and the system most practised, is the first mentioned of four courses; and it is by this system, with the plenty of manure from the sea-weed, that great part of this island, which is naturally as poor land as any in the kingdom, is made to produce such excellent crops of corn of the first quality.

The deep rich sandy loam before described, and some of the best of the land at the west end of the island, are cultivated under the round tilth system of East Kent, viz.

Beans,

Wheat,

Barley.

The process under the four course system is, after raking up the stubble of the wheat, and stacking it near the farm-yard for littering hog-pounds, thatching, &c. to plough the land five or six inches deep as soon as possible in the autumn, which is cross-ploughed when the land is tolerably dry in the spring, and repeated two or three times during the summer months. Between the times of ploughing, collections of mould, farm-yard dung, sea-weed, &c. are formed in convenient situations in the fields, which are turned over in the autumn, and in the winter, in frosty weather, carried out on the fallow, at the rate of from forty to fifty-five cart-loads per acre. This manure is spread and ploughed in as soon as opportunity offers, and the barley is drilled in, at the rate of three bushels per acre, or sown broad-cast, four bushels per acre, the first dry week in February or March; and if for clover or trefoil the next year, those seeds are sown with the barley: the clover or trefoil lies only one year, and is ploughed about five or six inches deep in November, and sown with wheat.

If no seeds are sown among the barley, the stubble is ploughed

ploughed in about six inches deep in the winter, and harrowed the first dry week in February; and then beans are drilled in furrows eighteen or twenty inches apart, at the rate of four bushels per acre: the furrows are harrowed, and the land generally rolled down smooth. As soon as the beans appear, they are horse-hoed, and sometimes immediately harrowed across the furrows; and then, as soon as they have recovered the harrowing, they are hand-hoed with a hoe about five inches broad, at each side of the furrow, at the expense of 3s.* per acre; which operation is repeated in May, or the first week in June, at 4s. 6d. per acre: the ground is then stirred with an earthing plate, to raise a quantity of mould against their stems. In some cases, the land is manured for beans instead of the crop of barley.

As soon as the beans are harvested, the land is scuffled with the broad share, and made perfectly clean by harrowing, and burning the weeds, if any, and then ploughed for wheat. In both cases, whether clover-lay or bean-stubble, the wheat is usually sown three bushels per acre, after having been steeped in salt water from five to twelve hours, and mixed with slaked lime. When pease follow the wheat, they are drilled in, and managed in every respect the same as the bean-crop, except harrowing after the horse-hoe. The barley, and other crops after pease, are managed the same as if the land had been a summer-fallow, instead of pease. Under the round tilth system, the bean and wheat crops are managed the same as before-mentioned; but the barley is usually sown later, in order to give time, by thrice ploughing, to clean the land; and the manure is generally spread on the barley-stubbles for beans.

* For the present prices of labour, see the general table, Chap. Rural Economy. Sect. Labour.

Radish-seed is frequently sown on these lands instead of beans, for the London market; and canary-seed in lieu of wheat, both on the clover-lays and bean-stubbles. The radish is sown in March, on furrows made with a two or three-chepe^d* plough, about ten inches apart, two or three gallons of seed per acre: as soon as they appear, every other row is cut up with a horse-hoe, leaving the rows twenty inches apart. When the plants get two or three rough leaves, they are hoed out to the distance of from ten to fifteen inches apart in the rows, and then kept clean by a second horse and hand-hoeing, if necessary.

The crop is seldom fit to reap till October, and sometimes is out in the fields till near Christmas, without receiving any injury from the wet weather; it being necessary that it should have much rain to rot the pods, that it may thrash well.

Canary is sown the first dry week in February, on furrows from ten to fifteen inches apart (the land being previously made fine and light on the surface), about four or five gallons per acre; and as soon as the furrows can be seen, they are hoed with a Dutch hoe, at the expense of 1*s.* 8*d.* per acre, and kept clean by repeated hoeings, when necessary, during the summer. It is generally ripe by the beginning of September. Like radishes, it requires much time in the field, and seldom suffers by wet weather.

EAST KENT.

Chalky soil forms a very considerable part of the district under survey. This sort of land cannot be said to be under any settled system of management, for there

* A provincial term for a piece of wood on which the share is fixed.

are almost as many schemes of practice as farmers; much of it is down-land, or sheep-walks; some of which, although no very material part, has been so time out of mind; and some tenants are restrained, very injudiciously, from breaking up those old downs. The practice has been chiefly, when old sheep-walks have been ploughed up, to do it in wet weather, in the midst of winter, when other arable lands are too wet to work with advantage; and the principal inducement has been that of employing the teams when they would probably be doing mischief on better soils. This sort of land, when so ploughed, is usually sown in March, with black or grey oats, which, from being generally over-run with charlock (provincially called kinkle) produces very poor crops, sometimes hardly worth harvesting. The crop of oats is generally succeeded by a fallow; perhaps sown with coleseed, and then oats with seeds*; and after that crop, if the land can be folded, a slight crop of wheat is obtained; but that only on some of the best parts of the field, where there is a greater depth of soil, or the flat tops of some downs, where there is a soil somewhat stiffer and better than the slopes of the hills. Some of the courses of crops of the down-lands, when ploughed, are as under, viz.

1.	2.	3.
<i>Down-land.</i>	<i>Down-land.</i>	<i>Down-land.</i>
Oats	Oats	Oats
Coleseed	Fallow	Fallow
Oats	Oats	Oats
Seeds	Clover or ryegrass	Sainfoin, from five
Oats	Oats	to ten years.
Fallow	Fallow	

* Clover and Trefoil.

4.	5	6.
<i>Down-land.</i>	<i>Down-land.</i>	<i>Down-land, burnt.</i>
Oats	Pease	Turnips same year
Tares	Coleseed	Barley
Coleseed	Oats	Clover
Oats	Clover	Wheat
Seeds	Wheat	Turnips, &c.
Wheat	Fallow	
Fallow		
7.	8.	9.
<i>Down-land, burnt.</i>	<i>Down-land, burnt.</i>	<i>Down-land, burnt.</i>
Turnips same year	Turnips same year	Wheat
Turnips	Turnips	Barley
Barley	Barley	Oats
Clover	Sainfoin	Oats
Wheat		Rye Grass
Fallow		

The five first and last are the prevailing courses, and are each of them very bad, as they generally tend to impoverish the soil, and make it worse, if possible, than before; for whatever grows upon it is carried to the barn among other crops, and the straw goes to the general mass of dung, and increases the heap for the better sort of land. Scarcely any body thinks of dunging this soil, and it is consequently impoverished, by being robbed of every thing it produces. But it is not so with the sixth, seventh, and eighth courses, for there the burnt turf produces turnips almost to a certainty; and by folding these off with sheep, much manure is left on the land, and a stout crop of barley and clover obtained; the clover being again folded off, a good crop of wheat is produced, and the land is in a gradual course of improvement. The ninth, and last mentioned, is the course after down-sharing that has hitherto generally prevailed; and is the most

most destructive plan that can be devised. It is this injudicious management of downshare land that has brought the practice of downsharing into disrepute. Four crops of white corn in succession, with rye-grass at last, would impoverish the best land in the kingdom; what then must it do on some of the very worst? Even if rich land was well manured for a crop of wheat, and that succeeded by three crops of white corn and rye-grass, it must inevitably become poor; and then the coat of manure might with as much propriety and justice be condemned for having done the injury, as the downshare for having hurt the land before mentioned. In short, it is not downsharing, but the wrong management afterwards that is destructive. Downsharing is the greatest improvement yet known for chalky soils, if rightly managed.

Loamy soils are usually under the round tilth system of East Kent, viz.

Barley,

Beans,

Wheat.

The barley is a cleansing crop, by being first ploughed in winter, and then twice or thrice more in dry weather in the spring, before the barley is sown. Some farmers, whose land is very clean, plough only twice, and then drill the barley in April, in rows from seven to ten inches apart, hoeing and hand-weeding the intervals. Four bushels are sown broad-cast, and from two and an half to three drilled per acre. Barley is mown, and after lying a week or two, is bound in sheaves, and set up into shocks of ten at a place, to be tithed. When the wheat-sowing is over, and the dung intended for beans is carried out, the barley stubbles are then ploughed in. The beans are put in rows, from eighteen to twenty inches apart, if
boxed

boxed in, four bushels per acre ; if drilled or dropped by hand, three only ; the crop is horse and hand-hoed, as in the Isle of Thanet ; and the whole, with the succeeding wheat crop, is managed as mentioned in that district. See page 74.

The strong cledge is generally under a four-course system of

Fallow,	Or,	Fallow,	Or,	Fallow,
Oats,		Wheat,		Wheat,
Clover,		Clover,		Beans,
Wheat;		Wheat;		Barley.

The oats and clover are sown, in a dry season, in March; the clover is generally fed with sheep, and folded for wheat, which is sown early, that the work may be finished before much wet weather sets in. If the fallow is cropped with wheat, it is sown the end of October, or beginning of November ; the clover-seed in that case is sown on the wheat in the spring, and covered with a roll only ; for this soil is generally too much pulverized with frost to admit harrowing at that time. The clover is fed off by sheep, as before mentioned, and the crops of wheat and oats are harvested, as on the other soils already described.

The hazel mould is under different systems at different places, according to the fancy of the farmer, or situation of his land. Some pursue the Norfolk system of

Turnips,
Barley,
Clover,
Wheat ;

others the East Kent, of

Barley,
Beans,
Wheat ;

and

and others

Pease,
Barley,
Clover,
Wheat.

Some sow early pease and turnips the same year.

This sort of soil being dry, and very easy tillaged land, may be managed as well under one course as another. If the occupier has with it a tract of grazing land, he finds turnips and clover convenient, and pursues the Norfolk system; on the other hand, if he has no grass-land, or has the corn-tithes himself, he finds it most advantageous to pursue the East Kent system. The methods used for sowing and harrowing the several crops, are the same as before mentioned; it is needless, therefore, to repeat them here.

The stiff clays on the tops of the chalk-hills are under a four-course system of

Fallow,
Wheat,
Beans,
Barley;

and a very good one it is for such a soil. The fallow gives an opportunity of getting a fine early wheat season, which is very necessary on this cold backward land. The wheat stubble is ploughed soon in the winter, by which the frost brings the surface into fine order for drilling the beans as soon as the land gets dry in the spring. The beans are horse and hand-hoed, to keep the land clean for the barley crop, which is put into the land at two ploughings only. The corn is harvested in the same manner as on other soils, but is much later than on any other sort of land. The wheat-harvest usually commences about fourteen or eighteen days later than in
the

the Isle of Thanet, or towards the end of August, and other crops in the same proportion.

*THE LAND IN THE VICINITY OF SANDWICH,
FAVERSHAM, AND DEAL.*

The dry loamy soils are cultivated in the round tilth system of East Kent; namely,

Barley,

Beans,

Wheat.

A few oats are sown instead of barley, and pease instead of beans; and sometimes a crop of canary is sown on the bean-stubble instead of wheat.

Barley is sown or drilled on the third ploughing, at the end of April and beginning of May: the quantity of seed sown, and other management, the same as before described on the loamy soils of East Kent. When the land is manured, the dung is generally laid upon the barley-stubble for beans, at the rate of forty or fifty cart loads per acre; when ploughed, the beans are drilled, or dropped by hand, from three to four bushels per acre; the crop is frequently horse and hand-hoed three times each, and always kept perfectly clean from weeds. It is harvested as in other parts; after which the land is ploughed once entirely flat, and sown with wheat, chiefly in the month of November. The crop of wheat is carefully hand-weeded in the summer months, and the harvest usually commences a few days later than in the Isles of Shepey and Thanet, or about the first week in August.

The stiff wet clay of the lower parts of this district is much of it under a two-course system, of beans and wheat alternately. The beans are always put in rows,

twenty inches apart; they are frequently planted by women dropping them by hand, while a man follows and covers them with the loose mould which he cuts and draws from the next furrow, with an instrument called a planting-hoe. Wheat is sown broad-cast before the rainy season commences in the autumn; and this land is laid in flat ridges of half a rod or a rod in width: after sowing, the ridge-furrows are opened, to let off the water in winter.

The best of these stiff wet lands are often sown with canary, instead of wheat, and garden-beans are planted instead of common ticks; these are the Windsor and Toker beans, which are dropped by hand, at the rate of six bushels per acre, in rows twenty inches apart. They sometimes produce very abundant crops, and great profit; at other times, when too much land is planted, and the crop happens to be indifferent, they sell at low prices, and turn to a very bad account; and at such times are given to fattening bullocks, sheep, and pigs. Both the bean and canary-crops are kept clean by repeated hoeings. The canary is cut in September, at the expense of 6s. or 7s. per acre, and is left a great while in the field, in lumps of half a sheaf at a place, before it is fit to carry into the barn. The expense of thrashing this seed is 6s. or 7s. per quarter: its chaff is the best horse-food of the kind that comes out of the barns.

ISLE OF SHEPHER.

The general rotation here is beans and wheat alternately; and when the land gets foul, or the farmer thinks it wants rest, he substitutes a fallow for the bean-crop, which is done once in six or eight years. On the gravelly parts they sow a few oats, and sometimes barley. Some turnips are sown; but from the land holding the wet so late

late in the spring, they are of little use to the grazier. If the cabbage-culture is beneficial in any situation, it must be a great acquisition in this island, as a substitute for turnips; and the soil is well known to be particularly favourable to their growth.

Much clover is sown with great success; and the lay is the farmer's favourite tilth for wheat. The land is ploughed in the winter for beans, with four horses, which plough about an acre in a day with much difficulty. The beans are drilled in rows, about twenty inches apart, as soon as the land will admit of it in the spring; they are horse-hoed twice, and hoed and weeded by hand once. The beans are harvested as in other parts of the county, and the stubbles are ploughed only once, and then sown with wheat in October: the land is laid in flat ridges with open furrows, to carry away the water in winter. The harvest usually commences as early as in any part of Kent. The wheat which this island produces, is generally the best that goes to London market; it frequently weighs sixty-four pounds, the Winchester-bushel; and, from its early harvest, is of a fine colour, and the bran of course is very thin. The beans also are a very good sample; both the crops of wheat and beans are large, when the land is in good order.

The clover that is sown in this island is mown twice; the first time for hay, and the second for seed. From the earliness of the soil, the hay is got off soon enough for the second cutting to come in good time for the seed-crop. This stiff soil, with a good harvest season, produces frequently great crops of very excellent seed.

THE UPLAND FARMS OF WEST KENT.

The mode of cultivation, or rotation of crops, varies so much through this part of the county, that it is im-

possible to lay down any particular system as the practice of the district; every farmer follows that plan which he thinks will answer his purpose best; and hardly any two neighbours adopt the same mode. Many that set out with a particular system in view, are driven from it by an unkindly season, and the untowardness of the soil.

The chalky lands, when under the plough, are cropped with turnips, barley, clover, and wheat, for one, two, or three courses, and then laid to sainfoin or rye-grass for a few years; after which the same course is again followed. This is easy tillage-land with four horses.

The clay soils, where they have settled systems and favourable seasons which admit the pursuing them, are under the following courses, viz.

Fallow,	Fallow,	Fallow,
Wheat,	Wheat,	Wheat,
Clover and Trefoil,	Clover and Trefoil,	Oats,
Wheat,	Oats,	Pease.

On the hill above Wrotham, &c.

Fallow, Wheat, Clover, Wheat, Oats.

They frequently sow sainfoin or rye-grass for a few years, and then break up with a fallow, and pursue the same course again. This land is ploughed with six, and sometimes eight horses.

The gravel and sandy soils.

Turnips,	Turnips,	Turnips,	Turnips,
Barley,	Oats,	Barley,	Barley,
Clover,	Clover,	Clover,	Clover,
Wheat,	Wheat,	Wheat,	Pease.
	Oats,		

It is dry land, and ploughs light.

The hassock, or stone-shatter soils, are under one of the following systems:

Turnips,

Turnips,	Turnips,
Barley or Oats,	Barley,
Clover,	Clover,
Wheat,	Wheat,
Pease,	Beans,
	Wheat.

This land works kindly, and is ploughed with four horses.

Coomby and pinnacky soils are nearly under the same system as the clay already described.

The hazel-mould is frequently managed with four courses: turnips, barley, clover, and wheat, with variations of substituting oats for barley, and pease for wheat; and sometimes after wheat and clover-lay, a crop of pease.

On the tract of land between the borders of the Thames and the hill, the gravelly soils are often cropped with early pease, which are gathered green for the London market; and then turnips the same year, succeeded by oats, clover, and wheat, in succession. Sometimes rye and winter-tares are sown, to be fed off with ewes and lambs in the spring, and then followed by turnips, &c.

The poor chalky land of this part is cultivated as at other places, and sown with sainfoin; great crops of which are produced by the assistance of soot, ashes, &c. from London.

The best land of the vallies is, much of it, under a system of six courses; namely, turnips, barley, clover, wheat, beans, and wheat.

[This is the rotation on the beautiful farm of Sir CHARLES MIDDLETON, at Teston, near Maidstone. In a late survey, I observe he is trying a new method of raising turnips among beans. The beans are dibbled in pairs of rows, twelve inches apart; three pair of such, or six rows, to

every rod in width. The holes for the beans are made for two shillings and six pence per acre, by men, and the beans are dropped in by children or women, by the day: favourable accounts are given me of the crops both of beans and turnips by this practice; but by it the succeeding crop must be either barley or oats, which otherwise would be wheat.]

For turnips, on the chalky and other poor soils, the land is ploughed in the winter, and cross-ploughed in a dry time in the spring, as in other parts of the county already mentioned; and generally manured with farm-yard dung, and mould from hedges and ditches, before the third or fourth time of ploughing, unless manure is carried out for the preceding crop of wheat; for without the land is in good heart, the poorest sorts, especially, will not produce good turnips. They are fed off with sheep, and the land, if it is stiff, is sown with oats on one ploughing; and if light and kindly for barley, that grain is sown instead of oats; for which the land is sometimes twice ploughed. The clover-seed is sown on both crops before the last harrowing; a great part of the clover is mown for hay, and then fed off the remainder of the summer; when it is ploughed once and sown with wheat; for which crop a clover-lay is esteemed here on these soils, as well as in other parts of Kent, the best tilth known.

The stiff red clays and coomby soils, are always summer-fallowed for wheat; three or four ploughings are given, as time and seasons will allow; but bad summer-fallows are frequently made on such land, notwithstanding every exertion of the husbandman. They are sown as early as opportunity will admit, and the same rule is observed when cropped with oats or pease; for as the cultivator cannot always sow when he wishes, he must therefore

fore do it when he can. When these sorts of land are laid down with seeds, what the Norfolk farmers call layers, they are sown with rye-grass, clover, and trefoil; they continue two or three years, and are then ploughed in the winter, and made a summer-fallow for wheat, with the same course as before.

The sandy and gravelly soils, intended for turnips, are frequently sown with rye, which is fed off with sheep previously to sowing the turnip-seed. This may be of great advantage to the sheep, should there be a scarcity of food in the spring; but it must tend to exhaust the soil, and weaken the turnips, unless the sheep get great part of their food by day on grass-land, or other feed, and go to the rye by way of folding the land at night; or if the land is to be manured for turnips, there is no fear of a crop; in that case, the sowing of rye may be excellent management, and indeed every plan is excellent on these soils that tends to secure good crops of turnips; for that is the very essence and spirit of good husbandry.

Not only the manure of the sheep in feeding off the turnips on these loose lands, but the treading of their feet, is of great service.

The barley and oats are sown as early as possible, and are mown as in other parts of the county; but here they are not bound in sheaves, but raked together by hand, and carried into the barn loose, where they are trodden with a horse. The clover is mown for hay, and fed after with sheep till autumn, and then once ploughed for wheat.

The stone-shatter, loamy soils, and hazel-mould, are of a light dry nature, and may be worked almost at any time. These are made into good tilths for turnips, and frequently produce fine crops without any manure. The sooner the turnips are fed off, and the land sown, the

better the produce in general of barley and oats; although great crops are sometimes obtained by a late sowing, if kindly showers soon succeed; but late sowings, with a succession of dry weather, generally fail. The clover crop and wheat sowing are managed as before-mentioned on other soils; only it is to be remembered, that the second growth of clover on these, as well as all other soils, is sometimes saved for seed, but not in any great quantity. When beans or pease are put in on the wheat-stubble, the operation is performed by drilling across the furrow as soon as the land is dry in the spring: the crops are managed in other respects by hoeing, &c. as in East Kent, and the bean-stubble is sown with wheat, as described in that district.

The early pease for gathering green, are drilled in rows, eight or nine to the rod, in the end of November, or beginning of December; they are generally sold by the acre, to persons who gather them, and send them by water from Gravesend, or by land-carriage to the London market. The pea-straw, when stacked dry, is esteemed very good fodder for cattle and sheep. The land is immediately ploughed and sown with turnips. Manure is not always, but should be, carried out for pease, by which no time is lost in getting the turnip sowing forward; and the manure is by that means well worked among the soil, to the immediate benefit of the young turnips, which is of the utmost importance; for by a rapid growth, they get out of the way of their great enemy, the flea.

Rye and winter-tares are sown in great quantities near London, for spring-feed for early lambs; they are fed off in good time for a crop of turnips.

The general management of this district, when compared with that of many other counties, may be said to
be

be very good ; but it will by no means bear a comparison with some of the eastern parts of this county for cleanliness of crops, and general activity in the articles of labour ; which are material circumstances in seed time and harvest.

The chalky soils are always subject to charlock ; and in this district, are frequently seen quite yellow in June and July with that plant in bloom, overtopping the crops of corn.

THE WEALD OF KENT.

The covenants in the leases between landlords and tenants, point out the system to be pursued ; which is fallow, wheat, oats, clover, or layers for two or three years. The tenants are bound to lay one hundred bushels of lime per acre on the fallows for wheat ; and generally put on double that quantity.

This lime is made of chalk, from the hill before mentioned, and is brought from the distance of twenty miles to some of the parishes, though there is excellent limestone in the centre of the Weald ; and even in the parish of Bethersden, famous for a fine limestone, called Bethersden Marble, chalk-lime is preferred ; and the chalk to make it is procured from a considerable distance. Chalk-lime is applied to stiff clay-lands, and stone-lime to sandy soils.

[Some of the West Kent farmers are of opinion that lime has been continued too long, and that the land is tired of it. The use of it is certainly becoming less every year : as a proof that this is the case, eight kilns formerly employed in the neighbourhood of Farleigh for burning stone-lime, are now gone to decay.]

The old lays are ploughed late in spring ; generally in the month of May for the first time.

They

They are cross-ploughed and well harrowed, as opportunity offers, during the summer, in dry weather.

The lime is dispersed in heaps, of several loads at a place, during the summer, and spread with a shovel out of a cart before the last ploughing for wheat; which is generally sown in the month of October, and reaped in the middle of August.

The wheat-stubble is cleared in the autumn and used for thatch, littering the bullock-yards, &c. The land is ploughed six or seven inches deep, and the oats are sown with the clover seed, without any other ploughing, as soon as the land gets dry in the spring. The soft wet clay-soils are generally sown with rye-grass and clover together. The crops of seeds are mown for hay, and then fed off until the land is ploughed, except in some cases where clover is sown alone on the best land, which is mown twice; the first time for hay, and the second for seed. In the best land, beans and pease are sown on the clover-lays, and on the old layers of grass: pease frequently succeed; beans very seldom. The hazel mould and best sandy soils are under the four-course system of turnips, barley, clover, and wheat. The turnips are frequently carried off the land; which so exhausts the soil, that the following crop of clover fails, and the land is ploughed up for a summer-fallow.

[This was the information obtained from the farmers of the district when the original survey was made; but upon further inquiry, it seems to be more likely that the clover crops are lost, from the land having been repeatedly before under clover.]

ROMNEY MARSH.

The very small portion of land under the plough is wonderfully productive in wheat, beans, oats, and pease.

The

The quantity annually broken up is thought to increase, owing to the moderate composition taken by the clergy in lieu of tithe, and the astonishing produce of the land. The practice of ploughing, however, is not general; and the greatest quantity in any one person's hands, hardly exceeds eighty acres; very few have half so much, and most of the tenants none.

The first crop, when the marsh-land is ploughed, is usually pease; the second pease or beans; and then wheat succeeded by beans, and wheat alternately for a few years, with sometimes a variation of a crop of oats or pease.

SECT. IV.—CROPS COMMONLY CULTIVATED :
THEIR SEED, CULTURE, PRODUCE, &c.

THE crops most commonly grown in Kent, are wheat, barley, beans, oats, and pease; also hops, canary-seed, radish-seed, turnips, and colewort: these are the principal, and are found almost on every farm having a soil adapted for them. The quantity of seed sown, and method of culture, are mentioned under the title *Rotation of Crops*.

Wheat.—The number of sorts of this grain is annually increasing, by importation from foreign countries.

Of the old sorts, are the Brown and Yellow Lammas; the White Straw, Fulham, and the White or Egg Shell. The Brown Lammas, till within these twenty or thirty years past, was the sort chiefly cultivated in this county; but it is now giving way to a variety of new species, as well as some of the other old sorts.

By some experiments I made in the years 1777
and

and 1782 *, I found the Brown Lammas the least productive of the several kinds ; and have never since sown any of it.

This is the common Brown-strawed Wheat ; it grows with a long jointed ear, the chaff of a dark brown colour ; the straw is long and apt to fall ; the hull or bran thin, and flour very white, and the corn mellow in grinding ; for which reasons it is esteemed by the millers as the best of the old sorts for their use.

The Yellow Lammas resembles the Brown in every respect, except that the colour of the grain is of a yellow hue, and the chaff of a somewhat lighter colour.

The White-strawed Wheat takes its name from the colour of its ear ; in other counties it bears the appellation of the Kentish White Straw. This kind sends out a greater number of stems from the stool, or plant, than the other sorts ; and by that means is often a very thick crop on the land. The straw is generally somewhat shorter than that of many other kinds, and not quite so liable to fall in rainy seasons. It is on these accounts much sown in the eastern part of this county : but, from its dull colour, having a thick bran, and often grinding very steely, it is not much approved of by the millers.

The Fulham also produces a white straw, which grows short and coarse : this kind is very productive, especially on poor land ; but the grain is very coarse, and the bran thick : from which circumstances it is the least valuable to the millers of any kind yet mentioned.

The White, or Egg Shell Wheat, is known by its producing a white straw, a smooth white chaff, and very

* See Annals of Agriculture, vol. iv. page 280.

white grain ; the bran of which is somewhat thick, but the flour remarkably white. It works mellow in grinding, is very early ripe, and so free in the ear, as to blow out in windy weather. This kind, from rich sandy loams, is often a beautiful sample ; and when so, brings the highest price of any sort.

The new sorts of wheat which have been introduced into this county within these last twenty or thirty years, are the Hoary White, the Nonpareil, the Pilbeam, the Square Ear, and the Hoary Brown ; with a variety of other sorts very lately introduced, and but little known.

The Hoary White, by some called the Velvet Eared, is by far the most valuable, because it is very productive, and the best for the millers' use. The straw is white and short, the chaff is covered with a thick fine down, somewhat of a brownish hue ; the grain is remarkably small, and of a dull white colour ; the bran very thin, so that some grains are almost transparent when held up to the light. It grinds very mellow, and makes a beautiful fine white flour. From the quantity of down upon the chaff, and its small ears binding up very close in the sheaf, this kind, in a rainy season, is apt to vegetate very freely in the field ; on which account it is not so proper to cultivate in a moist climate, and in small enclosures, that are not open to the winds and sun.

[This sort of wheat is now entirely lost in East Kent, very much to the regret of the millers, and many farmers. It was a good sort for producing quantity as well as quality ; and was said to have been originally introduced into this country from Dantzic ; but I have examined many parts of cargoes of wheat from thence, and have made many inquiries to get some of it again, without success.

We have a new Hoary White, introduced within these
few

few years, which grows in a larger ear, has a larger grain, and is thence by some called the Great Hoary; but by others the New Hoary: it is a very good sort, and earlier ripethan the Old Hoary; but it has not quite so thin a bran.]

The Nonpareil is a sort said to be brought into this country from America; it has a bright straw with a brown ear; and the grain is very white, large, and plump. It is very productive on all soils, thrashes very free, and yields, in that operation, the greater part of its chaff; thereby producing a great quantity of horse-meat. It grinds very mellow, and is well esteemed by the millers.

The Pilbeam is a brown wheat, growing very stiff, and is generally thick on the land. The grain is small and plump, somewhat of a yellow brown. It is said to be very productive on rich lands, and is a valuable kind to mix with others, but will not of itself make a good loaf of bread, from its not working properly in the act of fermentation. The bakers say it will not rise well after the yeast is put to it.

The Square Eared wheat is a very productive kind; but, from its being apt to drop out in the field before it is ripe, and, in consequence, to blow out in gales of wind, is not much cultivated.

The Hoary Brown is but lately introduced, and therefore little known.

[I have not seen any of the four last sorts these four or five years past.]

Besides those already enumerated, there are the two sorts of Rivet wheat, the white and brown; neither of which are much cultivated in Kent. They both ripen late in the season, and are so very coarse and steely, as to be unfit for making bread, unless mixed with a large proportion of other sorts. They, however, produce very
abundant

abundant crops on strong wet lands, and are saleable at inferior prices.

Steeping.—Salt water from the sea, where it is convenient, and where not so, brine, has been till within these three or four years, invariably used in Kent for the purpose of steeping wheat for sowing. After soaking it for a few hours, it is taken out, and a sufficient quantity of lime to dry it for sowing, is sifted over it. In case of wet weather or frost, it will keep in this state for a long time without injury.

This method has been practised, time out of mind, with a view to prevent the smut or collar; but it often proves ineffectual.

Mr. WYBORN, of Hull, in this neighbourhood, whose wheat one year, after the usual process of brining, was uncommonly full of smut-balls, endeavoured to investigate the nature of this distemper; and, by a happy combination of reasoning and experiment, discovered, that it was an infectious disease, and curable by arsenic. His letter on the subject, in the *Annals of Agriculture*, merits the attention of every practical farmer. It should be known, however, that if the wheat stands much more than ten or twelve hours in the solution of arsenic, vegetation will be totally destroyed.

The time for sowing wheat on the wet and cold lands, is early in October: on stiff cledge and drier clay soils somewhat cold, about the middle of that month; but the general time for the dry parts of the county, is the month of November. It, however, sometimes happens, by badness of weather and other untoward circumstances, that a considerable quantity is sown the first week in December; but the more early sowings generally produce the strongest crops.

The growing wheat, by all good managers, is generally

rally weeded in the months of June and beginning of July, by cutting up thistles and other weeds with a small angular hook, and pulling up charlock and some other weeds by hand ; that which is drilled, is frequently hoed in the month of March or April, if necessary. Many writers on husbandry recommend drilling, with a view to keep the land clean by hoeing, and thereby supersede the necessity of making summer-fallows : but those authors should recollect, that if all the crops were drilled, it would require more than treble the present number of husbandmen to perform the operation of hoeing them ; and therefore summer-fallows must be continued, until the population is sufficiently increased to clean the land without them.

The time of harvesting is mentioned under the Section *Climate*, Chap. I.

The thrashing of wheat is performed with a flail on an oaken floor on most farms of 80l. rent and upwards ; but on smaller farms, on an earthen floor. It is universally in Kent, cleaned with a casting-shovel, and flat broom, called a spry, which sweeps off the chaff and white coats with the small pieces of straw that fly among the corn. This method of cleaning corn is certainly the most expeditious and best, where the barn-floor is large, and of a sufficient length ; but in a small room, the winnowing machines will do it better, and perhaps cheaper.

In any county like this, where the soil is so extremely various, it is impossible to make an accurate estimate of the produce of the wheat crop. There are many situations, where two quarters per acre are a very good crop ; while double that quantity on some others, is but a very indifferent one : twenty-two bushels per acre may probably be nearly the annual average growth. The fine white wheats, especially the Hoary White of this county,

county, make most excellent bread of the whole meal, when properly ground and manufactured, in the following manner: to a bushel of meal, add a pint of good yeast well mixed with two or three gallons of warm water; stir the whole well together, and let it work six or eight hours before it is put into the oven. This is the common farm-house bread of East Kent; but in some parts, where the coarser kinds of wheat are used, the broad bran is taken out.

Barley.—There are only two sorts of this grain cultivated; the common long-eared English Barley, and the short-eared Sprat Barley: the latter is only sown on some of the richest parts of the soil, where the common kind is likely to grow too stout, and fall. This grain is never steeped; the quantity usually sown is four bushels per acre; if a drill plough is used, three is enough. The time of sowing is from Candlemas to the 12th of May, according to soil, situation, and other circumstances. It is always weeded in the same manner as wheat, and the harvest commences, for that sown early on dry warm soils, about the 25th of July, and continues at different parts of the county till the middle of September.

It is always mown with a scythe and cradle, and in East Kent bound into sheaves; but the West Kent farmers generally carry it into the barn loose. The produce is from one and a half to seven quarters per acre: the average may probably be twenty-six bushels per acre.

[A winter barley has been lately introduced about Ashford; it is a much thinner grain, but is found useful to sow early in the autumn, instead of rye, for spring food for ewes and lambs. It is afterwards suffered to stand for a crop of corn, and four or five quarters per

acre have been produced from it on indifferent land. It is the common winter barley of the North of Europe.]

Beans.—Of this grain we have the following sorts, viz. Common Ticks; large Flat Ticks, or May Beans; Small, or Essex Ticks, and French Ticks: and of the garden-beans, the Toker, Windsor, Long Pod, Spanish, or Lisbon, and Mazagan; besides a few other varieties cultivated only in small quantities for supplying the London seedsmen.

The first is the sort most generally cultivated by the Kentish farmers, and is used for fattening hogs, and as food for horses. These are usually either drilled, dropped by hand, or boxed, in furrows eighteen inches apart, from three and a half to four bushels per acre, in February and March; in either case they are generally hand and horse-hoed twice, and sometimes three times, and lastly hand-weeded. The crop is reaped about the end of August or beginning of September, and thrashed by a flail, cleaned with the casting-shovel and spry, and then sifted, to take out the dirt and small beans. The produce is from two to six quarters per acre, in proportion to the strength of the land and management. The May-beans are a larger sort of ticks, and somewhat earlier ripe: they are sometimes very productive; but being larger, are in consequence not so heavy, and therefore of rather less value per quarter. Four bushels, and sometimes four and a half, of this kind, are dropped in by hand per acre. In every other respect they are managed the same as common ticks.

The Essex ticks are a much smaller sort than the common tick, and of a rounder shape. They ripen six or eight days later than the first mentioned, and are not so productive, but more valuable, being heavier.

The small French ticks are a still less sort, being
about

about as big as a moderately sized pea, and nearly globular; these are the latest ripening sort known, and most valuable when dry, on account of their great weight. It is said, they will grow on some sorts of poor land, not well adapted for the larger kinds; but they are not very productive. Three bushels per acre of these two small kinds, is a sufficient quantity to seed the land when drilled; which is the best method by far of putting them in.

The token is the largest garden-bean, and somewhat of an oval shape. Many of them are found an inch and a half in length. The quantity of seed is usually about five and a half or six bushels to the acre. The beans are dropped by hand, in rows about twenty inches apart, as soon as the land is sufficiently dry in the spring. This crop is kept perfectly free from weeds during the summer, and is pulled up by hand in harvest: it is set up in lumps, of a sheaf, at a place to dry, in a conical form, the butt-end being spread out as wide as possible, to prevent their being blown down. They are thrashed and cleaned, like other sorts, and then culled by women, to take out every rotten and stained bean before they are sent to market. The produce is sometimes very abundant, and the price varies accordingly; the former from three to ten quarters per acre; and the latter from 8s. to 140s. per quarter.

The Windsor bean is somewhat less than the former; not so long, and more approaching to a square form. This kind is managed in every respect as the token, only requiring a little less seed: its produce is generally somewhat less, and value a little more. Of this sort of bean there are two varieties, the old Kentish, and TAYLOR'S Windsor bean; the latter was raised at Maidstone, by a Mr. TAYLOR, about forty years ago.

The long pod is about half the size of the token; it is an earlier sort, and much used by the London gardeners. The quantity of seed is about four bushels and a half to the acre, always dropped by the hand in rows about eighteen inches apart. This sort is harvested, thrashed, and managed, in other respects, the same as the other garden-beans, and the produce is from three to six quarters per acre: their value is more uniform than that of the other kinds, seldom arriving at any great price, being more generally cultivated on account of their superior hardiness.

The Spanish, or Lisbon, is a still smaller kind, and ripens about the same time. The Mazagan is the smallest of garden-beans, and earliest ripe.

The Spanish is dropped in by hand, about four bushels and a half per acre, in rows eighteen inches apart. The Mazagan is frequently drilled four bushels per acre. These two sorts are reaped as common beans: the produce of the first is from three to five quarters, and sometimes much more, per acre; and the second from two and a half to four and a half.

Oats.—The sorts of this grain are the large Poland, the Brue, the Tartarian white, the Siberian and Devonshire Black Oats, the red and grey, [and a new variety, lately introduced into this county, called the Potatoe Oat, so named from having been accidentally found in a field of potatoes.]

The Poland are sown, about four bushels and a half per acre, from the beginning of February to the middle of May: the first sown, if the land is in good order, are always the best sample, and generally the best crop. This kind being usually sown on the best land, the crop is hand-weeded by women and children, and it is mown with a scythe and cradle, unless too stout, and then it is

reaped

reaped like wheat, with a sickle. The harvest commences for the early sown crops, on dry warm soils, often by the 20th of July, and ends, for the late sown ones, on cold soils, as late as the end of September; but the general oat-harvest is in the month of August. The crop is thrashed with the common flail. The general produce of this kind is from three to six quarters per acre.

The Brue * oats take their name from a town in Holland, or Flanders, from whence they were originally imported into this country.

There are many white oats cultivated under different names in this county, as the Essex, the Hertfordshire, the twin oat, &c. all which I take to be the Brue oat. It is an early kind, and very productive on deep rich lands, and will yield a good crop on most soils that are not very poor. Four bushels are usually sown per acre; the management, in other respects, the same as the Poland; the produce generally somewhat greater.

The Tartarian are a very late sort, but very productive: they are extremely light, not much esteemed, and but very little cultivated.

The Siberian black oat is a very large, long grain: it was first introduced into this county about twenty-five years ago, by Mr. REYNOLDS, of Adisham; who also introduced the turnip-rooted cabbage, which still bears his name.

These oats are very apt to drop out in the field, and require as good land as white oats; but, from their colour, they are not quite so valuable. They are less cultivated now than formerly. From the large size of the

* Perhaps a corruption of Bruges.

grain, it is necessary to sow five or six bushels per acre. They are sown early, and are a very forward sort. The produce is about the same as white oats.

The small, or Devonshire black oats, are most commonly sown on chalky downs, and, being very hardy, will grow on almost any poor soil; but, like every thing else, are most productive on good land, and such as is in the best order. Four bushels per acre is the common quantity sown on the poor lands of this county; but some farmers, on very bad land, frequently sow more; that quantity, however, is quite sufficient if the land is perfectly clean. This kind being very hardy, and ripening late, cannot be sown too soon, provided the land is dry and in good order.

The poor chalky downs, where this sort of oats is usually sown, are very full of charlock, which in very few cases is ever taken out of the crop; but it ought always to be done; for it is quite contrary to reason and common sense to expect poor land to produce a crop of corn and weeds at the same time

The harvesting and thrashing are the same as of other sorts, and the produce on poor land is from one and a half to three quarters per acre. If sown on tolerably good land, or on poor chalky down-land, in good order after turnips, the produce is sometimes very abundant, even six or seven quarters per acre. The red oats are but very little cultivated, and not much known in Kent; they are chiefly grown on the poor cold stiff lands: the straw of them is said to be particularly valuable to cut into chaff: their management is the same, in every respect, as that of the black oats.

The grey oats are a very long, thin, poor, light grain, and are cultivated chiefly on account of their producing the most straw, on very poor land, for the purpose of cutting

cutting into chaff for horses. They are sown early, harvested and thrashed as other sorts, and produce on extremely poor land, where hardly any thing will grow, a tolerable crop.

[The potatoe oat is the shortest and most beautiful sample of any kind yet known ; producing, in good land, a very stout coarse straw. As yet we are not sufficiently acquainted with this sort to determine its merit ; the present appearance is somewhat against it ; the crops grown this year have a great abundance of smutty ears, insomuch, that the harvest-men, in reaping them, were made black, like chimney-sweepers, and the sheaves were very light.]

Pease.—Of this pulse we have the following varieties commonly cultivated by the farmers, viz. the Reading and LEADMAN'S Dwarfs, for breaking pease and fattening hogs ; the Grey Polt ; Nutmeg Grey ; Early Dun, in East Kent called SURTON'S Greys, from their first being introduced by a farmer of that name ; and SHEPHERD'S Grey Pease : all of which are for fattening hogs. Besides these kinds, there are many others cultivated for supplying the London seedsmen. [A new sort has been lately introduced, called Prussian Blue Pease, which, in some instances, have been found much more productive than the grey pease, and more valuable, as from some soils they break well in boiling. The nutmeg grey gease are much used by the Jews for boiling.]

The varieties of the early and marrowfat pease, for the seedsmen's use, are too numerous to be particularized in a general report of this nature.

All the kinds of pease are drilled in rows, about eighteen inches apart, from the middle of February till the end of March, and sometimes later, when untoward seasons intervene. These crops are cultivated, during

the summer, with horse and hand-hoes, the same as the bean crops; and are harvested from the middle of July till the end of September, as they become ripe. They are reaped with a hook, called a podware hook, and thrashed as other crops of corn. The produce is from one and a half to five quarters per acre. LEADMAN'S dwarf and the early grey pease, are thought to be the most prolific.

The early Charlton and hop-spur pease frequently are off the ground in time to get a good crop of turnips.

Hops are separately described, under the title of *Canterbury and Maidstone Plantations, &c.*

Canary Seed.—There are three kinds of tilths for this crop; viz. summer-fallow, bean-stubble, and clover-lay; the last the best. If the land is not very rich, a coat of rotten dung is frequently spread for it. Whether manured or not, the tillage necessary is to plough the land the first opportunity that offers after wheat sowing is done; and, as soon as the land is tolerably dry in the spring, furrows are made, from ten to fifteen inches apart, and the seed is sown broad-cast, about four or five gallons per acre, and well harrowed in; when the blade appears, and the rows are distinct, the intervals are immediately hoed with a Dutch hoe, and afterwards, in May or June, the hoeing is repeated with a common hoe; carefully cutting up every weed, and thinning the plants in the furrows, if they are too thick. It is cut in the harvest, which is always later than any corn-crop, with a hook, called a twibil, and a hink; by which it is laid in lumps, or wads, of about half a sheaf each.

The seed clings remarkably to the husk; and, in order to detach it, the crop must be left a long time on the ground to receive moisture sufficient to destroy the texture

texture of the envelopment, otherwise it would be hardly possible to thrash out the seed. The wads are turned from time to time, to have the full benefit of the rains and sun; it has sometimes continued in the field till December without vegetating, or suffering any kind of injury.

The produce is from three to five quarters per acre; and it is sold to the seedsmen in London, who send it to all parts of Europe for feeding small birds, which are kept in cages. The offal of this article is a most excellent food for horses.

Radish Seed.—This crop is much cultivated on the best rich loamy soils of Thanet and East Kent, for supplying the London seedsmen. The land should be clean, full of manure, and ploughed a good depth in the early part of the winter. The sorts are the early Short Top, the Salmon, and the Turnip-rooted.

The seed is sown on furrows, about ten inches apart, in a dry time in the month of March, about two or three gallons per acre. As soon as the plants appear, every other row is cut up with a horse-hoe, leaving the rows twenty inches apart. When the plants get two or three rough leaves, they are hoed out in rows, and are then kept clean by repeated horse and hand-hoeing, when necessary, leaving the plants at about eighteen inches distance. The crop is seldom fit to reap till October, and sometimes is out in the fields till Christmas, without receiving injury from wet weather; it being necessary that it should have much rain to rot the pods, that it may thrash well. The produce is from eight to twenty-four bushels per acre; and is sold to the London seedsmen, who send it to all parts of the kingdom for retailing to the gardeners.

Turnips.—This plant is more sown with us every year.

year. Thirty years ago, hardly one farmer in a hundred grew any; and now there are few, especially in the upland parts, that do not sow some every year. The preparation for turnips is to plough the land in the winter, and two or three times more, as opportunities offer, during the summer months; and to manure, before the last ploughing, with farm-yard dung, mixed with mould collected from hedges and ditches, unless the land was manured for the preceding crop of corn. If the land is not in good heart, it will not produce good turnips.

The sorts of turnips are the Red, White, and Green Round, the Tankard and Tap-rooted turnips. The first is most generally preferred; but the other kinds have each their respective advocates. The Tankard stands high above ground, and is a good sort to feed off before the frost sets in; after that, they are not so useful, being more liable to injury from frost than other sorts. The Red Round is esteemed a very hardy kind.

[We have now a new white round turnip, which is nearly globular, with a very small top, and a white smooth rind; the root stands well above ground. It is at present much esteemed by those who have made trial of them.]

The time of sowing commences, on poor lands, in the end of May; but the general sowing is about New Midsummer-day: good crops are, however, often obtained by sowing the last week in July, and sometimes the first week in August; the latest sown are the sweetest, and stand the frost best.

This crop is always hoed by hand, at the expence of from 6s. to 7s. per acre: sometimes a second hoeing is given, at half price.

The principal, and by far most profitable application
of

of this crop, is to fold them off with sheep. Some few are drawn and carried away for fattening cattle, either by strewing them on grass-land, or stall-feeding; but this is terribly destructive to the land from whence the crop is taken.

Cole Seed is much cultivated on the poor lands of the eastern part of the county, under the same management as turnips; but it is seldom hoed, and consequently much over-run with charlock. Sometimes, although rarely, it is sown for seed; but is most commonly fed off with lean flocks of sheep. Cattle and sheep, when poor, are very subject to be blown (burst) with eating greedily of this plant.

SECT. V.—CROPS NOT COMMONLY CULTIVATED.

THERE are several other sorts of grain and seeds which are not so generally cultivated as those mentioned in the preceding section, but which are productive and profitable in certain districts, under proper management; and which I shall arrange by themselves. These are tares, clover, trefoil, sainfoin, lucerne, burnet, spinach, kidney-beans, cresses, mustard, potatoes, flax, woad, madder, and cabbages.

Tares.—Of this grain there are two kinds; the winter and spring tare. The first is sown in the middle and end of September, about two bushels per acre, upon land that has borne a crop of any sort of grain, either to feed off with cattle and sheep in April, or to mow for soiling in May. The spring tares are sown and drilled as pease, early in the spring, either for soiling in July and August, or to stand for a crop of seed; the produce of which
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is from twelve to sixteen bushels per acre on poor land; and on that of better quality a little more. This grain is seldom sown on the best land, on account of its running too much to straw.

I learn from a note, signed T. H. that the sowing of winter and spring tares, to fold any sheep on in the spring and summer, is among the greatest improvements at present on the strong soil of the Weald of Kent, where turnips hardly ever answer; and that the sheep thrive and improve greatly, if allowed a sufficient quantity of that food; the land at the same time becomes an excellent wheat tilth*. The same person observes, from the information of a sensible intelligent farmer of Tunbridge, that folding on clover has there turned to a still better account.

Clover.—The common red Clover, the sort called Cow-grass, and the white, commonly called Dutch Clover, are the only sorts cultivated in Kent. They are all sown among barley or oats, in the spring, upon land that is clean and in good order. The first sort is sometimes mown three, or even on rich warm soils, four times in the summer; but the general custom is to mow the first growth, and feed the remainder; or to feed it at first till the beginning of June, and then save it for a crop of seed.

Sometimes two crops of hay are taken; and much clover on poor land farms is fed off with flocks of sheep, entirely folding the land over for wheat; for which crop no tilth whatever is so good.

A crop of clover seed is usually from two to four

* Without impeaching this practice on the strong soil of the Weald, I have to observe, that I have often tried it on both stiff and light soils, and have invariably found it a bad tilth for wheat.—*Editor.*

bushels per acre: sometimes, however, the extraordinary quantity of eight bushels has been obtained. This is a biennial plant.

[Experience teaches us, that it becomes more difficult every year to obtain a crop of clover on land where it has been produced before more than once; as yet no one seems to have discovered the cause. It at first grows well, and makes a good figure in the autumn; but in the spring it begins to die away in spots, which keep spreading until the whole field is so bad as not to be worth standing for a crop: this has happened to me in a great many instances, so that now I am obliged to abandon clover on soils where some years back it flourished exceedingly well.]

Cow-grass is a species of clover, which is mown only once in a summer. This plant is perennial.

The white, or Dutch clover, is found in almost every meadow in this county; it is cultivated on some farms for supplying the London market; where, for these few years past, there has been a great demand for it. All the sorts are mown for seed with a scythe, and the seeds are thrashed off with a flail from the straw, and then ground in a mill, or worked out with flails, at about 4s. or 5s. per bushel. The produce is from two to six bushels per acre.

Trefoil is sown in the spring, with the crops of barley and oats, about two gallons of seed per acre: the crop is fine food for sheep to graze in the summer months, on chalky and other poor dry soils. When it is intended for seed, the crop is mown about the first or second week in July; and it is frequently thrashed off the straw in the field on a sail-cloth, and then sold by the quarter to persons who have mills, who grind the seed out of the husk, and then sell it to other merchants in
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the different towns and villages, for retailing to the farmers in those counties where it seldom is saved. The produce in the husk is from two to ten quarters per acre, and each quarter produces about two bushels of clean seed.

Sainfoin.—This is the most valuable of all the grasses cultivated in this county; and is much grown on the chalk-land of the eastern part. It is sown among Lent-corn on clean land, at from four to five and a half bushels per acre; it is mown for hay in June, and its produce is from ten to sixty hundred weight of dried hay, fit to stack, per acre. Those who cultivate this plant should observe, that if it is fed off with sheep, it is very soon destroyed; whereas, if sown on clean dry land, after a good summer-fallow, and preserved from sheep, it will last in the ground ten or twelve years. The aftermath is excellent to feed cattle, and the produce is sometimes very abundant.

Lucerne.—This is a very valuable plant to cultivate on dry lands for soiling horses in the summer months; but it is seldom made into hay. The tillage required for it is a well made summer-fallow, ploughed as deep as possible, with a good covering of manure. It is generally sown with a thin crop of barley, from 16 to 20 pounds per acre: coal-ashes or soot are sown over the crop in the spring, and sometimes a covering of rotten dung is spread upon it early in the winter. The produce from dry good land is very abundant, and four crops are usually obtained in a summer. This is often sowed in rows, and kept clean with the hoe.

Burnet is very little cultivated; it grows naturally on chalky soils, and affords herbage in the winter and spring months; but it is not much liked either by cattle or sheep. It is sown, about one bushel and a half or two bushels

bushels per acre, among barley or oats; it is mown for seed in July, and being very subject to drop its seed before it is ripe, it should be mown early. It produces from eight to twenty bushels per acre. Although this plant is not much liked by cattle and sheep in its green state; yet, when made into hay, they eat it with the greatest avidity.

Spinach Seed is grown in the Isle of Thanet and East Kent, to supply the London seedsmen. There are two sorts, the Prickly and the Round; both are sown in furrows, about twelve or fourteen inches apart; the prickly, six gallons per acre, and the round four. Early in March, when the plants have leaves about an inch or two in length, they are hoed out to the distance of four, or five inches. When the crop is in full bloom, the greater part of the male plants are drawn out by hand, and given profitably to young pigs; by which operation the female plants have more room to grow, and perfect their seed. The crop is pulled up when ripe, and thrashed in a field on a cloth, or carried to the barn. The produce is from two to five quarters per acre.

Kidney Beans are much cultivated about the town of Sandwich, and in the Isle of Thanet, for supplying the London seedsmen: The tillage for the crop is the same as for a crop of beans or pease; and the manure is rotten dung ploughed in. There is a great variety of sorts; those chiefly cultivated are, the Black Speckle, the Canterbury Dwarfs, the White Dwarfs, the Red Speckle, the Scarlet, and the White Dutch Runners. From five to ten gallons per acre, is the quantity of seed to drop in an acre of land, in proportion to the size of the sort; the smaller the bean, the less quantity. The time of planting this crop is from the eighth to the twentieth of May; if earlier, it is in danger of being destroyed by a frosty morning.

morning. It is hoed and kept perfectly clean from weeds, and harvested, by being pulled up by the roots as the plants become ripe, in autumn. The early sorts are fit by the end of August, and the late ones are frequently not ripe till October; those which ripen late, and are in danger of being hurt by wet weather, are frequently tied up in small bunches, and hung upon poles to ripen, and, when thoroughly dry, are thrashed and sent to market. The produce is from ten to twenty bushels per acre.

Cresses and White Mustard are sometimes sown for the London seedsmen. The method of tillage is to harrow the ploughed land, and strike furrows about eleven or twelve inches apart, and then sow the seed, two or three gallons per acre, in March. The crop is hoed and kept clean from weeds, and is reaped in July, and thrashed on a sail-cloth in the field. The produce is from eight to twenty bushels per acre.

Potatoes.—This crop is more cultivated by the farmers every year. Various methods of tillage are used for this plant; in general, dung is ploughed in, and then furrows are made, twenty inches apart, with a plough, in which pieces of potatoes are dropped, about fourteen inches asunder, by hand, and are then covered by splitting the furrows. Sometimes they are covered with a planting-hoe. The other methods used, are dibbling them in, and dropping the pieces of potatoes in every other furrow after the plough, while ploughing in the dung. The quantity of seed is about six sacks per acre, each weighing near two hundred pounds. The time of planting is from March to the first week in May. The crop is taken up by splitting the furrows with a plough, while women and children pick up the potatoes, and put them into sacks. Sometimes
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the crop is dug up with forks by the sack, for sixpence each. The produce is from eighty to one hundred and fifty sacks per acre. There is a great variety of sorts in cultivation; but those chiefly used, are the white kidney, the early brown, the champion, and the peach, with the Surinam, called here the hog-potatoe.

The method of keeping them is, to lay them up in out-houses, well covered with wheat-straw; but it is said, that it is much better to bury them in ridges in the field, first covering them with straw, and then with mould.

Large quantities have been cultivated by some farmers in this county, for stall-feeding cattle, and for feeding hogs; and favourable accounts have been related of this practice; but from the observations I have made on the subject, I cannot speak in favour of it: to me it appears to be an unprofitable practice.

Flax.—The best tilth for this crop is a summer-fallow, and next to that, a clover-lay: it is often sown after wheat and beans.

The land is ploughed in the winter, and in March is harrowed fine, and the seed is then sown at the rate of two bushels and a half per acre. It is weeded by hand in the month of May, and pulled up in July; the expense of which, with turning and binding into sheaves, is 16s. per acre: the length is from two to two feet and a half; but it is of little value when of the shortest length.

The produce of seed is from eight to twelve bushels; and of flax, from one to two packs of 240 pounds each, per acre.

The quality of the flax of this county is like that which is imported from Holland; but somewhat inferior.

When the seed is beaten off in the barn, the straw is taken to the ditches in small bundles, where it lies from ten to fourteen days, to prepare it for swingling. The better the flax, the more watering it requires; and the warmer the water, the sooner it ripens; but if it lies too long, it is spoiled.

The expense of swingling is 2s. 4d. per stone of fourteen pounds weight.

A bounty of 4d. per stone is paid by government to the cultivator.

Woad.—This plant is much cultivated in the western part of this county on poor, stiff, and on some chalky lands. It is sown, about 10 or 12 lb. per acre, among beans before the last hoeing, in the beginning of July. It requires no culture while growing, except the land is foul and over-run with weeds; in which case, the weeds must be drawn out by hand, or cut up with a narrow hoe. When the plants have produced their bloom up to the top of the stem, it is time to pull them up, which generally happens by the first week in July; they are then tied up by a single stalk in small handfuls, and set up in a conical form to ripen; and, when thoroughly dry, the seed is shaken out on a cloth, or into a tub; the plants are then bound with rope-yarn into bundles, each weighing thirty pounds; sixty of these bundles make a load of woad, which sells from 4l. to 10l.

It is often so great a drug, that it lies in stacks or in barns for several years, for want of a market; and it has sometimes been so very scarce, as to sell for above 21l. per load. The produce is from half a load to a load and a half per acre.

It is generally sold by the growers to speculating merchants, who supply the dyers with it, as opportunities offer.

Madder.

Madder.—This is a plant also used by the dyers, which has been formerly much cultivated in the eastern part of this county; but I believe is now entirely given up.

The first cultivation of it in Kent, upon a large scale, took place in the vicinity of Faversham; the value of it being at that time 5*l.* per cwt. There was a tolerable prospect of its becoming a private and public benefit; but the Dutch, foreseeing the detriment this speculation might occasion to their sale of the plant, contrived to overstock the London market; which proved destructive to the plan and its spirited projector. I am nevertheless firmly persuaded, that good crops of excellent madder may be raised in Kent, on soils properly adapted for the purpose, and that it would be a profitable article of culture, if it were never under 3*l.* per cwt. nor would the buyers be injured by a restriction to this price; but then the legislature must interfere, to prevent the importation of the root from Holland, where it can be cultivated cheaper than here. Perhaps, if that country should continue unfriendly to us, it might be good policy to encourage the growth of madder at home. I have many years been in the habit of cultivating it; but, from the low price at market, have been obliged to abandon it. There have been several modes of planting practised; but that which appears to me the best, is to plant it in single rows, about two feet apart. The land should be perfectly clean from weeds, and have been well manured the preceding year, so that the dung may be well incorporated with the soil; which should be a fine, deep, rich, sandy loam, without any redundancy of moisture. In order to prepare the land for planting, it should be ploughed in the autumn, to have the benefit of the winter's frost, and harrowed in dry weather in the spring, and then

then kept clean by horse-hoeing until the plants are ready for drawing, which is usually by the end of May, or beginning of June: the proper time is known by the plants having got to the height of ten or twelve inches from the ground, and having produced roots branching out from the bottom of the suckers; which will be perceived by drawing up a few of them. When the suckers are in this state, all hands necessary for this work are to be provided, that the operation may proceed with every possible dispatch. One acre requires about twenty thousand plants. The plants should have about a third of their tops cut off, and then their roots should be dipped in earth, or fine mould and water, beaten together to the consistence of batter; which prevents the necessity of watering them. It requires one woman to dip the plants, two others to carry and strew them in handfuls along the furrow, and about seven to follow the plough. The land should be ploughed with a strong turn-wrest plough with six horses, twelve or fourteen inches deep; women attend to lay the plants about eight or nine inches apart in every other furrow, leaning off from the plough; by which, every time the plough returns, the row of plants laid in by women who follow the plough, are covered with the earth of the furrow.

The crop must be kept perfectly clean by the hoe and hand-weeding during the summer months, and earthed up with a plough each autumn until the third after planting, when the roots are dug up by trenching the land two feet deep. Two children, about eleven or twelve years of age, attend each digger, to pick out the roots, the workmen breaking every spit of earth to pieces with their spades. The roots are then carried to be cleaned from dirt, and afterwards dried on a hop-kiln till they

they are brittle enough to snap asunder freely; they are then fit to pack in bags for sale to the dyers, who grind and manufacture them into powder for use. The produce is from eight to twenty hundred weight per acre.

Cabbages.—The culture of this vegetable for cattle or sheep, is but very little practised; a few trials, however, have been made; but the expense of from 12*s.* to 20*s.* per acre for transplanting, and the general idea which prevails of their being a very exhausting crop, are circumstances which greatly tend to prevent their becoming an article of general cultivation. They are highly recommended by some, to large flock-masters, by way of securing food in very hard winters, when turnips cannot be used, from being covered with snow, or when they may have become rotten by hard frost.

The tillage necessary, is to plough the land in the winter, six or seven inches deep, and to cross-plough it in the spring in a dry season; and then, after manuring with a good covering of rotten dung, before planting in June, to plough it again, turning over a furrow ten inches wide, and then by planting every third furrow, the rows of cabbages will stand two feet and a half apart. The sort for cattle or sheep is the large drum-head, which in good land will grow to an immense size. The seed should be sown the last week in March, on a rich warm border of light soil, where the plants may remain till a showery season in June, when they should be transplanted with small iron trowels, in the following method:—The plants being ready drawn from the seed-bed, a woman attends in the field to dip the roots of the plants in fine mould and water, beat together to the consistence of batter; two others then carry them in handfuis, and strew them in small lumps along the furrows ready for the planters: seven men will keep these

three women fully employed : they thrust their trowels with their right hand into the land, in a diagonal direction, with the point towards them, and then, by pulling the handle of the trowel a little towards them, the earth is lifted so as to leave a space to put in the plant with the left hand ; the trowel is immediately drawn out, and the earth pressed close to the root of the plant with the handle. The land being ploughed straight, and left unharrowed, there is no occasion for lines to direct the planter. By rolling the surface after the plants are in, the work is finished. In July and August the crop must be kept clean by horse and hand-hoeing.

Cabbages are sometimes planted by laying the plants in the furrow as directed for planting madder ; but as a much less number of plants are necessary per acre, it does not require so many women to attend a plough.

Turnip-rooted Cabbage.—This kind was first introduced in general culture by the late Mr. REYNOLDS, of Adisham, in this county, for which he obtained a medal of the Society for the Encouragement of Arts and Sciences, many years ago. It is a most valuable plant ; and every farmer who keeps sheep, should have a small piece to eat off in the month of April, after turnips are gone, and before there is plenty of other herbage. The severest winters do not hurt it ; and it produces a great quantity of nutritive and wholesome food : it is however an exhausting crop, and expensive to get out of the ground ; but its great value, as a plentiful supply of good food for stock, when, in some seasons, there is nothing else to be had, is more than sufficient to counterbalance every thing that can be said against it. The time for sowing the seed, its culture, &c. are the same as before mentioned for cabbages.

CHAP. VIII.

GRASS.

SECT. I.—NATURAL MEADOWS, PASTURES, AND
MARSH LAND.

THE quantity of land in natural meadow, or upland mowing ground, is very small in East Kent, in proportion to the extent of that part of the county, or in proportion to the hay-meadows of many other counties. The greater part of the hay of East Kent, even that which is used for horses, is produced in the marshes, from a want of a sufficient portion of meadow-land.

The Weald of Kent abounds in this description of grass-land, which produces a vast quantity of excellent hay, of a quality sufficient to fatten some of the finest oxen in the kingdom.

The other parts of the county have here and there small parcels of meadow-land, some few of which are of good quality; but in general, the hay-meadows of Kent are much inferior to those of many other counties; and this perhaps may be the reason why there is so small a portion of this kind of grass-land in this county.

Pastures for keeping small dairies are found on every farm; but there are no dairy-farms of any great extent in this county. The farmers in the upland parts, in general, desire no more pasture-land on their farms than is necessary for the keeping a small dairy for supplying their families with milk and butter, and a little fresh butter

for sale. Cheese and salted butter for sale, are seldom or never made to any extent. The markets for corn being so exceedingly easy of access, by means of the navigable rivers and the sea, tillage is thought more profitable than grazing on dry lands; which, if they were laid to grass, would produce but a scanty herbage for cattle.

The downland sheep-walks, which abound on the chalky hills of East Kent, can hardly be called pasture.

The marsh-lands are situated along the borders of the rivers and the sea-shore. This sort of grass-land is of a very considerable extent.

Romney Marsh contains - - 44,000 acres

Borders of the Stour, - about 27,000

of the Medway,

of the Thames,

and the Swale, &c.

} about 11,500

the whole is used either for fattening cattle and sheep, or for breeding of sheep.

The system of management of Romney Marsh, is that of breeding, rearing, and fattening sheep; the practice of feeding lean cattle, and even of fattening some of the smallest Welsh sorts, is only made subservient to the principal object, sheep-grazing; merely to take off such grass as runs away from the sheep in a growing time: it is always considered extremely bad policy to see much grass on the land among sheep. Every grazer, whose business is complete, has two sorts of land; namely, breeding land and fattening land. The breeding land is stocked with ewes in the autumn, for the winter: every field has such a number placed in it as the occupier supposes it will keep; which is from two to three and a half per acre, in proportion to the strength of the field.

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In kindly growing summers it is particularly necessary to keep a strict watch on the grass, that it may not run away from the sheep; and to prevent it, by adding more sheep, or any other stock that can be had, to keep it under; for if it is suffered to run from the sheep, they are much injured, and the grass gets coarse. Upon such occasions, cattle are generally taken in to keep at very low prices.

A very few oxen are fattened, which are bought in from the plough-teams of the Wealds of Kent and Sussex. They are very large, and have a reserve of the best grass to themselves. From their size, they require a longer time to get fat than the smaller sorts: they usually weigh from forty-five to seventy score each.

Some of the other marsh-lands of Kent are used nearly in the same manner; others are grazed by Welsh bullocks for fattening; and, in some parts, the graziers buy the lean sheep from the flocks of East Kent, and fatten them for Smithfield, or other markets.

The land of this county is seldom changed from meadow to arable, or from arable to meadow. The dryness of the soils of the upland parts of the county, occasions the land to be but badly adapted for meadow: when once a field is become a good old meadow, it is held sacred; and it is a common covenant in leases, not to break up old grass-lands.

SECT. II.—ARTIFICIAL GRASSES.

For laying land down to either meadow or pasture, the common practice is to sow hay-seeds, which are the sweepings of hay-lofts, procured in London at from 10*d.*

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to 1s. 3d. per bushel; these are sown in the quantity of about ten or twelve bushels per acre, with ten or twelve pounds of white clover-seed, under barley, on land that has been made perfectly clean by a summer-fallow.

By this mode it frequently happens that very bad sorts of grasses are raised, and the farmer's hopes of a good pasture are totally destroyed. It is, therefore, a much better method, and indeed the only good one, until the best sorts of grasses are cultivated for sale, to save for seed a piece of fine old meadow that is known to abound in the best sorts of grass, by letting it stand about three or four weeks longer than it should, when intended to be mown for hay. When it is mown and ripe, let it be thrashed on a sail-cloth in the field, and immediately sown on the piece of land intended for the new pasture; which should, by a good summer-fallow, be brought into fine tilth to receive the seed. This, with ten or twelve pounds of white clover per acre, will make an excellent meadow.

The culture, with the turn-wrest plough, after a summer-fallow, leaves the land so perfectly clean and level, that no instructions are necessary here; only simply to harrow the seed in and roll the land down smooth frequently, until the grass is well matted, and the land becomes firm enough to bear the tread of cattle.

There are many plants which, by some, are called Artificial Grasses; such as Sainfoin, Clover, Trefoil, Lucerne, Burnet, &c. As these are treated of under *Crops cultivated*, it is needless to mention them here.

SECT. III.—HAY-MAKING.

THIS operation is very badly conducted in most parts of this county, owing perhaps to a scarcity of hands. On the early upland meadows the hay-harvest commences by the end of June, and continues, on different soils, during the whole of July and beginning of August. The common mode in the eastern part of Kent, is to let the grass lie a day or two in the swath, and then turn it over: some spread it all over the land, turning it at intervals, until it is sufficiently dry to stack. The very excellent method of putting it up into small cocks every evening, increasing their size as the hay becomes dry, is not so much attended to as it ought to be.

Clover for hay requires to be made more dry than grass; for if the sap is not thoroughly dried up, it often heats too much, and is spoilt. Sainfoin also requires to be well dried, but not quite so much as clover; they neither of them are apt to fire in a stack; but, frequently, if carried too green, will burn to a coal. Large stacks being apt to heat more than small ones, it is necessary to carry the hay, of whatever kind, so much drier; and if proper attention is paid, and the weather will admit a large quantity being carried together perfectly dry, there is no occasion for any chimnies being made; but when, from apprehensions of approaching bad weather, it is hurried in too soon, then chimnies made, by drawing up the stack, as it ascends, a basket, or a sack stuffed with hay, will certainly prevent any danger of fire. When, by means of rainy weather, the hay of any sort has been much washed, and cannot be got in in good order, a layer of dry wheat-straw between every load or two, and a small sprinkling of salt,

are often used with great advantage. Bullocks are said to thrive very fast on salted hay; [but the present enormous duty unfortunately amounts to almost a prohibition of its use.]

SECT. IV.—FEEDING.

THE system of grazing in the marsh-lands of the Isle of Thanet and East Kent, is generally to buy in lean cattle and sheep, and keep them till they are fit for the butcher. The cattle are principally bought out of the Welsh droves, and the sheep from the fold-flocks in the vicinity.

The grass that is mowed for hay is usually set up in stacks, either in the marshes near a foddering-lodge*, or carried home to the farm-yards on the borders of the marshes, and given to fattening bullocks, or sold to the inn-keepers at Margate or Ramsgate.

The grazing in East Kent, on the upland farms, if it may be called grazing, is that of feeding flocks of lean sheep on the downs and seeds, folding them every night. These are bought in when wether-lambs in August, and sold out lean, at about two years and a half old, to the fattening graziers. Some farmers of late years, by sowing many turnips, make their wethers fat, and sell them to the butchers in the spring.

The upland pasture is wholly employed in breeding lambs, or feeding young lean sheep. These fields are generally so poor, as to keep only one or two breeding ewes per acre, or two or three tegs†.

* Shed.

† Sheep of a year old.

The inferior parts of the marsh-land are used in the same way; but the best fatten a great number of sheep, and many head of cattle.

The feeding of the grass-lands of the western part of the county, is done in various ways. Some have dairies of six or eight cows, which are of mixed breeds, between the Staffordshire, Welsh, and Sussex.

Some of the small dairies of three or four cows, have the Welsh sort only; and there are farmers who fatten a few Welsh cattle on the best of their meadow-lands with hay and grass in the winter.

A flock of sheep under a shepherd, and folded at night, is a very rare sight in West Kent; it is only a very few of the largest farmers who follow that practice.

Many farmers of this district have small parcels of different sorts of sheep, chiefly either Wiltshire or South Down, for feeding on such grass-land as is not used for the dairies, or fattening cattle.

The grazing of the Weald of Kent, is to rear young cattle, which are put out to keep to the Romney-Marsh graziers in the summer. In the autumn, they are taken home to the layers and inferior grass-lands; and in the winter, to the straw-yards; or are kept out on rough lands, and have straw carried to them: when they are of age to fatten, which is at four years for steers, and three for heifers, they have the best grass with hay. That which is made of rye-grass and clover, is given at the first part of the winter; and the best hay of the farm is used to finish them. Old meadows are always mown for hay to fatten the oxen.

The inferior pastures are stocked, first with milking-cows, to take off the head grass, and afterwards with the lean cattle, or working oxen. A suit of fields are thus fed in rotation during the summer.

A great

A great number of Romney-Marsh lambs are taken into keep in the winter, on the stubbles, old layers, and meadows; the price of keep is from 2*s.* to 2*s.* 6*d.* per score, per week. These lambs are returned the 5th of April, and in bad winters, frequently go home nearly starved; from which they sometimes die in great numbers when they get into good keep. Great losses are likewise often sustained after a wet autumn, by the rot.

The layers of rye-grass, and clover, are mown for hay, which is used for the plough-teams and lean cattle; and some of the best is given to fattening bullocks in the beginning of the winter. The old meadows produce great crops of hay, which is of a very fattening quality. Bullocks fed thereon, frequently weigh from forty to forty-five score each; and some old working oxen attain the weight of sixty score, and sometimes much more. The fat oxen are commonly sold between the months of March and June. The sale of them is the chief dependence of the Weald farmers for payment of their rent, and other heavy expenses.

CHAP. IX.

GARDENS AND ORCHARDS.

IN the vicinity of all the great towns, there is a portion of land appropriated to the culture of vegetables. In the neighbourhood of Gravesend and Deptford, a very great quantity is raised for the supply of the metropolis. Of asparagus there are many fields, containing several acres each. To describe the numerous tribe of vegetables, their culture and produce, would far exceed the limits of this work. It may perhaps be sufficient to report, that fine rich land, conveniently situated near great towns for this purpose, lets from 4*l.* to 10*l.* per acre.

In the neighbourhood of Maidstone are a great number of small fields, of from one to ten acres, and somewhat more, planted with fruit of different kinds, for which the rocky soil of the neighbourhood seems particularly adapted. The easy carriage from hence to the metropolis, renders the growth of fruit a very profitable article of husbandry. The best method known here for raising orchards of apples and cherries, and plantations of filberts, is to plant them among hops, by which they very soon come to perfection: the constant culture of the land for the hops, with the warmth and shelter they afford the young trees, causes them to grow with great luxuriance*. It is a very common practice to plant hops,

* I am informed by Mr. RANDALL, of Maidstone, that the cherries which

hops, apples, cherries, and filberts, all together : eight hundred hop-hills, two hundred filberts, and forty apple and cherry-trees per acre. The hops stand about twelve, and the filberts about thirty years ; by which time the apples and cherries require the whole land.

Sometimes apples and cherries are planted in alternate rows, with two rows of filberts between each of them.

There are some plantations of filberts raised among hops, without any other trees.

The method of planting apple and cherry-trees, is to dig holes about two feet square, and two spits deep, taking out the rocks, and turning down the surface-soil on which the young trees are placed, and the remainder of the earth is trodden down close about the roots : they are supported by stakes until they get sufficient strength not to be hurt by gales of wind. A composition of lime and night-soil is, with a brush, painted on the stems of the young trees, which is said to promote the growth of them exceedingly.

The favourite sorts of apples for cyder are, the Golden Rennet*, Sharp Russet, Golden Mundy, Kernel-permain, Stire-apple, Risemary, Farley-pippin, and Red Streak : for domestic uses, the Lemon-pippin, or Quince Apple, Royal Russet, Ribstone-pippin, Holland-pippin, Loans-

which do best with the land laid down, are one sort only, which is on a rapid state of decay, namely, the black-heart.—*Editor.*

Cherries do best when early laid down to pasture. Filberts answer well on very few soils.—*Note by a Middle Kent Farmer.*

* It is a remarkable circumstance, that notwithstanding the golden rennet has flourished and borne extremely well in this part of Kent, the young trees planted of late years do not succeed well on any soil. The same is to be remarked of the black-heart cherry, which, when it gets to the size of a man's thigh in the stem, gums and dies. Yet old trees of both sorts continue to bear well.—*Note by a Middle Kent Farmer.*

permain,

main, Nonpareil, Golden-pippin, French-pippin, Kentish-pippin, and Golden Nob.

The cyder fruit generally hangs on the trees until the beginning of October, and is then gathered and laid in heaps under cover; the early sorts, a month, and the later ones from one to three months, to ripen; it is then ground and pressed, and the juice put up into casks. In plentiful years, cyder fruit sells for 14*d.* and in scarce years, up to 2*s.* per bushel.

Mr. STONE, of Maidstone, is a cyder-maker of great repute, and in a very extensive line of buiness: being called upon in this Survey, he, with great liberality, offered to communicate every information in his power for the benefit of the public. His warehouse, mill, press, and vaults, were contrived by himself, many years ago, with great ingenuity, and are exceedingly convenient.

From many years experience, he finds no particular advantage in watching the fermentation of cyder, in order to rack it at any exact time: a method considered of great consequence in Herefordshire, as mentioned by Mr. MARSHALL, in his Rural Economy of that county.

Mr. STONE mixes all sorts of apples together, and makes excellent cyder. Golden-pippins alone make very fine cyder, if well managed; but great skill and care are required.

The sorts of apples for domestic uses are sold to fruiterers, who send them to London by the hoys, and to the north of England by the coal vessels.

Fruit-orchards are considered as the most valuable estates. Tithe is very rarely paid in kind; but in lieu of it, a composition of 2*s.* in the pound on the price of the fruit.

Cherries.—The site preferred for this fruit, is where there is a deep surface of loam upon the rock. If planted by themselves, they are placed from twenty to thirty feet distant; and are put somewhat deeper in the earth than apples: in other respects, the management is the same. The sorts are the Black-heart, White-heart, Flemish, or early Kentish, Courone, Hertfordshire Black, Wild Black, and Red Cherries; also May-dukes and Morellos.

They are usually sold to the higlers, who retail them on the sea-coast of Kent, by the sieve, or basket, containing forty-eight pounds each; or they are sent to London by water, and consigned to fruit-factors.

Tithe is paid by composition of 2s. per pound on the sale.

Cherry gardens, while they are in full bearing, which is seldom more than thirty years, are more profitable than orchards; but after that time, the orchards produce most money.

[Mr. RANDALL, who is a great planter of orchards, &c. is of opinion that there are few soils deep enough to produce a fine cherry garden. He has known the product of single trees in this county to have sold for above five pounds per year, for seven years in succession.]

Filberts.—There are several hundred acres in the vicinity of Maidstone. The soil best adapted for them is the stone-shattery sandy loam, of a quality somewhat inferior. It is a disadvantage for the trees to grow with great luxuriance, as they bear most nuts when but moderately strong: if they are planted among hops, without apples or cherries, they are put about twelve feet apart; when the hops are dug up, the filbert-plantation is kept clean by repeated digging and hoeing; and great skill is necessary

cessary in pruning, to make them bear well*. A small part of the produce of this plantation is sold to the higglers, who retail them in different parts of the county; but the principal part is conveyed by water to London, and there consigned to factors, who sell them by the hundred, of an hundred-and-four pounds, from 16s. to 40s. per hundred, in proportion to the crop and demand; [now from 1l. to 5l.]

Tithe is compounded for by the year.

HOP-GROUNDS.

The Hop Plantations in the vicinity of Canterbury and Maidstone. being the principal growth of the county, a description of them may suffice for the whole.

The plantations near Canterbury, called the City Grounds, are those surrounding the city, to the distance of two or three miles, and contain between two and three thousand acres.

The hops growing there, and in East Kent, are of a very fine rich quality, and if well managed, are of a good colour. They are highly esteemed by the London brewers for their great strength, doing more execution in the copper than those of any other district.

The best of these plantations are those which have

* It is entirely owing to the skill and management in pruning the trees upon even a favourite soil, that they pay. They are trained in the shape of a punch-bowl, and never suffered to grow above four or five feet high, with short stems, like a gooseberry-bush, and exceeding thin of wood. It is supposed, that within a few miles round Maidstone, there are more fibrets growing than in all England besides. These are also excellent in quality, and, if suffered to stand till ripe, will keep good for several years in a dry room or closet. But when gathered, they should be laid thin on the floor of a room where the sun can get in to dry them.—*Note by a Middle Kent Farmer.*

a good deep rich loamy surface, with a deep subsoil of loamy brick each. This kind of land forms the principal part of the plantations of East Kent: there are, however, some grounds, where the surface is very flinty, and some of a gravelly nature; but these are inferior.

The plantations of the town of Maidstone and its vicinity, extend through the several parishes on the ragstone shelf of land which lies below the chalk-hills, on the borders of the Weald of Kent. This plantation, in some years, grows great crops of hops; but the quality of them is somewhat inferior to those of Canterbury and East Kent*: in general they grow larger, having a thicker leaf, with a less quantity of the *farina*, provincially condition, which constitutes their essential quality. Nothing can be a more satisfactory proof of the superiority of East-Kent hops, than that they generally sell to the London brewers for most money; yet there are many of the Middle Kent planters, who produce hops of the first quality; and their plantations in general are managed with great skill and attention. Some of them are very extensive: that of the Earl of ROMNEY consists of forty-five acres in one field, and is in a high state of cultivation. On account of the richness of the soil, it is planted thinner than usual, having only eight hundred and ten hills per acre; but four poles are placed to each hill. Some part of this plantation was trenched before planting, at the expense of 2*s.* 6*d.* per square rod, or 20*l.* per acre; and that part succeeds best. The hills

* In the margin of the original printed Report, which was circulated for remarks and observations, was a long Note by a Middle Kent Farmer; which was afterwards printed in the Appendix to the first edition. The substance of it is now interwoven in this chapter.

are manured every year at the rate of twenty-five cart-loads per acre, from mixhills of equal quantities of dung, and river-mud with drift sand; which are prepared one year before hand, and when well rotted, are carefully trenched over, so that the mixture is intimately blended in one mass. It is put on the hills when the land is dug in the summer, being at the time the hops are tied to the poles.

From the excessive high price of hops in 1799, and 1800, the planters have been tempted to extend their plantations so much, that the market is now overstocked, and their business, until the plantation be much reduced, is entirely ruined. There are some planters in West Kent, who have nearly a hundred acres each.

When a piece of land is intended to be planted, the first thing is to plough the land as deep as possible, early in October, and to harrow it level; it is then meted each way, with a four rod chain, placing pieces of reed or stick at every tenth link, to mark the place of the hills; which makes 1000 per acre. This is the general method; but some few grounds are planted eight, and some twelve hundred per acre; some are planted wider one way than the other, in order to admit ploughing between the hills instead of digging; but this practice, although it has been tried many years, does not seem to increase, on account of the difficulty of digging along the rows where the plough cannot go; that part being much trodden with the horses in ploughing, digs so much the worse, that an extra expense is incurred, which in some measure, defeats the economy of the plan. When the hills are marked out, holes are dug about the size of a gallon, which are filled with fine mould, and the nursery-plants placed in them.

Some put three plants, others two, and some only one

good one to each hole. If the land is planted with cuttings instead of nursery-plants, the holes are dug in the spring, as soon as cutting-time commences; some fine mould is provided to fill up the holes, in which are placed four or five cuttings, each about three or four inches in length: they are covered about an inch deep with fine mould, and pressed down close with the hand. When the land is planted with cuttings, no sticks are required; but if nursery-plants are used, they require sticks or small poles, six or seven feet high the first year: in both cases, the land is kept clean during the summer, by horse and hand-hoeing: the next winter it is dug with a spade, and early in the spring the old binds are cut off smooth, about an inch below the surface; a little fine mould is then drawn over the crown of the hills. As soon as the young shoots appear, so that the hills may be seen, they are stuck with small poles, from seven to ten feet long, in proportion to the length it is expected the bind will run; these poles are called seconds, and are generally bought in the woods, at from 5s. to 8s. per hundred, and three of them are placed to each hill. As soon as the bind gets about two feet in length, women are employed to tie them to the poles. The land is kept clean during the summer, by horse and hand-hoeing, as before mentioned. The proper time for gathering them is known by the hop rubbing freely to pieces, and the seed beginning to turn brown. When in this state they turn from a green to a rich yellow colour, and then the longer they hang on the bine without turning brown by wind or by disease, the richer they become. It frequently happens in years of great crops, for want of oast room to dry them, or hands to do the work, that hops remain upon the poles till they are very much bruised, and many are lost by wind and bad weather; yet those
late

late picked hops, though of a bad colour, are often very strong, and the most experienced planters are of opinion that it is better to be too late than too early in the picking; because the early cutting of the bine makes it bleed, and weakens the stock for succeeding crops.

The plantations of Middle Kent are so extensive, that thrice the number of the working inhabitants of the district in some years are required to gather the crops. A great number of people are employed from London, and other parts; and it is on this account, strangers not being so easily managed, that the hops of this district are not picked so free of the small green leaves that grow among them in the branches.

In East Kent, they are picked into baskets, containing five bushels each, and in West Kent, into bins, consisting of a frame of wood covered with cloth, out of which the hops are measured; they are then carried to the oast in bags, at noon and evening, for drying. Great care and skill are necessary in this branch of the business: the smallest neglect or ignorance in the management of the fires, will spoil the hops, and occasion great loss to the planter. When dried and sufficiently cool to get a little tough, so as not to crumble to powder, they are closely trodden into bags or pockets; the former containing two hundred weight and a half, and the latter, an hundred and a quarter.

The second year after planting, full sized poles from fifteen to twenty feet in length, according to the strength of the land, which cost from 16*s.* to 36*s.* per hundred, are placed to the hills instead of the seconds, which are removed to younger grounds*. Here great care is

* [Since the year 1796, best poles have reached the enormous price of three pounds per hundred and upwards, but are now reduced as low as thirty shillings.]

necessary not to overpole; for by that means young grounds are often much weakened; and it is equally so, not to overdung them, as that will make them mouldy.

Fifty cart-loads of well rotted farm-yard dung and mould, once in three years, are generally esteemed sufficient for an acre of land.

IMPLEMENTS AND APPENDAGES TO THE HOP-GROUNDS.—*See page 55.*

Productions.—There can be no certain report made of the produce of the hop-plantations, because, in some years the growth of these districts is less than two hundred weight per acre, and in others it is fourteen or fifteen: the average may be seven or eight. [Upon further consideration, I think it cannot exceed seven.]

CHAP. X.

WOODS AND PLANTATIONS.

THE woodlands of the eastern part of Kent are dispersed principally between the great road from Rochester to Dover, and the chalk-hill that runs from Folkstone, by Charing, to Detling. These woods furnish the country with fire-wood, tillers for husbandry uses, and the dock-yards with timber for ship-building; but the most material part of their produce is the immense quantity of hop-poles cut out for the neighbouring plantations.

THE MANAGEMENT OF WOODLANDS IN THE DISTRICT
EXTENDING FROM CHATHAM-HILL TO CHARING.

*Copy of a Paper, presented to the Kent Agricultural Society,
by R. TILDEN, Esq.*

“The soil on which these woods grow, is for the most part flint and clay, with chalk at no great distance from the surface. Where chalk is the chief component part of the upper surface, the wood is of slow growth and little value. They are generally cut down from ten to fourteen and to eighteen years growth; and the price varies from 5*l.* to 15*l.* per acre, depending in a great measure on the goodness of the wood, the demand, and the price of poles. Hop-poles are the chief article which make woods valuable in this part of the country; there is not only a constant demand for them at home, but they are carried as far as Maidstone, and to a considerable distance

tance

tance beyond, the plantation there being so very extensive as to require more than the woodlands in that situation produce, and the planters preferring the poles which grow upon the hills to those of quicker growth and nearer home.

“ Part of the woodland in this district is in the hands of the proprietors, and part is let to the tenants who occupy the adjoining farms. When fit to fell, it is commonly sold by valuation. After the purchase is made, and the leaf is off, the wood is parcelled out among the different workmen employed by the purchaser. The first step is to clear the stocks of the small spray, bushes, &c. These are made up into bavins, bound with two wifts *, and are called winter kiln bavins. They should be six feet long, and two in circumference over the bands: the price of making them is 3*s.* per hundred; and they sell in the woods for 6*s.* per hundred. If bushes are wanted, the best are bound up in bundles with one wift, at 1*s.* 6*d.* per load, consisting of fifty bundles; and they sell in the woods from 7*s.* to 10*s.* per load.

“ After the stocks are cleared, they are cut down and thrown into ranges, wide enough to admit a team to pass to fetch away the different articles. These are cut out as the stocks are felled, and consist of first and second best poles, first and second ordinary poles, use-poles, stakes, and binders, thatching-rods, austrey-rods, hurdle-rods, wheel-timber, piles, and props. The remainder, not fit or wanted for these purposes, is thrown into the range, where it remains to employ the woodmen in the spring.

“ The best first poles are chesnut, ash, willow, and maple: their length should be eighteen feet; their price

* Local term for bands.

varies from 30*s.* to 35*s.* per hundred; chesnut poles are dearest, varying in price from 15*l.* to 20*l.* per 1000 in the wood.

“ The best second poles consist of the same wood as the first, and are only a smaller pole; varying in length from fifteen to sixteen feet. They sell in the wood from 20*s.* to 21*s.* per hundred.

“ The first ordinary poles consist of oak, gascoign, red birch, beech, and hornbeam; the two last very inferior: their length should be from seventeen to eighteen feet; they sell in the wood from 12*s.* to 20*s.* per hundred.

“ The second ordinary poles, varying in length from fifteen to sixteen feet, sell in the wood from 10*s.* to 12*s.* per hundred.

“ Use poles consist of ash, chesnut, willow, oak, asp, and gascoign, which are too large for hop-poles. They are cut at one halfpenny each, and sell in the wood from 4½*d.* to 6*d.* according to the size, length, and goodness of the wood. The largest sort are sold by admeasurement, from 8*d.* to 9*d.* and 10*d.* per foot.

“ Stakes and binders are cut out of hazel, ash, oak, willow, and maple; they are bound up in bundles, twenty-five in each; the price of cutting is 1½*d.* each; and they sell in the wood from 4½*d.* to 6*d.* per bundle. The length of a stake should be five feet; of a binder, from fifteen to eighteen feet.

“ Thatching-rods are cut out of the same kinds of wood as the stakes and binders which are not of a proper length for binders, or large enough for stakes. They are bound up in bundles, fifty in each; the price of cutting is 2*d.* per bundle; and they sell in the wood for 6*d.* The length of a bundle should be six feet.

“ Austry-

“ Austrey-rods are smaller than thatching-rods, cut out of hazel. They are used to bind billet-wood for the London market. They are bound up in bundles, one hundred rods in each; the price of cutting is 2*d.* and they sell at 6*d.* per bundle in the wood: their length is five feet.

“ Hurdle-rods are cut to make hurdle-gates for folding sheep; they are cut out of the same kind of wood as binders; indeed, they are only a small binder, from ten to fourteen feet long. They are bound up in bundles, fifty in each: the price of cutting is 2*d.* and they sell in the wood at 6*d.* per bundle.

“ Wheel-timber is cut out of large beech of two or three falls growth: it is used for fellies of wheels; it should not be less than seven inches diameter at the small end. It is cut down for one penny for every length of three feet, and sold in the wood from 7*d.* to 8*d.* per length; if sold by admeasurement, at the same price per foot; if smaller, it is cut out for axle-trees, plough-cheps, and wrests. Axle-trees should be seven feet long, and six and a half inches in diameter at the small end; they are cut for 1*d.* each, and sell in the wood for 10*d.* Plough-cheps should be five feet long, and five inches diameter at the small end: they are cut for one halfpenny each, and sell in the wood for sixpence.

“ Plough-wrests should be four feet long and five inches diameter at the small end: they are cut for one halfpenny each, and sell in the wood for 2*d.*

“ Piles are cut out of beech and hornbeam; they are used to prevent the tide from washing away the chalk at the footing of the sea-walls, and are cut of different lengths.

	s.	d.		l.	s.	d.
12 feet long	1	1½	} each	6 feet long	1	15 0
11 ———	1	0½		5 ———	1	5 0
10 ———	0	11½		4 ———	0	19 0
9 ———	0	10½		3 ———	0	12 0
8 ———	0	8½				
7 ———	0	7				
						per 100

“ N. B. The above is the price of the piles delivered at the place where they are to be used. Land-carriage is 5*s.* per hundred for six feet piles, 4*s.* for five feet, 3*s.* for four feet, and 2*s.* for three feet piles. If they go by water-carriage, the price is the same.

“ Props which are used in the coal-mines at Newcastle, are cut out of oak and birch; they should be cut six feet four or five inches long, and be two and a half inches diameter at the small end: the price of cutting is a halfpenny; and they sell in the woods at 2*d.* each.

“ These are the chief, if not all the articles which are cut during the winter. In the spring, what remains in the ranges is made up, part into summer kiln-bavins, which are made of the smallest wood, and bound with two withes, and should be six feet long. The price of making is 3*s.* per hundred; and they sell in the wood from 8*s.* to 9*s.* per hundred. Part is made into household bavins, being the best faggots which are made; they should be six feet long, and two feet over the band; the price is also 3*s.* per hundred; and they sell in the woods from 12*s.* to 14*s.* per hundred. The remainder is cut out in cord-wood; each stick should be three and a half feet long, the length of the cord fourteen feet, and it should be stacked three feet high; the price of cutting and stacking is 2*s.* per cord; and the cord sells in the wood from 12*s.* to 16*s.*

[In one of my late Agricultural Tours I waited upon
Mr.

Mr. TILDEN, who favoured me with an account of the prices of the workmanship and sale of the woods of his vicinity, which, contrasted with the prices he quoted in the year 1795, shews the increased price of this branch of husbandry, and the difference of the value of wood in seven years :

	Price of cutting and making-up.			
	1795.		1802.	
	s.	d.	s.	d.
Cord of Wood, - - -	2	0	2	6
Hundred of best Bavins, -	3	0	4	0
—— Summer Kiln ditto, -	3	0	4	0
—— Winter Kiln ditto, -	3	0	4	0
—— Best Chesnut Poles, -	1	0	1	3
—— Second best Poles, -	1	0	1	3
—— Oak, Beech, &c. -	1	0	1	3
—— Second ditto, - -	1	0	1	3
—— Stakes and Binders, -	0	1½	0	2

	Price of the different articles in the Wood.			Increase of			
	1795.			1803.			Labour Value.
	£.	s.	d.	£.	s.	d.	s. d.
Cord of Wood,	0	14	0	0	19	0	0 6
Hundred of best Bavins,	0	13	0	0	18	0	0 5
—— Summer Kiln do.	0	8	6	0	12	0	1 0
—— Winter Kiln do.	0	6	0	0	8	0	1 0
—— Best Ches. Poles	1	15	0	2	5	0	0 3
—— Second best do.	1	0	6	1	5	0	0 3
—— Oak, Beech, &c.	0	16	0	0	18	0	0 3
—— Second do.	0	11	0	0	11	0	0 3
—— Stakes & Binders	0	0	4½ to 5	0	0	7	0 0½

By which it appears, that on the average, this kind of husbandry labour is increased in seven years about 27 per cent., and the price of woods 30 per cent.]

“ It

"It has been found by those that have been very attentive to the management of their woodlands, that wood, like every thing else, decays and produces fewer poles every fall, unless they are replenished. This is best done in the autumn after the wood is felled. The plants, whether chesnut, ash, or willow, should be taken up from the nursery with as much earth to their roots as can be conveniently done *, and their small roots should be cut as little as possible. Strong plants taken up in this manner, and planted with care, seldom fail. They should be looked over the next spring, to fasten those which the frost may have loosened.

"The tithe of woodlands was, a few years ago, at 2*s.* in the pound; but it now varies from 2*s.* 3*d.* to 2*s.* 6*d.* and to 3*s.* † Many clergymen are of opinion that the woods ought not to be cut down only, but to be made up in the different articles for sale; but this is not true: if the clergyman and purchaser should disagree, all that the latter has to do, is to sever every tenth perch and leave it: the expense of doing this is found to be about 3*d.* in the pound. If wood therefore is sold at a fair valuation, it appears
unreason-

* Removing earth with the roots of plants of the kind here mentioned, is impracticable and unnecessary; no deciduous plants, but American flowering shrubs, require earth with them, nor will they retain it.—*Note by Mr. Randall, of Maidstone.*

† I never heard of 3*s.* being paid for the tithe of wood; 2*s.* 6*d.* is a common price, and ought not to be called unreasonable; for if the purchaser gives 20*s.* for the wood and 2*s.* for the tithe, amounting in the whole to 1*l.* 2*s.*, the tithe of which will be found to be nearly 2*s.* 2½*d.*: add the expense of felling, and in most cases 2*s.* 6*d.* is a reasonable charge.—*Remark by the Rev. Mr. Pryce.*

This mode of estimating tithe is erroneous, because it supposes eleven-tenths of the whole; and by that means makes the tithe too small. The fact is, that the seller can engage only for nine-tenths; and, consequently, the par-

unreasonable for any clergyman to demand more than 2s. 3d. in the pound *."

son's share is a ninth part of the sum the wood sells for, with an addition of a tenth of the price of severing; which in most cases will be found to amount to about 2s. 3d. in the pound, as Mr. TILDEN very justly observes.—*Editor.*

* The practice of laying down the different sorts from the stock to strike into the ground, is a valuable discovery; and I believe rather a local one. They produce hop-poles more quick by this, than in any other way.—*Note by a Middle Kent Farmer.*

The method is, to select long healthy young branches from the stocks adjoining to vacancies in the wood, and then to dig holes, each about two feet square, and fifteen inches deep, returning the surface mould into the bottom of the hole, and then bending each branch and fastening it down with a peg, about ten or twelve inches below the surface, treading over it the remainder of the mould.—*Editor.*

General Observations on the preceding Table.

The oaks are all cut in the flaying season, for the bark of all sizes. The fencing-poles are either used whole, or cut into gates for sheep-fences. The hop-poles are sorted into three, four, or five sorts, and sold by the hundred. The faggots, or bavins, are made into lengths of five feet; the best for bakers and house-keepers; and on the hills they make inferior sorts, called kiln-brush, which are used for burning lime. Stakes and ethers are cut out before the faggots are made. In the neighbourhood of Chatham they cut some small bundles of brush and cord-wood, for the use of shipping and the metropolis. The woodlands of the Weald are tithe-free.

[By mending the vacant spots of woods with such sorts of plants as are best adapted to the respective soils, a great additional produce of wood has been obtained. This improvement, together with an increased demand for hop-poles, has made some woodlands the most valuable estates in the county. The beautiful woods of Lord ROMNEY, and those of Sir CHARLES MIDDLETON, near Maidstone, are good specimens of what has been done in this way. His Lordship has, not long since, made above 50*l.* per acre of some wood of eleven years growth, on a poor pinnock soil, that was many years ago mended by the late Lord ROMNEY; and Sir CHARLES MIDDLETON, from a better soil on the rock, has made 104*l.* per acre, of a late fall of only nine years growth; but this was from a plantation of chesnut; a sort of wood the most valuable of any, except larich, for hop-poles.

From some hints on the culture of larich, and the value of that wood for hop-poles, published some years ago by the ingenious Dr. ANDERSON, of Edinburgh, I

was induced to raise a small plantation, by which I was enabled to cut down in July last a fifth part of an acre; the produce of which lies now in the field, and is as follows :

		£.	s.	d.
440	Faggots, worth 10s. per hundred	2	4	0
475	Best poles - 40s. — — —	9	10	0
125	Second ditto, 20s. — — —	1	5	0
162	Third ditto, - 10s. — — —	0	16	2
88	Large pieces, 1s. each,	4	8	0
75	Hedge stakes, - 3s. per hundred	0	2	3
		<hr/>		
		£.	18	5 5
		<hr/>		
Multiply by				5
		<hr/>		
Worth per acre,		£.	91	7 1
		<hr/>		

The land on which this valuable produce was reared, is a very poor light loam, not worth more than 6 or 7s. per acre rent, when it was planted.

The plants cost 1s. per hundred, and were put in with a dibbler after a deep ploughing, at the distance of two feet each way. The value of the produce in eleven years is near ten times the original value of the land at thirty years purchase !!!]

CHAP. XI.

WASTES.

THE waste lands, the neglected woods, and the impoverished commons, are striking evidences of the necessity and importance of inquiries like the present; and the legislature will have abundant merit in suggesting to the proprietors of these estates a plan of improvement, from which individuals and the community will derive the greatest advantages.

In the county there are the following commons, viz.

Blean Common,	Charing Heath,
Swingsfield Minis,	Lenham Heath,
Stelling Minis,	Pinnenden Heath,
Rodes Minis,	Cox Heath,
Ewel Minis,	Langley Heath,
Stouting Common,	Barming Heath,
Challock Lees,	East Malling Heath,
Baddlesmere Lees,	Seal Chart,
Chart Leacon,	Ightham Heath,
Hotfield Heath,	Wrotham Heath,
Hays Common	Dartford Heath,
Bromley Common,	Dartford Brimps,
Boxley Heath,	Black Heath, &c. &c.

The whole extent of these commons, I apprehend, does not comprehend more than 20,000 acres. The soil of a few of them consists of a poor cold loam; of others, of a wet stiff clay; but the principal part abounds in

gravel and sand. They are in general covered with furze and fern, interspersed with patches of grass; and feed some lean cattle and poor half starved sheep. If they were in a state of severalty, under proper systems of management, they might undoubtedly be made of great value. Enclosures would do much; industry and due attention to the natural produce, and what has been cultivated on similar soils in other places, would do more. Nature is a wise counsellor, and those who follow her advice can, with the aid of art and observation, do wonders in agriculture.

I shall here take the liberty of suggesting to the Honourable Board of Agriculture, the propriety of recommending to the legislature a plan for a general act of enclosure, founded on the principle of Mr. GILBERT's act for incorporating parishes for the support of the poor, so far as that act relates to the calling a meeting, and determining by a majority of two-thirds in number and value of the occupiers, whether their common shall be divided; and, if determined in the affirmative, then to proceed by appointing commissioners, and expediting the business, as in cases where separate acts of parliament have been obtained.

CHAP. XII.

IMPROVEMENTS.

SECT. I.—DRAINING.

THIS is a subject of infinite importance to the prosperity of this kingdom. Bogs exist in most of the counties, more or less, and in some to a wonderful extent; the whole of which is convertible to the very best land, by proper management.

In Kent we have a great many small patches of boggy and spongy lands, formed by means which will hereafter be mentioned. We have also several extensive parcels of marsh-lands, which, by too much water, in the winter months are frequently rendered totally useless, and of but little value in summer. The quantity of these two kinds of wet lands amounts to some thousand acres, the whole of which, at a very small expense, might be improved, in its annual value, at least 1*l.* per acre.

Besides these, there is much land of considerable value that might be greatly improved, by a proper attention to the general principles of drainage.

The different kinds of drainage may be arranged under the following heads, viz.

1. Upland Drainage,
2. Flood Drainage, and
3. Bog Drainage.

Upland Drainage is effected in two ways; either by surface drains, or by hollow drains. The first is done by

laying the land in ridges, and leading the water, by means of furrows, into narrow channels made with the spade, and thence by a general conductor to the streams. This kind of drainage is practised only on soils having a clay surface, or any other substance impenetrable by water; and the method used in Kent is to lay the land in flat ridges, either a half or a whole rod in width: if the land is very wet, narrow ridges are made; and if but moderately so, wider ones. When the land is ploughed, the furrows between the ridges are opened with a plough, having a mould-board on each side, by which a drain for the water is made; and at the lower parts of the field a channel is dug out about the breadth of the spade, to receive the water from the furrows, and convey it away as before mentioned. This mode of draining arable clay-soils on hills receiving no water but what falls from the clouds, is found to be effectual; and the flat ridges made with the turn-wrest plough, are very far superior to the high round ridges of other counties made by the ploughs with fixed mould-boards; for the flat ridges have the very great advantage of receiving and retaining the small showers equally over the surface of the ridge in summer, when every drop of water is of the utmost consequence to vegetation; while the high round ridges are more exposed to evaporation, and cast off little sudden showers, and the crops growing thereon in dry seasons, are in a starving state for the want of a sufficient degree of moisture. Great objections are made by some to flat ridges, alledging that the surface is more likely to be incrustated and baked together, by the water standing thereon after heavy showers; the fact is otherwise; but even if it should be so, the evil is easily remedied by taking the first opportunity of a dry season in the spring to harrow the surface of a wheat-crop; or to prevent the mischief

mischief, by drilling all crops, and hoeing the intervals by hand, if labourers are to be had, if not, by scuffling the surface with horse-hoes. At any rate, the evil of an incrustated or bound surface, which may be so easily remedied, is not to be put in competition with the advantages resulting from having a level surface to retain the small showers that fall in a dry summer.

The second mode of draining upland is by hollow drainage; which is practised on all land having a porous soil on the surface, and a retentive clay-soil a little below it, which keeps the surface wet till the water is taken away by some artificial means. The method is, to cut angular channels at such places, and at such distances from each other, as the nature of the soil seems to require; which must be determined by experienced men from local circumstances; such as, whether the retentive bed of clay be a greater or less depth from the surface; and whether the field to be drained has a greater or less fall for the ready passage of the water. The method of preserving the channels open and free, is various. Some lay flints or stones at the bottom, others green bushwood; and some make the trench with shoulders towards the bottom, and lay thereon a tuft of grass, with the grass-side downwards, thereby leaving an entire cavity for the passage of the water. In Essex I have been informed they use ropes of straw, made by twisting it together, about the size of a man's arm; these ropes are laid at the bottom instead of wood or stones: this is a very cheap method, and is said to be more durable than bushes. In every case, the trench is filled up and levelled with the mould that was dug out of it. These underground drains, when they are well executed, and made of a sufficient depth, out of the reach of moles and pressure of cattle or carriages, will last from ten to

twenty years, and upwards; and land may be drained in this mode at an expense of from 15*s.* to 30*s.* per acre, in proportion to the number of channels required. But it should be observed here, that many attempts at hollow draining have been made on boggy and spongy soils without success, owing to a want of the knowledge of the original cause of the mischief; which will be explained when the drainage of that sort of land is mentioned.

[I have lately drained a field of twenty-six acres of very wet land; but otherwise extremely rich and fertile, by laying the bottoms of the drains with whole bricks, filling up with brick-rubbish and sea beach, at the expense of nearly five pounds per acre. These drains will probably run for ages without choking up. Their durability ought to be great, or the expense is too much. Chalk will answer the purpose, when below the reach of frost, as well as bricks, and where near at hand, will occasion a considerable saving of the expense.]

II. *Flood Drainage*.—This kind of drainage is very little attended to in some parts of this county: for want of it, many extensive tracts of marsh-land are very much injured; and a benefit, which otherwise would accrue by a great increase of property in mutton, wool, and beef, is thereby lost to individuals and the public.

The mischief of floods is obvious; and, fortunately, so is the remedy, when their causes are known. These are, first, rain falling on retentive lands, whose surface is below the level of the river where embankments are wanting, or are defective. The nuisance in such cases can only be removed by evaporation or machinery*; but
it

* A machine of this kind has been lately erected by Mr. HOOPER, of Cottington, near Deal, which promises to be of the greatest utility, as its
cost

it may be greatly lessened by embankments. Under these circumstances, suitable embankments along the river answer a general good purpose; they keep the downfal-water in its proper channel, and the accumulated stream enlarges the bed and improves its outlet.

Secondly, A descent of water from the adjoining hills; the whole of which may be conveyed to the river by embanked channels, in such directions as nature points out.

III. *Bog Drainage.* All boggy soils consist of a mass of vegetable matter, arising from the surface of the land

cost is very little, and construction simple; it is not likely to get out of repair; and requires little or no attendance, it having a vane which keeps it always facing the wind.

DIMENSIONS OF THE MILL AND PUMP.

Four sweeps, the drivers of each seven feet long, and breadth sixteen inches. The leaders of each are the same length, and nine inches in breadth; these are so fixed, with springs behind them, as to check the velocity in strong gales of wind.

The mill works a square pump fifteen and a half inches by seven in the clear. It is calculated, in moderate gales, to make a stroke in one second of time, by which it delivers two gallons of water, making a discharge in twenty-four hours of 1600 butts, of 108 gallons each. It is planned with a lever, in case of necessity, to work another pump of the same size; which in strong winds would of course discharge double the above quantity. The price, including fixing, is 31*l.* 10*s.*

The use of this mill is to throw out the water from about 100 acres of grass-land, that have heretofore been always under water in a rainy season; occasioned not by the downfall of rain, nor by springs rising out of the land, but by springs issuing from the foot of the adjoining hills, and floods from the higher grounds spreading over the level below, faster than the sewers could take them away. The sewer which did run across this land is now turned round the outside of it, and the land to be drained by this mill is embanked against the floods, so that there will be no water to raise from it, but what falls from the clouds.

[This mill has been found to answer the intended purpose so well, and the neighbouring farmers have been so thoroughly convinced of its utility, that now, 1803, there are ten more erected in the same level; by which many wet fields, that used never to have any stock in them in winter, will now keep in that season a great many sheep.]

having

having been overflowed for ages with water, thereby producing a number of aquatic plants, whose roots form a thick matted turf that contain water, in the nature of a sponge. As these aquatic plants continue their growth upwards, their roots become matted together under the surface, and thereby form the spongy surface of the bog; hence, all bogs are in a perpetual state of increasing depth, so long as they are fed with the necessary supply of water to keep up the vegetation of the aquatic plants. Let the supply of water be cut off, and the aquatic plants soon die; by which the bog is no longer a mass of vegetating matter, but becomes a body of firm rich mould, in the nature of a rotten dunghill. This sort of land, therefore, when once it is properly drained, becomes the richest and most valuable: hence it is obvious, that all boggy lands may be increased in their annual value, at least 20s. per acre, and probably to twice that amount.

The springs that occasion the bogs, issue from the foot of the adjacent hills; and the method of draining, or more properly, destroying, the bogs, as discovered by the ingenious Mr. ELKINGTON, is so simple, easy, and certain in its effects, that it need only to be made public, to be generally adopted, and it will then produce the most beneficial effects to the community. For, besides the great increase of national wealth, by the destruction of all the bogs in the kingdom, amounting in value to many hundred thousand pounds a year, the improvement of the health of the neighbouring inhabitants is of the utmost importance; not to mention the increase of population, by the improvement and culture of these now barren and almost waste districts.

It may be presumptuous in me to enter at large into this subject, after the excellent Report which has been
made

made on Mr. ELKINGTON's mode of draining, by the worthy President of the Board of Agriculture; but as this Survey, when published by the Honourable Board, may fall into the hands of many who may not have an opportunity of seeing the other, I shall just mention such ideas as have occurred to me on this subject, together with the outlines of Mr. ELKINGTON's plan.

Water falling from the clouds, in rain or in dews, on the surface of the earth, descends in perpendicular directions through all porous soils, such as chalk, stone, gravel, sand, &c. until it meets with a bed of close tenacious earth; of which clay is the principal and most retentive: the water being there stopped in its descent, glides along the surface, and bursts out over the edges of the bed of clay, in the nature of a spring; from thence it flows down the sides of the hill, and produces a bog. The hills containing sand, rock, and gravel, in this county, and I suppose in most others, have beds of clay at their base, lying considerably above the level of the bottom of the vales which intersect the hills. The method practised so successfully by Mr. ELKINGTON, is to cut off these springs from their source by deep channels, in lines nearly in the direction of the vallies, thence conveying the water down to the rivers or sewers below.

When the direction for a drain is marked out, it is necessary to begin at the bottom next the river, carrying the trench gradually up to the spring-head, under the guidance of a spirit level: a fall of an inch in four or five rods, is sufficient to carry off the water. As the workmen proceed in making the trenches for the drains, holes are made in them with a boring auger, in order to tap the springs, and let out as much water as possible. If, from the situation of the land and soil, it is necessary to make very deep channels, then drains of stone or brick

brick are laid, and the drain is covered in with the earth that is dug out; but otherwise, open trenches will answer every purpose.

The mouth of the covered drain should be laid on a little green brushwood, to prevent its sinking into the earth. If any trees are found near the direction of the drain, they should be dug up, as otherwise their roots are liable to get into the drain; where they grow with such rapidity as to burst or choke it in a few years. If a small quantity of water only is expected to come down the drain, a breadth of four or five inches is sufficient; but if a quantity is found issuing from several springs, or comes from a considerable distance, by which an accumulation of water follows; then the drain should be about six or seven inches wide. If made with bricks, and the soil on which they are laid is a soft quicksand, they should be laid flat; but if clay or firm earth, laying them on their edges will do; the depth of the drain should be greater at the lower end than at the upper; namely, three bricks at the lower end, two in the middle, and one at the upper part.

H. DARREL, Esq. of Cale-Hill (very much to his honour) is the first who has undertaken bog-drainage in this county, under the direction of Mr. ELKINGTON. He commenced his operations in the spring of 1795, and has, in the course of about eight months, very effectually drained about seventy acres, which were worth about 7*s.* or 8*s.* per acre, and now will very shortly be to him invaluable, on account of their situation, close to his mansion; but, independent of that circumstance, this land will be increased in its annual value full 20*s.* per acre: by which, he has the acquisition of an estate of 70*l.* per annum for an expense not yet ascertained; but which will hardly exceed 200*l.* or 300*l.* Cattle have sometimes

sometimes been laid up on these bogs, so that they have been obliged to be drawn out by ropes from places which, in one year or less, from the time of the drains being cut, are become firm enough to bear the tread of horses.

[In a late survey of the improvements that have been made by Mr. DARREL, in the drainage of these bogs, I learn that he has had fine cabbages on some, and ten quarters of oats per acre on others, that have been under the plough; and where rushes have heretofore been frequently mown for thatch, now good grass appears.—Several of his drained bogs have lately been converted to water-mead, and are in a rapid state of improvement; but for want of a sufficient fall, the action of the water is not so lively as could be wished.]

SECT. II.—PARING AND BURNING.

For this subject, see the Appendix.

SECT. III.—MANURING.

THE sorts of manure commonly in use in this county, are dung, sheep-folding, chalk, turf-ashes, soot, coal-ashes, sea-weed, woollen-rags, and lime; with a variety of other manures, too numerous and trifling to be particularized.

Dung of horses, cattle, and hogs, is mixed together in large heaps, and laid in the fields intended to be manured, usually on a layer of fresh earth, a foot or two in depth, dug out of hedge-rows, waste banks, or useless spots of land. When the heap of dung is made up, some persons give it a covering of mould; and it is

an excellent practice to keep it moist, and prevent evaporation. After it has lain a month or two to ferment, it is trenched over at the expense of 3*s.* 6*d.* per hundred cart-loads; and then, after lying a few weeks longer, it is fit for use. This manure is laid on the land at the rate of from forty to sixty cart-loads, of twenty bushels each, per acre. The expense of carrying out the heap, when conveniently situated, is about 15*s.* per hundred cart-loads, and for spreading, 3*s.* 6*d.*

The principal part of this sort of manure is carried out for wheat or beans. Some farmers dung for barley, and others for turnips.

Manuring with the sheep-fold is practised on fallow-lands in the spring months, after barley sowing, for turnips; then on fallows or clover-lays, for wheat; and when that season is over, the fold is removed to either wheat stubbles or turnips, in order to fold the land for the succeeding crop of barley or oats.

Two hundred sheep will fold about an acre in a week; the value of which is from 20*s.* to 30*s.* in proportion to the time of the year; the last folding in the autumn, next to the ploughing for wheat, being the most valuable.

Chalk is sused to great advantage as a manure on some wet, stiff soils, having no calcareous earth; in quantity, from fifty to eighty cart-loads per acre. Its beneficial effects are said to last twenty years, and the value of it is often estimated between outgoing and incoming tenants, when lately laid on, as high as 5*l.* per acre.

There are many soils, however (indeed, throughout the greatest part of this county, where chalk is in plenty) which derive no benefit from it. Some farmers, from observing the beneficial effects of chalk as a manure at other places, have been tempted to use it on their lands; where

where it has proved to be of no kind use; and much time and expense have been entirely thrown away.

The best method of using it, is to spread it early in the autumn, in order that it may be thoroughly drenched with rain, that the frost may have its full operation upon it; by which means it is well pulverized when the thaw comes on, and will mix the more readily with the soil.

Old grass-lands on wet sandy or clay soil, over-run with furze or rushes, are greatly improved by chalk.

[A vast quantity of chalk is carried away from the vicinity of Gravesend, in vessels and barges, for manure, to the clay districts along the borders of the Thames in this county; but much more is carried over to the other side into the county of Essex. Some of this chalk is brought down to Herne and Whitstable, where within these few years immense improvements have been made with it. The method is to lay it in the winter on poor wet hungry grass-lands, about 13 or 14 large cart-loads per acre, which by the water and land carriage, &c. costs from 6*l.* to 8*l.* per acre. The grass and rough land producing fern and bushes with some grass of little value, when chalked, and ploughed, grows excellent corn. Mr. FORD, the proprietor of much of the tithe in this vicinity collects his corn tithes; but very wisely, to encourage the practice, remits to the farmers the tithe of the first crop of corn after chalking; hence much of it is done, and the practice increasing, adds greatly to the emolument of the tithe owner.]

Turf-ashes, if spread on poor chalky thin lands for turnips, at the rate of about twenty cart-loads of thirty bushels each per acre, will seldom fail to produce a good crop: and it is well known, that if once a good crop of turnips can be obtained on such poor lands, a good foundation is laid for future improvements.

Turf-

Turf-ashes are often used for wheat, and sometimes for other crops ; but there is no application of them so advantageous as that of using them for turnips.

Soot is a valuable manure for a top-dressing on sainfoin, clover, lucerne, and meadows : it is usually purchased at the neighbouring towns for 6*d.* [now 8*d.*] per bushel, and sown on the land at the rate of forty or fifty bushels per acre, early in the spring.

Coal-ashes are a good manure for the same purpose ; but not so much used, on account of their consumption in the manufacture of bricks: the price at the towns is about 2*d.* [now 3*d.*] per bushel: they are sown on the land in the spring, at the rate of four or five chaldrons per acre. Cold, wet, clay meadows, are much improved by them.

Sea-Weed.—This is a most excellent manure, being a mass of vegetable matter, strongly impregnated with salt. Immense quantities are sometimes thrown by the winds and tides on the shores of Thanet ; from whence it is carted through sloping passages, called gateways, in the cliff to the land.

When a quantity comes ashore, after a gale of wind, the farmers set all hands to work, to get as much as possible while the tide serves, lest the next should carry it away ; and if it happens in the night, they work at it then till stopped by the waters coming on. Some farmers will get up in one tide two or three hundred cart-loads. Those who live at a distance, hire small spots of land, of a few perches, to lay the fresh weed upon as they get it ; and carry it away to the farm at a more convenient opportunity. It sometimes comes ashore in quantities that amount to several thousand cart-loads ; and is, perhaps, all swept away by the next tide. The principal method of using it, is by mixing it in layers
among

among the farm-yard dung in the mix-hills. It is of great use in helping to rot the dry part of dung carried out of the farm-yard in summer.

Woollen Rags.—The chief use of these as manure, is to lay them round the hills of hops, &c.: the method is, to open the hill, and place the rags, ready cut into small pieces, two or three inches square, close round the roots, a little below the surface of the land, and immediately cover them up with mould. A ton of rags per acre is the usual quantity, which is about two pounds and a quarter to every hill of hops: they cost from 4*l.* to 6*l.* per ton. For dry gravelly soils, this is a good manure, as the rags operate in the nature of a sponge, to retain the moisture in a dry season, and thereby support vegetation; but, on the contrary, in a rainy summer it is supposed they do great injury, by producing the mould.

Lime.—I have already mentioned, page 89, the practice of using lime as a manure in the Weald of Kent, and that many of the tenants there are bound by their leases to lay on their fallows a hundred bushels of lime per acre. This lime is usually made of chalk in preference to stone, and is dispersed in heaps, of several loads at a place, during the summer, and spread with a shovel out of a cart before the last ploughing for wheat; which is generally sown in the month of October. Lime is very little used in any other part of this county: it has been tried on various soils in East Kent, such as chalk, clay, loam, and hazel-mould, without any apparent good effect.

[Lime is usually sold by the bushel; but the lime burners have their bushel measures made of basket, and these seem annually to diminish in size; so that waggons which formerly took away two hundred bushels from the lime-kilns, on the chalk-range above Boxley, Char-

ing, &c. now carry three hundred bushels, although the waggons are not larger. This seems an imposition that requires a remedy by the legislature.

Similar complaints are made by the buyers of lime in East Kent.]

Sand has been spread, at the rate of a cart-load a perch, upon stiff cledge soils, without being of any use; and tanners bark, at the rate of fifty cart-loads per acre, has been spread on chalk soils, and ploughed in for turnips, succeeded by barley: both crops very inferior where the bark was laid on, to that of some adjoining land manured with turf-ashes.

[I have since, however, laid some sand on a piece of wet marsh-land, the soil a stiff clay, for a crop of beans; the effect of which was a very great improvement on the crop; while chalk laid close by it produced scarcely any perceptible benefit.]

Kelp, ground to powder, has been sown at the rate of twenty cwt. per acre on pasture, sainfoin, and clover, without any sensible effect. There can be no doubt, but that many valuable discoveries may be made, as to the use and effect of other substances as manures, through the aid of chymistry: but theorists in that science are too apt to recommend compositions which, when put to the trial, prove useless. Writers, therefore, on this subject, should be cautious how they recommend expensive manures, without proof of their utility.

SECT. IV.—WEEDING.

THIS county has long been noted for its clean crops of corn; and a slovenly farmer is an object of reproach to

to all his neighbours. The husbandry of East Kent, and the middle of the county, about Maidstone, is extremely neat. There are three different modes of weeding the corn used here, viz. horse-hoeing, hand-hoeing, and hand-weeding. The bean and pea-crop is invariably horse-hoed two or three times; the first, as soon as the rows appear; they are then hoed by the hand along the sides of the furrows, with a plate about five inches wide; as soon as that is done, they are horse-hoed a second time; and if a second hand-hoeing is thought necessary, it is repeated; and then the beans are horse-hoed a third time with an earthing plate, to raise the mould against their stems.

Pease are seldom horse-hoed more than twice: both crops are usually looked over by women and children, who pick out by hand such weeds as the hoes have left. Many other crops of corn in rows or drills, such as canary, barley, wheat, and oats, are both horse and hand-hoed; and all crops in most kinds of land in the eastern part of the county, but more particularly in the best lands, are weeded in this manner: A gang of from ten to twenty, chiefly boys and girls, walk through the corn in June, and the beginning of July, attended by a careful man to look after them; and with angular weed-hooks cut up thistles and other weeds; at the same time, pulling up by the roots such weeds as will easily draw.

It is contrary to reason and nature, to expect that the earth can produce a full crop of corn, and a crop of weeds at the same time; and therefore, if the weeds are eradicated, most certainly a better crop of corn may be expected.

The poorest land which stands most in need of every assistance that art and industry can give it, is generally most neglected; crops of charlock in full bloom are

seen on some chalky downs in the month of June, over-topping the puny half starved corn, dazzling the eyes of the beholder with its lustre, but blasting the hopes of the penurious cultivator. However, it is much to the credit of Kentish farmers, that there are not half the weeds to be seen now on the poor lands that there were twenty years ago. The good lands have always been kept very clean.

Thistles are often cut out of the corn with small chisel shaped spuds, and in the same manner from grass-lands; but the best and most certain method of checking the growth of thistles on the grass-lands, is to let them alone till they are in full bloom, and then to mow them with a scythe; for if they are cut while young, they produce fresh shoots from the sides of each plant; but when mowed in full bloom, the stem is hollow; by which the rain-water and dews descend into the heart of the plant, and occasion it to rot.



SECT. V.—WATERING.

THE practice of irrigating meadows, is an improvement of infinite importance; by which many poor grass-lands are made to produce abundant crops, and good lands are made much more valuable; but I am sorry to say, the practice has yet very few friends in this county.

There are many rivers, rivulets, and rills flowing through various parts of Kent, offering their streams for the melioration of many thousand acres of grass-lands; some of which are at present poor, and unproductive, and at too great a distance from manures, to receive any aid of that kind.

The

The waters being properly thrown over these lands, would render them capable of producing a much greater quantity of hay, and of maintaining an increased number of valuable animals; thereby greatly adding to the stock of manure for the improvement of other lands, and ultimately increasing the employment of labourers, and consequently adding to population.

Before any attempt is made to irrigate the land, it should be well drained; then, having the command of the water, good crops may be produced at pleasure.

Bogs, when drained, and the soil is become a firm compact body, will become by irrigation, the richest meadow, and be increased in their annual value from 1*l.* to 5*l.* per acre; and, as water is always at command on an old bog, the expense of laying it out for irrigation must of course be very trifling, in comparison with the magnitude of improvement.

[In other counties bogs of little or no value, by this practice, have been made to produce two abundant crops of hay in one summer; besides a large growth of grass for autumn feeding, and another in the spring before the land is laid in for the first crop of hay. His Grace the Duke of BEDFORD's farm, at Priestly, near Woburn, in Bedfordshire, is an instance of this kind, and an example, that every proprietor of bog land ought to see.]

A most material object, namely, that of manuring the land, is likewise obtained by this practice; for it is a well known fact, although seemingly a paradox, that irrigating is most beneficial in the greatest floods of rain; because then the waters are most impregnated with rich particles of manure, washed down from the arable uplands; which, when thrown over meadows, form a

thick sediment, that operates as a rich and fertilizing manure.

It is to be observed, that although these lands are remarkably kindly for sheep, particularly ewes and lambs in the spring, they are certainly productive of the rot, if sheep are put upon them in the autumn.

A gentleman in East Kent, a few years ago, turned a little rill over a meadow, and made his grass grow very luxuriantly; and, not being acquainted with the business, frequently, in the autumn, turned a large flock of sheep into it; the whole of which he lost the following spring by the rot; and the land has never been irrigated since.

It must be obvious to every one, that to have the command of water, by which a dry soil can be saturated with moisture in a burning time, must be the means of promoting vegetation, when otherwise the grass would be dying away.

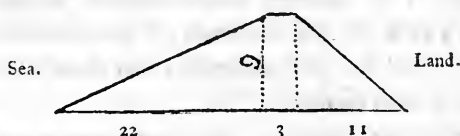
When farm-yards are situated on a declivity, the washings and overflowings of them are invariably turned into conductors, to lead them away to distant rivers. This is entirely throwing away a great treasure, which might be conveyed at pleasure to any adjoining field below the level of the farm-yard*.

[Among the improvements noted in this county, it may not be improper to mention here, that in the Isle of Thanet, at a place called Ebbsfleet, along the road from Sandwich to Ramsgate, some land has been taken in from the sea by means of a wall, or embankment of earth, dug up from the outside of the enclosure. This wall was made in the deepest part at first for

* For further information on this subject, see Boswell's *Irrigation*, and Mr. Davis's excellent *Account of Wiltshire*.

27s. per rod of $16\frac{1}{2}$ feet in length; the perpendicular height 9 feet; breadth at bottom 36 feet; at top 3 feet. The outside face of the wall next the sea forms an angle, the base of which is 22 feet, then allowing for the breadth of the top 3 feet, it leaves 11 feet for the base of the angle, the hypotenuse, or face of which is next the land.

SECTION OF THE WALL.



A lesser wall is made nearer the shore, which is only seven feet high, at the expense, when made, of seventeen shillings per rod. Sixty-four acres were first taken in about twenty years ago; since which, about 125 more have been added to the enclosure; but from going too far out into the sea, it has been found requisite to give up about forty-five acres, by setting a new wall within, abandoning the outside one; this latter work has been performed at the expense of sixty-two shillings per rod. The whole land now enclosed which is considered as secure, is 144 acres. This has lately been purchased by Mr. PETLEY, a neighbouring farmer, at about 32l. per acre. The first enclosure of 64 acres is extremely rich fattening land; the latter will, no doubt, very soon be equally good, and worth at least 50l. per acre. The whole length of the wall is about 520 rods, of which 194 is new work.

This land, before it was taken from the sea, was what is termed salts, being covered at spring and high tides by the sea, and was only fit, at certain times of low water,

to feed a flock of sheep, and worth not more than three or four shillings per acre, rent.

There is a large extent of the like salts at the other side of the river, belonging to the Earl of GUILDFORD, which no doubt might, by the same means, be made equally valuable.

Gentlemen having estates in land along the sea-shore, with salts, who visit the watering-places of Margate and Ramsgate in the summer, would do well, in their rides, to take a view of this enclosure; it does honour to the projector, and is a good example to all those who are interested in such estates.

There are no instances, that have come to my knowledge, of *warping* in this county; but there are many situations upon the borders of our rivers, where vast improvements might, by that process, in all probability, be made, and, by it, good estates in a manner *created*. The borders of the Medway, below Rochester, seem to offer great scope for that improvement.]

CHAP. XIII.

LIVE STOCK.

SECT. I.—CATTLE.

THIS not being a dairy or grazing county for cattle, we have no particular breed that may be allowed the appellation of Kentish Cattle. The sort bought in by graziers to be fattened for sale in the marshes of East Kent, are from North and South Wales, which are brought by the Welsh drovers to Canterbury and other markets; and the chief part of the dairy-cows are selected from those droves: others are a mixture of those and home-bred cattle, of various sorts and shapes. The principal object as to a cow here, is the giving a large quantity of milk. If a cow, though ever so ugly, is a good milker, and produces a cow calf, it is often reared for the dairy.

There are no ox-teams used in the eastern part of this county, which is partly the occasion of there being but little attention paid to the breed of cattle; but in the Weald, many farmers use oxen both for the road and plough, and there are some few individuals, who are very famous for a fine breed of Sussex cattle.

It is somewhat extraordinary, and much to be regretted, that, in a county where agriculture is arrived at such great perfection, there should be so little attention paid to the breed of cattle.

In

In West Kent, the dairies are small, seldom exceeding six or eight cows, and those are home-bred, between those of Staffordshire, Wales, and Sussex. Some of the small dairies of three or four cows, have the Welsh sort only.

In the Weald of Kent, the cattle are of the Sussex breed, both for the pail and plough.

Some farmers are more careful in the choice of bulls and breeding-cows than others; but there is not that attention paid to this department of farming business as in the midland counties. The finest bull of this district would hardly sell for twenty guineas, although he may be very handsome in every respect, and weigh, if killed, fifty or sixty score. These cattle are almost invariably of a deep red colour, and remarkable for a kindly soft skin. Their bone, in proportion to their great size, is small. The best of them have a great breadth of loin, and length of sirloin and rump, with a small head and neck; their horns are short, and stand upwards. They have a ready disposition to fatten; and seem to deserve the attention of the curious in cattle, as much as any sort in the kingdom. If the same care was taken here in breeding them, as is done in other counties, the breed might be greatly improved; and probably some of the best might be found equal in value to a Shakspeare*, or a Brindle Beauty†.

[Since the year 1796, a spirit has arisen in this county, which has tended much to the improvement of cattle here. Some prizes have been won by the Kentish farmers

* A bull-calf, so called, sold at public auction, at the sale of the late Mr. FOWLER's live stock of Rollwright, near Chipping Norton, for 29*l.* 8*s.*

Since sold for four hundred guineas.

† A cow, thus named, sold at the same sale for 273*l.*

for cattle shown at the Smithfield Society; a proof that we are following the graziers of the midland counties.]

Within these few years, some cows have been brought from the islands of Alderney and Guernsey, for the use of the dairies of gentlemen's families. These are a very small, ill-made kind of cattle; but they are remarkable for giving milk of a very rich quality, yielding a greater portion of cream, and making more butter from a given quantity of milk, than any other kind of cattle: the butter, too, is of a beautiful yellow colour, and is highly esteemed for its fine flavour. Whether these kinds of cows will preserve their superiority in this respect many years, if bred and kept in this county, time only can discover; but it is most probable that soil and climate will operate in the course of time, so that there will be no perceptible difference in the quality of the cream and butter, between these and common English cows.

An experiment was tried here in the summer of 1794, between a large home-bred cow of eight years old, and a small Alderney, two years old:

	gal.	lb. oz.	
The home-bred cow, in } seven days, gave }	35,	which made 10 3	} butter.
The Alderney cow, in } the same time, gave }	14	———— 6 8	

The cattle which are fed in Romney Marsh, are taken into keep chiefly from those farmers who keep lambs during the winter. Thus, by a temporary exchange of stock between the farmer and the grazier, each party is accommodated; for if the grazier could not put out his lambs in the winter, he must alter his present system of grazing; and the upland farmer would be very much distressed with his bullocks in the summer, when his pastures are

are reserved for hay, or fed with his dairy. The farmer keeps the lambs about thirty weeks, from the beginning of September; and the grazier keeps the bullocks about twenty weeks, from the middle of May.

Some graziers buy Welsh calves in the autumn; put them out to keep in farm-yards for the winter; and in the spring, place them among their sheep, where they get fat in a few months, and weigh from eighteen to twenty-two score each.

A very few oxen are fattened, which are bought in from the plough-teams of the Wealds of Kent and Sussex: they are very large, and have a reserve of the best grass to themselves. From their size, they require a longer time to get fat than the smaller sorts: they weigh from forty-five to seventy score each.

[The polled Scots cattle are frequently brought into this county for summer grazing, and with some are a favourite sort. Lord THANET has them in his enclosed grounds: they are very hardy, and will soon fatten on indifferent land. Mr. CURLING, of Shuart, in the Isle of Thanet, an excellent grazier, has them generally to fatten among sheep in his salt marshes: they weigh from 12 to 25 score each.]

Before concluding this Section, it may be proper to observe, that farmers at different parts of this county have been, and still are, in the habit of fattening oxen, and other cattle, in stalls, on potatoes and hay, or straw; others on turnips and cabbages, and hay or straw; and likewise on oil-cake and hay. By these means the cattle are frequently made very fat; but it is generally observed by the most experienced men, that this system is not profitable, the chief advantage being that of raising a supply of good manure for the arable lands; a consideration

deration which, by some, is not thought to be of sufficient importance to pay for the risk and trouble of attending stall-fed oxen.

[Sir CHARLES MIDDLETON enters largely into this business: he has frequently upwards of 40 oxen in stalls, feeding on oil-cake and hay. His hay is all cut into chaff, which he thinks is a saving of one-fourth, but acknowledges that there is always a loss upon feeding the cattle. His object is raising a mass of manure for his hop-gardens, and for the general improvement of his estate.]

SECT. II.—SHEEP.

KENT has long been famous for a fine breed of sheep, called in the county, Romney Marsh sheep; but in Smithfield, where great numbers are sold every week, Kent sheep. They are remarkable for arriving at an extraordinary degree of fatness at an early age, and for producing a large fleece of very long fine wool. These circumstances combined, render this perhaps the most valuable of any breed in the kingdom, not excepting the famous Dishley sort, whose wool, confessedly, is very coarse.

Their carcasses and legs are rather long, and bones large, in comparison with some other breeds; they have no horns, and their faces and legs are white.

The fat wethers, at two years old, weigh from twenty-two to twenty-eight pounds per quarter.

Their wool is the combing sort of the first quality, being very long and fine; the fleeces of the young sheep are about five pounds weight, those of the ewes six, and the fattening wethers eight or nine pounds each. This marsh

is supposed to produce twenty pounds of wool per acre, which, for 44,000 acres within the county, is 880,000 pounds of wool, or 3666 packs per annum; but as the greater part of the land has above four sheep per acre at shearing time, and as the average weight of the fleeces is certainly above five pounds, the annual growth of this marsh, in the county of Kent, is probably full four thousand packs.

This is the principal sort of sheep kept in this county. There are, however, many of the upland farmers who keep those of Wiltshire, Dorsetshire, and the South Downs. As these will, no doubt, be properly described in their respective County Reports, I shall forbear to mention them here.

[Within these few years, the new Leicester have been a good deal introduced by some graziers in Romney Marsh and in East Kent, with a view to cross that breed with the Romney Marsh; and from this cross, many half-bred sheep have been produced in our markets. The effect of the cross on the breed of Kent, is evidently that of reducing the size of the animal, and making the wool coarser, but giving them a better disposition to fatten.]

The management of sheep in the different parts of Kent, is as follows :

In the eastern part, the flock-farmers buy in lambs at Romney fair, the 20th of August, at from 12*s.* to 14*s.* [now from 22*s.* to 24*s.*] each; and when they have kept them two years, they either sell them lean to the fatting grazier, or make them fat themselves on turnips and pea or bean straw. Sainfoin and clover hay are generally too valuable at the watering places, to be used for that purpose. Oats, and cullings of garden-beans, are sometimes given, to finish them in the spring. When these two-yearling sheep are sold in the autumn to the graziers, the price





A Small SOUTH DOWN RAM belonging to. W. Boys.

Live Weight July 1793. 169 lb.

price is from 24*s.* to 28*s.* each; and when made fat, produce from 34*s.* to 42*s.* according to their size and fatness*. The few sheep bred in these marshes, are of the same sort, except some small parcels of Dorsetshire and South Down ewes, which are bought to make early fat lambs; and the ewes are made fat in the autumn.

Almost the whole of the sheep kept on the upland farms of East Kent, are the true Romney Marsh breed; whose carcasses and bones being large, and wool long and heavy, they require rich land, and good keep, to make them fat. It seems quite contrary to reason and nature, that they should be equally adapted to rich marsh-land and poor chalky downs; and consequently they are not so fit for this district, at least the chalky part of it, as the South Down sort, whose natural soil is a fine turf on chalk hills. Impressed with this sentiment, I have for these fifteen years past kept no other than South Down sheep, and have every reason to be satisfied with them. My flock is about 1000, 400 of which are breeding ewes.

[We have now a vast increase of this sort of sheep among the flock-masters in the eastern part of the county. Many who formerly had only Romney Marsh sheep, now keep the South Down entirely, and those chiefly are ewe-flocks; from which many thousands of sheep are now bred annually, on a district of country that heretofore scarcely ever produced any.]

The sheep in the Isle of Shepey are of the Romney Marsh sort; true Kents. The soil being much inferior to Romney Marsh, the sheep are somewhat smaller; and,

* [Since returning the Original Report to the Board, prices have very considerably advanced. In the last three years, lean sheep of this kind have sold from 40*s.* to 50*s.* and fat ones from 44*s.* to 70*s.*]

from the same cause, their wool is lighter and finer. Some graziers get rams from Romney Marsh; others prefer their own sort; and but very few, if any, pay that attention which it is their interest to do, to the wool of the rams they use. [There are now, however, some spirited men making great improvements in this island.] The wethers are fattened at three years old, then weighing from twenty to twenty-four pounds per quarter.

In West Kent, a flock of sheep under a shepherd, and folded at night, is a very rare sight; it is only a very few of the largest farmers who follow that practice*.

The sheep mostly kept in this district are the South Down sort, bought in wether lambs, at the autumnal fairs on the Downs, chiefly at Lewes, the 2d of October. They are kept the first winter on stubble land, with grass and a few turnips, and on grass and seeds in summer; and frequently are fatted on turnips the next winter, before they are quite two years old. This is become the favourite sort within these few years, and increases annually in this district.

The other sorts of sheep kept here, are the West Country, from Wiltshire and Dorsetshire: the wethers are bought in at all ages, to be fattened on turnips.

There are hardly any sheep bred in the Weald of Kent, excepting a few for early fat lambs, of the Wiltshire and South Down sorts.

Some of the Wiltshire wethers are bought in to fatten on turnips; and a few South Down wether lambs are bought in the autumn, and kept on the driest parts until

* It is only a few years since the practice of folding at all in Middle Kent has prevailed, except on very large farms; perhaps the smallness of them in general may have been, in some respects, the cause of it. The practice of it is now gaining ground, even on the smaller farms, as the advantages attending it are too obvious to escape common observation.—*A Note by a Middle Kent Farmer.*

they are two years old, and then made fat for sale on turnips or meadow-lands.

It has been mentioned, that the grand system of management in Romney Marsh, is that of breeding, rearing, and fattening sheep; and it remains only to describe the mode.

The rams are usually put to the ewes, allowing one to forty or fifty, and sometimes sixty, from the 12th to the 16th of November, and stay with them about five weeks. The ewes live entirely on the grass, without any hay, during the winter. In deep snow they scrape with their feet, and obtain a subsistence, although they then lose flesh, and sometimes become very poor by their weaning time. This Marsh produces many twins; but a great number are lost, so that most graziers consider their crop not a bad one, if they wean as many lambs as they put ewes to ram.

The lambs are weaned the first or second week in August; and those that are not sold, are very soon after put out to keep to the upland farmers of the county, where they remain till the 5th of April, at from 2*s.* to 3*s.* per score [now 5*s.*] per week. When they return to the Marsh, they are put on the poorest land, or such fields as the grazier thinks want improvement by hard stocking; which is here called *tegging* a field, and is held to be of great service. These young sheep are placed in the fields in proportion to what it is judged each will maintain, from the 5th of April until August, which is at the rate of from four to eight per acre.

The wether-tegs, in the autumn, are removed to the fattening, and the ewe-tegs to the breeding grounds, among the two and three yearling ewes. The wethers remain till July or August following, when, as they become fat, they are drawn out and sold to the butchers at the Marsh. [KENT.] N markets,

markets, or are sent to Smithfield. The two-yearling wethers, when fat, at this season weigh from 20 to 28 pounds per quarter; and some of the largest and best fed, a few pounds more. The old ewes, here called barrens, are put to fattening as soon as their milk is dried after the third lamb, which is at the age of four years, on some of the best land, where they are placed from two to three per acre for the winter. These, in favourable winters, are sometimes made fat, and sold in the spring, soon enough for the same field to take in a fresh set of wethers, and make them fat by the autumn; but this can only be done by light stocking.

The practice of fattening sheep on turnips, assisted by oil-cake, corn, hay, sainfoin, &c. is greatly in use among the upland farmers of this county; not so much for the profit by feeding with those articles, as for the great improvement of the soil, where the turnips are fed off. The manure from sheep fed on oil-cake and turnips, is found to be very enriching to the land.

A great number of fold-flocks of lean sheep, from eight to twenty score in number, are kept by the farmers of the eastern part of this county. These are each attended by a shepherd, who removes the fold every morning to fresh ground, at six o'clock in summer, and at break of day in winter; the flock is then driven away to the most inferior keep at the first part of the morning, and is returned into the fold for two or three hours in the middle of the day, while the shepherd goes to dinner: in the afternoon it is gradually led to the best keep on the farm, that the sheep may return full fed to the fold in the evening.

Great caution is necessary in feeding sheep on clover in summer, and on turnips in the first part of the winter; as otherwise they will die in great numbers, by being,
what

what is provincially termed, *blown*; which is occasioned by taking the clover and the young turnip-tops into the stomach too hastily when the sheep are hungry, so that there is not sufficient time for digestion; by which the air is generated to such a degree in the stomach, that great swelling ensues, and the animal soon dies.

Attentive shepherds will, in the first instance, take care to feed their flocks so as to prevent this disease, by keeping them from such strong food while they are hungry. As yet, we seem not to have any effectual remedy for this disease; but the South Down farmers say, that half a pint of lintseed oil, given to a sheep when first *blown*, is a certain cure.

[Much contest has arisen respecting the claim of superiority in the different breeds of sheep. The Leicestershire grazier thinks none equal to the new Leicester sort; and the Romney Marsh man defies all the disciples of Mr. BAKEWELL to produce a sheep equal to Mr. WALL's, of Romney Marsh; while some others contend that the South Down is superior to either. I am of opinion, that each sort has its relative merit, and that there are soils and situations peculiarly adapted to the different kinds. The new Leicester is a quiet docile animal, with a ready disposition to fatten, and therefore best adapted for rich warm enclosures, where there is plenty of grass, and where his only business is to eat, and lie down to sleep. The Romney Marsh is an old sort, that, for centuries past, has been bred, exposed to all winds and weather, and frequently with very short keep: hence it has naturally acquired a hardy habit, and active disposition to seek out for food, and, of course, is a sort best calculated for open exposed situations. The South Down, in like manner, have been bred for ages on cold hills of extremely poor land, with short keep, and always in the

fold at night. This breed is therefore, by Nature, best calculated for such situations. Few instances of a fair trial have been known in this county, between one breed of sheep and another; indeed, none strictly fair, that ever came to my knowledge. There is at this time a trial going on between six new Leicester and six of Mr. WALL's Romney Marsh sheep, in Lord THANET's park at Hothfield. These are now tegs, and are to be kept till they are two years old, and fat; but as no one can tell which six sheep eat the most grass, it cannot be discovered which are the most profitable. The only thing that, in this instance, can be proved, will be, which six sheep have increased most, or produced most mutton and wool in a given time. So far, this may be useful to know; but it cannot be decisive, till a method can be found out to prove which sort of sheep will produce most mutton and wool from a given quantity of food.]



SECT. III.—HORSES, AND THEIR USE IN HUSBANDRY, COMPARED WITH LIVE OXEN.

THERE are many very fine teams, each consisting of four horses, in the hands of the farmers of the Isle of Thanet, and East Kent, some of which were bred here from a sort that has been long established; and others are a cross, between the old Kentish cart-mares and stallions from the midland counties, or half-bred Flemish; and, within these few years, there have been several very good mares brought from Flanders, which have cost from 25 to 40 guineas each. Black is the favourite colour, and there are but few of any other: they are from fifteen to sixteen hands and a half high, with much bone, and
good

good action. They plough, generally, with four in winter, and work an acre and an half in a day; and in barley-season with two, and then plough two acres a day, with a *mate* to lead the horses.

Many farmers have great pride in their fine teams, which are often too fat to do the quantity of work in a day they ought.

In the Isle of Shepey, the horses for the plough are bred principally from a sort that has been in the isle time out of mind. The mares are covered by stallions that come from other parts of the county in the season: they are of a size somewhat smaller than those of other parts of Kent, where the land ploughs much lighter. Whether smaller horses are found to answer best here, is much to be doubted, as it is natural to suppose, that such very stiff heavy land must require strong horses. It should rather seem, that the breed of them here is become small from neglect; and it would perhaps be better, if more attention was paid to the breeding and rearing the *cols* in these parts.

In West Kent there are many fine teams of cart-horses, but very few are bred there; the farmers buy them of dealers, who bring them at the age of three, four, and five years, from the midland counties.

The Weald is the only part of the county where oxen are generally used for draught. Here it is common to see horses and oxen together, both in the plough and on the roads; eight or ten oxen, with a horse or two before, to lead them along. Frequently ten oxen, without any horse, are seen drawing a plough, which would be much more expeditiously done by four horses. An acre a day is the common yoke for eight or ten oxen, in wet heavy land, where four horses would plough an acre and a quarter. On farms having a greater portion of rich

meadow than arable, it perhaps may be proper to employ oxen as beasts of draught, because they are in a growing state, and increasing in their value to fatten, and because they are fed at a small expense on good pasture-land; but on farms not having a greater portion of pasture than arable, and that pasture not being rich good land, the expense of supporting the requisite number of oxen exceeds the expense of supporting the requisite number of horses. There is, besides, another disadvantage attending the use of oxen: the slowness of their pace is apt to lead the ploughmen into slothful habits, which are seldom got rid of. By some it is contended, that oxen are so valuable to fatten when they have worked for five or six years, that, on that account only, they ought to be more used as beasts of draught; but it should be recollected, that horses, when they have worked the same time, are more valuable than oxen, because they will then sell for more money, and will work eight or ten years longer; during which time they will earn by their labour perhaps double the value of a lean ox at nine years of age; and therefore the value of an ox, after working five or six years, is not a sufficient argument to recommend them for general use.

[The loss of manual labour, in working oxen, ought to be taken into the account. In the Weald of Kent, where ten oxen are seen in a plough, there are two drivers, which, when only an acre is ploughed in a day, must cost, for manual labour only (two men and a boy), 6s. at least per acre. But if, instead of ten oxen, four strong horses are used, one man and a boy with them, will plough an acre and a quarter in a day. The manual labour, in that case, is only (man at 2s. 6d. and boy at 1s. per day) 2s. 9d. per acre; and if the expense of hay (especially when at six or seven pounds per ton), together with

with the value of the grass, when mutton and beef are 8*d.* or 9*d.* per pound, that these ten oxen consume, be taken into the account, it will appear that horses must plough the land much cheaper than oxen.]

When horses have laboured a great many years, as a great many do, they owe their masters and the public nothing; and therefore they ought not to be condemned as beasts of draught, in favour of oxen, when their labour is done, and because they are only fit for the hounds.

In short, neither of these animals is to be generally recommended in preference to the other: Nature has provided situations best adapted for each of them.

The breeding of horses is not practised in this county as a separate branch of business, as in many parts of the North; but there are some farmers who breed a colt or two annually, though not so many of late years as heretofore.

The great supply of draught-horses is from the midland counties, brought hither while colts and fillies by dealers who attend the fairs and markets.

[The method of feeding farming-horses is so totally different from that of most other counties, that it is thought proper to note it here.

To every team of four horses there is a man and a mate, who work entirely with the team, and have the sole charge of it. When two yokes* are made in a day, which is the usual practice of East Kent, the time of going to work is at six o'clock in the morning, returning home at ten; and then going out again at one, and returning at six; by which the day's work consists of nine hours; and the usual quantity of land ploughed in that

* Provincial term for the time of being at work.

time is an acre and a half. The time for breakfast is five, dinner twelve, and supper eight o'clock.

It is the man's duty to feed (provincially bait) the team from four o'clock in the morning till six; and the mate takes that office during the interval of rest for the team at noon, and also from six till ten.

The horses are then littered, and the stable is shut for the night. While the mate is baiting in the noon-time, the man fetches the *taff** and *chaff** from the barns, and cuts the corn-sheaves, and sometimes barley-straw, into chaff, which is mixed with what comes out of the barn. During the time that the horses are in the stable, this mixture, which constitutes the whole of what the horses eat (unless when corn is given instead of the corn-sheaves), is carried, by about a gallon at a time, as the horses eat it; never overcharging the manger, nor suffering it to be quite empty. To every team there is generally a fixed allowance, served out by the bailiff, either of corn in the sheaf, to be cut, or of clean corn: if the former, seven sheaves of oats, or four of oats and three of beans, per day; but if the latter, seven bushels of oats, or four bushels of oats, and two, and in some cases three of beans, per week. Where the allowance is of corn, it is mixed with the taff and chaff, &c. as before-mentioned, and given in the same manner. This allowance is sufficient to keep the horses in good heart; but where the first teams are seen immoderately fat, and unfit for their business, it can arise only from their not doing their proper quantity of work, or from their being fed with corn stolen from the barns and granaries; a practice too common in this county. In West Kent, a

* Provincial terms for what comes away from the corn in cleaning; in some counties called *colder*.

different system of keeping horses is practised. Hay is there frequently used; and at many places, one yoke only in a day is made, going out to work at six, and returning at two o'clock. Most business is certainly executed by making two yokes; and it is much better for the horses to have an interval of three hours to feed and rest.

There are some farmers who allow neither corn nor hay; but, instead thereof, twenty-four strike bushels (about two hundred weight) of bran, per week, to a team, besides the taff and chaff from the barns; and there are others who allow a less quantity of bran, and some sainfoin hay with it, to cut into chaff.]

SECT. IV.—HOGS.

THE hogs of the eastern part are of various sorts, some farmers preferring a large, and others a small breed; but there are none very large and coarse. The smaller sorts are those mixed with the Chinese breed. They are fattened at the age of eighteen or twenty months, for the use of the family of servants in farm-houses; and made to weigh from ten to twenty-five score each. The Chinese fatten readily, but are generally thick hided, and do not bear the cold well; and from their tenderness, are very apt to lie in stable-dung, and get the mange.

A great number of pigs are reared in this district, and fed on the corn-stubbles for the butchers, which are killed in the autumn for roasting pork, at the age of three or four months, then weighing as many score pounds each.

Some are fattened and killed at from six to twelve months

months old, and sold to small families in the neighbouring towns and villages, or to pork-butchers, who retail them in sides and quarters to those families. The business of rearing and fattening hogs for sale, is generally considered unprofitable.

In the western part of the county, there are a few farmers who have the larger kind, or Berkshire breed, of hogs; but in general, they are mixtures of many different sorts.

Little attention is paid to this animal, though the breed might, doubtless, be very much improved with proper care.

[Within the last seven years, some Kentish farmers have bent their attention to the improvement of the breed of hogs. A few have been introduced from the midland counties, called the Dishley sort. These are chiefly mottled with large black spots: what I have seen of them, appear generally wide on the back, but are large boned, and seem coarse skinned. I have had for thirty years past a small short-backed sort, that are all white, small boned, and very fine skinned, broad and straight on the back, and kindly feeders. At the age of eighteen months, with moderate feeding, they will usually weigh from fourteen to eighteen score, sometimes upwards of twenty score. I have not hitherto seen any other kind to prefer to them.]

Many hogs are kept in the woods of the Weald of Kent in the autumn, on acorns, and fattened on corn in the winter.

Pork is the chief food of farm-house servants and labourers in husbandry in this county; and there are very few of the industrious workmen that do not fat a hog or two every winter. When hog-corn, such as beans and pease, is very dear, the farmers often let their workmen
have

have a reasonable quantity at an under-price. This tends to keep up a mutual good understanding between the farmers and their labourers.

SECT. V.—RABBITS.

THERE is but a very small portion of this county employed as rabbit-warren. Brabourn Lees, near Ashford, and some small warrens near Folkstone, are all that I know of. The rabbits on Brabourn Lees* have some years, like sheep, been infected with the rot. However valuable they may be to the proprietor of a barren soil, yet they are often a nuisance, by the mischief they do in the neighbouring corn-fields.

SECT. VI.—POULTRY.


GEESE and turkies, fowls and ducks, are bred in this county sufficiently to supply the inhabitants, and a few to spare for the supply of the shipping that sail from Gravesend and the Downs.

The price of poultry is very much increased within these few years. Turkies now sell as high as 6*s.* or 7*s.*; geese 4*s.* or 5*s.* [now 5*s.* or 6*s.*] each; and ducks and fowls 3*s.* 6*d.* to 4*s.* [now 4*s.* to 6*s.*] per couple.

* [Barracks have lately been erected on this warren, by the inhabitants of which, the rabbits are all destroyed.]

SECT. VII.—PIGEONS.

THIS kind of poultry, if it may be so called, is not in such plenty as some years back; a number of pigeon-houses have been destroyed, on account of the mischief they do to the thatch as well as the corn-fields. The dung of them is valuable to sow on clover; but it is an article procurable in so trifling a quantity, as hardly to merit notice. The value of pigeons is about 5*s.* or 6*s.* [now 6*s.* to 8*s.*] per dozen.



SECT. VIII.—BEES.

THE few bees there are in this county, are chiefly in the hands of the small farmers and cottagers. There are some instances of the latter class sometimes paying their rent by the sale of their honey and wax. There is, no doubt, a certain extent to which the quantity of bees might be increased; but what the increase might be, it is impossible to say; it seems, however, that a great many more might be kept, and, to appearance, without expense or injury to any kind of crops; if so, it certainly is well worth the attention of the Honourable Board, to propose some method of encouraging an increase of them*.

* See Wildman on Bees.

CHAP. XIV.

RURAL ECONOMY.

SECT. I.—LABOUR—SERVANTS—LABOURERS—
HOURS OF LABOUR.

THE price of labour varies in different parts of the county. The regulating medium for all task-work, is the value of the day's labour.

PRICE OF LABOUR.

PRICE OF LABOUR.										1795.		1803.		Reaping		
										£.	s.	d.	£.		s.	d.
Labourers per day, of ten hours, from	-	-	-	-	-	-	-	-	-	0	1	6	to 0	2	0	0
Threshing wheat, per quarter*	-	-	-	-	-	-	-	-	-	0	2	0	— 0	3	0	0
Barley	-	-	-	-	-	-	-	-	-	0	1	4	— 0	1	8	0
Beans	-	-	-	-	-	-	-	-	-	0	1	2	— 0	1	8	0
Oats	-	-	-	-	-	-	-	-	-	0	1	0	— 0	1	6	0
Pease	-	-	-	-	-	-	-	-	-	0	1	6	— 0	2	0	0
Canary-seed	-	-	-	-	-	-	-	-	-	0	6	0	— 0	7	0	0
Clover-seed, per bushel	-	-	-	-	-	-	-	-	-	0	5	0	0
Spreading dung, per 100 cart-loads, 24 bushels each	-	-	-	-	-	-	-	-	-	0	3	6	— 0	4	0	0
Turning dung	-	-	-	-	-	-	-	-	-	0	3	6	— 0	4	0	0
Making hedges, per rod	-	-	-	-	-	-	-	-	-	0	0	2	— 0	0	4	0
If plashed and bound	-	-	-	-	-	-	-	-	-	0	0	6	0
Hoeing beans per acre, first time	-	-	-	-	-	-	-	-	-	0	3	0	— 0	3	6	0
Ditto, second time	-	-	-	-	-	-	-	-	-	0	4	0	— 0	4	6	0
Pease	-	-	-	-	-	-	-	-	-	0	3	0	— 0	4	0	0
Dutch-hoeing canary and barley, per acre	-	-	-	-	-	-	-	-	-	0	1	8	— 0	2	0	0
Common hoeing	-	-	-	-	-	-	-	-	-	0	3	6	— 0	4	0	0
Hoeing turnips, per acre	-	-	-	-	-	-	-	-	-	0	5	0	— 0	6	0	0

* This year, 1795, by the badness of the crop, some farmers pay 10s. per quarter.

Reaping

	1795.			1805.			Cook.
	£.	s.	d.	£.	s.	d.	
Reaping of wheat, per acre	0	8	0	0	11	0	0
Mowing barley and oats	0	1	8	0	3	0	4
Binding and shocking	0	1	8	0	3	0	4
Cutting beans, and binding	0	5	0	0	5	6	0
— peas, without binding	0	4	0	0	4	6	0
— canary or radish-seed	0	6	0	0	8	0	14
Mowing sainfoin	0	2	0	0	2	6	0
— clover-hay	0	2	0	0	2	6	0
— clover-seed	0	2	0	0	2	6	0
— grass in the marshes and meadows	0	2	6	0	3	6	0
Waggoner's wages per annum, and board	10	0	0	11	0	0	0
If a married man, and boards himself, per week	*0	10	0	0	10	6	12
Second ploughman, at per annum	9	0	0	11	0	0	0
Third ditto	8	0	0	10	0	0	0
Waggoner's mate	6	0	0	9	0	0	0
Second plough-boy	4	0	0	6	0	0	0
Third ditto	3	0	0	5	0	0	0
Buttiff	12	0	0	16	0	0	0
Dairy-maid	4	0	0	5	0	0	0

* With wheat and pork at reduced prices.

	1795.						1803.						Picking	
	<i>f.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>	<i>s.</i>	<i>d.</i>		
Cook-maid	-	-	-	4	0	0	to	5	0	0	4	0	0	0
Shepherd, per week	-	-	-	0	9	0	-	0	10	0	0	10	0	0
Women's wages for weeding, per day	-	-	-	0	0	8	-	0	0	10	0	0	10	0
Children, from 10 to 13 years old	-	-	-	0	0	6	0	0	6	0
Value of ploughing an acre of land	-	-	-	0	7	0	-	0	10	0	0	10	0	0
A harvest-man for five weeks, with board	-	-	-	3	10	0	-	4	0	0	4	0	0	0
Without board	-	-	-	5	5	0	-	6	10	0	0
<i>Hop-Garden Labour.</i>														
Per day	-	-	-	0	1	8	-	0	2	0	0	2	0	0
Digging, per acre	-	-	-	0	15	0	-	1	0	0	1	0	0	0
Cutting, per acre	-	-	-	0	5	0	-	0	5	0	0
Poling	-	-	-	0	10	0	-	0	12	0	0
Sharpening old poles	-	-	-	0	2	0	-	0	2	0	0
Tying	-	-	-	0	10	0	-	0	12	0	0
Crowning, a shovelful of mould to every hill, when } cleansed of superfluous bine	-	-	-	0	1	6	-	0	2	0	0
Half-hilling	-	-	-	0	3	0	-	0	3	0	0
Whole-hilling, or second operation	-	-	-	0	2	6	-	0	2	6	0
Summer-hoeing, per acre	-	-	-	0	5	0	-	0	5	0	0

	1795.				1803.						
	£.	s.	d.	£.	s.	d.	£.	s.	d.		
Picking by the basket, of five bushels	0	0	7 to 0	0	2	0	0	1	0 to 0	2 6 6	[During
Drying, per week, with a quart of strong beer per day	1	1	0	1	1	0 — 1	4 0	
Composition for tithe, per acre	0	10	0* — 1	5 0	0	10 0 — 1	5 0	half price	
First year of poling	0	5	0 — 0	7 0	0	1 0	0	1 0	
Bagging, per bag	0	1	0	0	0	9	
Sharpening new poles, per hundred	0	0	9	0	0	8	
Shaving	0	1	6	0	1	6	
Drawing new poles into the ground, per hundred	0	0	3	0	0	3	
Stripping poles of the bind, per acre	0	2	6	0	3	0	o
Opening the hills, per acre	0	3	6 — 0	5 0	0	3 0 — 0	5 0	0	3 0	
Stacking poles, per acre	0	2	6	0	3	0	
Annual expense of an acre of hop-ground, from	20	0	0 — 30	0 0	40	0 0 — 50	0 0	0	0	
Cleaning marsh-ditches, per rod	0	1	0 — 0	2 0	0	2 0 — 0	3 6	0	2 0	
Cutting ant-hills, per acre	0	5	0 — 0	11 0	0	7 0 — 0	16 0	0	7 0	
Carting them together	0	5	0 — 0	11 0	0	7 0 — 0	16 0	0	12 0 — 1	0 0	
Value of ploughing an acre of land in stiff marsh-lands	0	10	0 — 0	12 0	0	12 0 — 1	0 0	0	4 0 — 0	4 6	
Thatching, per 100 square feet	0	3	0 — 0	3 6	0	3 0 — 0	4 0	0	3 0 — 0	4 0	
Carpenters per day, and 4d. allowance for beer	0	2	4 — 0	2 6	0	3 0 — 0	4 0	0	3 0 — 0	4 0	
Bricklayer, with like allowance	0	2	6 — 0	2 8	0	3 0 — 0	4 0	0	3 0 — 0	4 0	RENT.]

* The most general price.

KENT.]

[During

[During the time of taking this survey in the years 1794 and 1795, the scarcity of labourers, and high price of all kinds of provisions, in the last year, together made the price of labour higher than stated in the first column of this report; but some parishes at the latter period allowed corn to their workmen at a low rate, instead of raising the price; others raised money for them by assessments; and some paid an additional price for their labour.

In the former edition of this Report, returned to the Board of Agriculture, in the year 1795, it was then stated, that upon the whole the price of husbandry labour was nearly doubled in the last thirty years. Since that period, a return of peace increasing the supply of hands, and plentiful crops increasing the supply of provisions, prices of labour have been somewhat reduced: the renewal of war, however, having occasioned a scarcity of labourers, although provisions are more plentiful, prices of labour are again become as stated in the former edition, "nearly doubled in the last thirty years."]

In most parts of this county the labour is done by the piece; which is by far the best method for the employer, the employed, and the public; because the labourer has the opportunity, by greater exertions, of earning more money; and the master has more business executed by the same hands. The master's eye is only necessary to see that the work is properly done; and the community is benefited in proportion to the additional quantity of labour thereby performed by the same number of inhabitants of the country. When a number of labourers work together by the day, much time is lost by idle conversation.

The scarcity of yearly servants is much greater along the coast than in the interior of the county; and their
general

general conduct and behaviour are much better in the inland parts.

The hours of labour in summer, are from six o'clock in the morning till eleven; and from one in the afternoon till six in the evening, allowing half an hour for breakfast, in case that meal is not eaten before six o'clock; and then working till half past eleven; so that the standard day's labour is ten hours; but there are few instances in which it is strictly adhered to. In winter, the time of working for a day is as long as daylight will permit, making the dinner-time as short as possible.

Upon the whole, a day's labour is generally much shorter than formerly, owing partly to the scarcity of workmen, who well know that if one master will not give them their hire for a short day, another will; and partly to the inattention of masters and their bailiffs to the hours of working.

SECT. II.—PROVISIONS.

THE easy communication between all parts of this county and the metropolis, renders the markets of Smithfield and Mark-lane the regulating medium, by which the prices of all kinds of provisions that are sold in the county are governed. If wheat rises 2*s.* per quarter at London, it immediately does the same at all the markets in the county; and if butchers meat is plentiful, and falls in price in Smithfield, it soon lowers in the country markets.

The supplies necessary for the army and navy, in time

of war, must contribute to increase the demand for provisions; at the same time, two extremely dry summers, with one of the severest winters ever remembered, have contributed to decrease the supply. The latter causes, however, have principally occasioned the present scarcity, and consequent high prices of provisions. A decreased supply will always operate in raising the price of any commodity; but if to that be added an increased demand which must be supplied, the effect is doubled, and prices rise in proportion. A medium price can only be found in a just balance between supply and demand. Since the beginning of this Survey, the price of bread is advanced about cent. per cent.; and butchers meat about twenty per cent.

[Nothing could be more unjust and unfounded than the clamour that was raised against the farmers, millers, and merchants, during the great scarcities of corn, in the years 1795 and 1800.—It was said that farmers hoarded their corn, that millers monopolized it, and that merchants destroyed whole vessel loads in the Thames, and at sea, to keep up prices; and that there was no real scarcity. If any proofs to the contrary were necessary, we need only look to the immense consumption of foreign corn in those years: had there been a plenty, as many persons ignorant of the real state of the case contended, there could have been no occasion for the foreign corn, and the importers of it at high prices from the Continent would have been ruined. The fact is now positively ascertained, that the country was deficient to the amount of the consumption of that extraordinary supply; and it was the high price, by its operation as a bounty upon importation, that saved the country from absolute famine; for had that importation not taken place,
bread

bread could not have been found for the people. The cause of this scarcity is to be traced to the severe winters and dry summers preceding the harvests of those years.]

THE PRICES OF PROVISIONS, DECEMBER 1795.

Mutton 6*d.* beef 5½*d.* veal 8*d.* pork 7*d.* bacon 8*d.* butter 12*d.* and good Cheshire cheese 7*d.* per pound, of sixteen ounces avoirdupois; potatoes 8*s.* to 10*s.* per sack of nearly 200*lb.* neat; coals 36*s.* per chaldron of 36 bushels; a half peck loaf of best wheaten bread, 2*s.*

[The scarcity of bread corn was so extraordinary and extensive in its operation, as to occasion at the time an enlarged consumption of butchers meat, the effect of which, by a scarcity of live stock, is not yet recovered. Cattle and sheep fit for the butcher, are not raised in less than from two to five years; hence such a scarcity as happened in the year 1800, must take up at least three or four years, before the balance between supply and demand can be restored to its just equilibrium, and of course the present high price of meat has its origin in the late scarcity of corn, as well as of grass.

The late uncommonly dry summer, must have had an additional effect in preventing prices of meat coming down to their proper level.

Mutton is now, December 1803, 8½*d.* beef 8½*d.* veal 10*d.* pork 7*d.* potatoes 10*s.* 6*d.* per sack; coals 48*s.* per chaldron; a half peck loaf 1*s.*]

SECT. III.—FUEL.

COALS are brought from Newcastle and Sunderland to all the maritime ports of Kent, and from thence are
 o 3 distributed

distributed to the interior parts, seldom exceeding 30s. per chaldron in time of peace.

Faggots of wood are found in plenty in the western and middle parts of Kent. The bakers, who formerly heated their ovens with wood, now in many places use coals, and, by experience, find it more advantageous: the decreased demand for fire-wood, by the new method of heating ovens, is amply compensated to the growers of wood, by the great consumption of faggots for burning bricks and lime. Turf and peat are very little used. Tanners' bark, after infusion, is dried, and formed into cakes of a convenient size, and becomes an article of fuel in the vicinity of tan-yards. In the eastern part of Kent, fire-wood for heating ovens is sometimes so scarce, as to sell from 16s. to 20s. per hundred of brush-faggots; each five feet and a half long, and three feet in girt.

CHAP. XV.

POLITICAL ECONOMY.

SECT. I.—ROADS.

THE principal road in this county, is that leading from London to Canterbury, which of late years has been much improved and kept in excellent order by the commissioners, who have immense sums at their disposal; and materials are every where near at hand: but it is somewhat extraordinary, that their power is not extended eastward to Deal, where there is such a resort of shipping. I am told, that this short space of sixteen miles between Canterbury and Deal, is the only part of the road from the Land's End to Deal, that is not supported by turnpikes*. The turnpike roads in other parts, are also, in general, very good, except some cross turnpike roads in the Weald, which are as bad as can be imagined; being even impassable for coaches or chaises very frequently in winter. The money collected at the gates on these roads, is barely sufficient to pay the interest of the sum borrowed; which is an evil that calls aloud for a remedy. The cause of the badness of these roads is a want of materials; the soil being a deep soft clay, without any mixture of gravel, flints, stone, or chalk, or any other good materials within a moderate distance.

* [A turnpike road is now made from Canterbury, through Sandwich and Deal, to Dover, and another from Sandwich, across the country, to Dover.]

The cause of the evil being thus seen, a remedy should be sought; and what Nature has denied, Art and Industry should endeavour to supply. Bricks, burnt very hard, would make an excellent road, if laid on green furze, and covered over thinly with gravel. Fields, along the roads where there are no woods, might be sown with furze, for the purpose of burning bricks; and kilns might be erected at proper intervals. Thus the bricks would be made on the spot, and brought into use at an easy expense. Roads thus formed in those parts, would open communications that would probably lead to a variety of improvements.

Three hundred and forty thousand bricks are sufficient to pave a mile of road nine feet wide; the expense, therefore, is not very great. Paved roads have been made in Lancashire, which cost from fifteen to twenty hundred pounds per mile.

Where surveyors of the highways are attentive to their duty, the common roads are, in general, tolerably good; but I am sorry to observe, that there are a great many parishes whose roads are much neglected, the full composition for the statute duty not being collected, or the duty not performed.

- If the full statute duty were performed, or the money arising from a full composition were laid out with judgment and economy, there are few parishes that would stand in need of turnpikes, except in the Weald, or other places where there are no materials. But if three days duty only is compounded for, at four shillings and sixpence per day, and that money is injudiciously expended, as is too often the case, good roads cannot be expected. Upon the whole, the highway act is fully adequate to the purpose of making good roads; but the fault is in those who should carry it into execution.

One very great evil in the expenditure of the highway money is, the lavishing it in the employment of carts to fetch materials from a great distance ; when, perhaps, a labourer, with a pick-axe, would find sufficient on the spot for one-fifth of the expense.

SECT. II.—CANALS.

EXCEPTING the navigation from Maidstone to Tunbridge, by small barges, and that, I believe, is not an artificial one, we have no navigable canals. This county being almost surrounded by the sea and the Thames, and intersected by the Medway, canals are the less necessary.

There are, however, many situations where navigable canals might easily be made, and some which would probably prove a source of great convenience and wealth to the neighbouring inhabitants and proprietors of estates.

Of these, the river Stour seems to be the first object, as it certainly might be made navigable to Lenham. By such a navigation the Kentish ragstone would be conveyed to Ashford, Canterbury, and Sandwich, for paving or building, or for exportation ; likewise oak timber might be brought, at an easy expense, from the Weald of Kent to the port of Sandwich, for ship-building, and other purposes ; so might hops, fruit, bark, corn, &c. from the interior of the county to those towns ; from whence would be returned coals, and such other goods as are now conveyed at a great expense to those parts by land-carriage.

[A navigable canal is now making from the Thames, near Gravesend, to fall into the Medway, near Rochester,]

SECT. III.—FAIRS.

THE old established fairs in this county are so numerous, that there is hardly any place of note to be found without one; but they are of trifling import when compared to the great stock-fairs of other counties. If, instead of several autumnal sheep-fairs, now annually held in East Kent, there were only one, there probably would be more business done at that than all the rest; and the establishment of a good sheep-fair, in the spring of the year, would be a great convenience to both buyers and sellers.

In 1792, a wool-fair was proposed by Sir EDWARD KNATCHBULL, Bart. to be held at Ashford; which met with general approbation, and has hitherto been very numerously and respectably attended; and although not much business has as yet been done at it, on account of the prejudices of the buyers, who fancy that it is meant as a combination of the sellers, yet it is presumed, when those prejudices are done away, this meeting will be found a measure of great public utility to all parties concerned. [This fair has not altogether answered the sanguine expectations of the first projectors; but it has been progressively improving, and several growths of wool have of late been sold at it.]

There are considerable fairs, for the sale of fat and lean cattle, at Maidstone, Ashford, and other places in the Weald of Kent.

SECT. IV.—WEEKLY MARKETS.

ALMOST every town in the county has a weekly market, where every kind of provision and vegetables are sold.

·sold. The two cities of Canterbury and Rochester are well supplied by markets, under regulations of the respective corporations.

The market-house at Canterbury has lately been rebuilt in an elegant style: to defray the expense of it an additional tax was laid upon butter; which so offended the farmers in the neighbourhood, that they entered into an agreement to bring no more to market, but to expose it for sale at a place without the liberties of the city; and instead of spending the money at the city shops adjoining the market, it was carried away to purchase goods at other places. The citizens, finding that their interest lay in a free sale for provisions of every kind within the city, took off the additional toll.

[At several places in different parts of the county, there have lately been established, once a fortnight, markets for the sale of fat cattle and sheep, from which, frequently, unsold stock go away by drovers, consigned to salesmen at Smithfield market. These markets keep the price of meat nearly on a level with the London market.]

SECT. V.—COMMERCE.

THE chief part of the agricultural commerce of this county, is that of exporting corn to the London markets; very little is sent to foreign ports directly from Kent, though much of the Kentish corn goes abroad, when corn is exported from the grand receptacle, Mark-lane market.

At the towns of Maidstone and Chatham, and all others on the coast, there are several hoys, carrying from three to five hundred quarters of corn each, which are
conti-

continually going to London with the produce of the land, and returning with grocery, &c. for the supply of the country.

The soil and climate of this county being better adapted to the growth of corn than of grass, no cheese or butter is made for exportation, nor a sufficient quantity for the consumption of the inhabitants; the deficiency, therefore, commerce supplies from other parts of the kingdom.

SECT. VI.—MANUFACTURES.

THE manufactures of this county are very trifling; probably owing to the successful attention generally paid to agriculture and grazing. It has been observed by sensible writers on agriculture, that where manufactures most flourish, the land is most neglected; and this county is an instance of the truth of the observation. There is hardly any county to be named where agriculture is arrived at such perfection, or where there are so few manufactures as in this. There are some, however: at Canterbury, silk has been manufactured to a considerable extent; but it is now giving way to cotton. Much credit is due to Mr. CALLAWAY, for his spirited exertions in this branch.

At Dover and Maidstone are manufactories of paper of all sorts. At Stoner, near Sandwich, and the Isle of Grain, are salt-works. At Whitstable and Deptford are large copperas works; and in the Weald of Kent, bordering on Sussex, are furnaces for casting iron.

Gunpowder is made at Dartford and Faversham; and at Crayford there are large works for printing of calicoes, and the whitening of linens. Sandwich was formerly famous

famous for a particular kind of flannel, and some other woollen goods; and the inhabitants were increased and enriched by the establishment; but the business has long been driven from thence to the northern counties, by the increased price of labour in Kent. An attempt has lately been made, by a spirited young man in that town, to carry on an extensive manufactory in coarse woollen and linen goods; which promises well*. Sacking and hop-bagging have always been manufactured in sufficient quantity for the consumption of the county.

It seems to have been an error in the politics of this country, to have bestowed so much attention to the encouragement of manufactures, in preference to agriculture. Had the same encouragement been given by parliament, for the last fifty years, to agriculture, as we have seen given to manufactures, we, probably, by this time might have had many thousand acres of land, that are now desolate wastes, in a high state of cultivation, and covered with a healthy race of inhabitants. The lower classes of the people employed in agriculture, are always the most healthy, and get the most comfortable living; and by their residence in the country, at a distance from great towns and populous villages, are more out of the way of temptations to vice and idleness. Let the cottages of the farmers' labourers be examined, and compared with those of the manufacturers in great towns: the former will be found comfortably clad and well fed, while the latter are often starving in rags and filth.

There can be no doubt but that agriculture and manu-

* [The high prices of labour and coals, together with the want of a sufficient water-fall to work the fulling-mill and other machinery, have occasioned this manufactory to be relinquished.

At Maidstone, by the advantage of a good head of water, a woollen manufactory is carried on to a considerable extent.]

factures are mutually dependent on each other; but it must be bad policy to encourage one at the expense of the other.

SECT. VII.—THE POOR.

THE poor of this county are generally well taken care of by the parish-officers, and their opulent neighbours. The greater the scarcity of provisions, and the more the appearance of distress among the poor, the greater is the extent of charitable contributions, over and above what the law provides for maintaining them. The poor laws are such, that no person need be in distress for provisions, if it be not his own fault. Those who are capable of labour, are sure to find employment among the farmers; for in an agricultural county like this, workmen are always wanted. It is only in manufacturing counties where there can be any real distress among the poor. Those who are incapable of labour, the law has amply provided for. The sober and industrious labourer in Kent, unless he has a large family, cannot with propriety be called a poor man; because, by his industry, he can always procure a comfortable maintenance, equal, if not superior, to the little farmers (usually called peasants) of some foreign countries; or perhaps to some small tenants of this.

Those who are doubtful of the truth of this observation need only step into the cottages of this class, at their hour of dinner at twelve, when they may see the superior comforts of the husbandry labourers of this agricultural county. Very few of the sober and industrious but what have a pork-tub to go to for a dinner; and many of them, by their own earnings, with that of their wives and families, including

including what they get in harvest, hop-picking, &c. have an income of from forty to sixty pounds per annum.

SECT. VIII.—POPULATION.

MR. HASTED informs us, that, by modern calculations, Kent is supposed to contain 40,000 houses, inhabited by 200,000 persons, of whom 60,000 are able-bodied men.

“ When the militia was altered to the present mode,
“ the return made from this county of able-bodied men
“ fit to serve in it, was 16,757 in West Kent, and 9,164
“ in East Kent; in all 25,921; according to which, the
“ proportion of militia-men allotted for this county by
“ parliament was, for West Kent, 621; for East Kent,
“ including the city of Canterbury, 339; in all, 960.

[It has already been stated in the former part of this edition, that the number of houses in this county amounts to 45,000, and that the population is from thence estimated to be 225,000.

By an account taken, pursuant to act of Parliament, in 1801, the return of this county was—inhabited houses, 41,617; males, 145,787; females, 151,438;—total number of persons, 297,225. These returns were not conducted with the accuracy they ought to have been, 14 counties only being acknowledged complete, in the enumeration from whence the above extract was taken: whether this county was amongst those whose returns were defective, I cannot ascertain.]

CHAP. XVI.

OBSTACLES TO IMPROVEMENT.

THE principal obstacles to the general improvement of this county are, the payment of tithes in kind, the corn-laws, and the prohibition to export wool in its raw state.

That the payment of tithe in kind does operate against improvements is evident, from the immense quantity of poor uncultivated land in most parts of this county where the tithe is paid, remaining in its barren state; while some of the same sort of lands, where farmers happen to have the tithe themselves, are improved and cultivated to a high state of perfection, and made as productive as some of the best lands.

The corn and wool laws were professedly enacted to keep down the price of those articles; if, therefore, they do operate according to their original intention, it needs no argument to prove that they are obstacles to improvement.

The right of commonage on the barren heaths of this county, is certainly an obstacle to their improvement. Short leases are likewise great obstacles; no man of common prudence will spend much money on his farm to improve it, unless he has a security of reaping the benefit of it himself; besides, if he does so, he must be aware that he is throwing out a great temptation to an illiberal neighbour

neighbour to bid for his farm, or to a covetous landlord, to take advantage of his liberality and industry.

Respecting the legislation and police of corn, I am not competent to give information on these heads to the Honourable Board; but it is my firm opinion, that were there no corn-laws, there would be a much greater quantity of corn grown; and, if so, the markets would be filled, the prices lowered, and, by the increase of quantity, the farmers, and ultimately the land-owners, would be enriched. The dread of a low price must evidently tend to deter a farmer from cultivating and improving his land with a view to grow more corn; hence the intention of keeping corn low has the effect of raising it, by discouraging its cultivation. On the other hand, were laws enacted with the intention of making corn dear, in all probability, by the very idea of such a prospect, cultivation would be so much extended, as to make corn plentiful and cheap.

CHAP. XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—AGRICULTURAL SOCIETIES.

IN January 1793, a Society for the Encouragement of Agriculture and Industry, was established at Canterbury, under the patronage of Sir EDWARD KNATCHBULL, Bart. and FILMER HONYWOOD, Esq. the members for the county.

Officers for this Society, consisting of a President, Vice-President, two Stewards, and a Treasurer, are annually elected; besides these, there is a committee of twenty-four members, twelve of which are annually nominated in the following manner :

The President first appoints a new member; then the person so appointed nominates one of the old committee, who mentions a new one; which goes on alternately till twenty-four are appointed.

A SKETCH OF THE KENT AGRICULTURAL SOCIETY,

As published by the Society.

“ The advantages that the public are likely to receive from the institution of Societies for encouraging Agriculture and Industry, and the benefits that have accrued to those parts of the kingdom in particular where they have been already formed, first gave rise to the idea of the establishment of one in this county. To shew the utility

utility of such an institution, it will be necessary only to state what are the CHIEF OBJECTS OF ITS ATTENTION.

“ To excite by premiums, and otherwise, a spirit of emulation among the ploughmen :

“ To encourage a spirit of industry among the labourers :

“ To reward the labour and industry of those poor labourers and cottagers who shall breed up, or have bred up, the greatest number of legitimate children, either without any, or with the smallest relief from their respective parishes :

“ To encourage diligence and industry in servants, of both sexes, employed in husbandry :

“ To promote the knowledge of agriculture, by encouraging experiments on those subjects which are of the most importance to it ; by distributing rewards to such persons as shall raise the largest and best crops of natural and artificial grasses, and the several sorts of grain, on any given quantity of ground ; the nature of the soil being taken into consideration :

“ To encourage the improvement of waste lands, by enclosing, draining, manuring, raising plantations, and by the introduction of vegetable food for cattle :

“ To encourage the improvement of the breed of all sorts of live stock, and to provide for their health better than has been hitherto done :

“ To promote all improvements in the various implements belonging to the farmer, and to introduce such new ones as the experience of other counties has proved more valuable than those now generally used in this.

“ And as there is hardly any object of rational improvements which may not be brought within the influence of such institutions, by a proper distribution of premiums, the attention of the Society will always be directed, in

proportion to the support it shall receive, to every thing that may hereafter appear most likely to conduce to the prosperity of this county in particular, and to the good of the community at large.

“As it is the wish of this Society that its utility should become as extensive as possible, it is earnestly requested that all persons who approve of the institution will give it their support. Subscriptions may be paid into the hands of the Treasurer, or into either of the three Canterbury banks; or into the banks of Messrs. BRENCHELEY and Co. Maidstone, and Messrs. DAY and Co. Rochester.”

The rules and regulations for the government of this Society are well drawn up, and its finances are at present in a flourishing state. A great many servants and labourers have received the Society's premiums for long and faithful services, and for bringing up large families. Among other premiums, is one of 10*l.* 10*s.* for a double turn-wrest plough.

Books of the transactions of this Society are to be had at the printing-office, Canterbury, price 6*d.*

[This Society has not been kept up with so much spirit as at its first commencement.]

Some years since, a Society was established at Maidstone, called the Kentish Society, for promoting every branch of useful knowledge through the county of Kent. This was begun under the patronage and support of the late Lord ROMNEY, the Earl of STANHOPE, and the present Lord ROMNEY, then the Honourable CHARLES MARSHAM. Whether it was by aiming at too much, or from a want of support in subscriptions, that it fell to the ground, I am not competent to say.

About a year ago, an attempt was made to establish another Society at Maidstone, upon less general principles;

ciples; but joining some other sciences with agriculture. There was a great number of the names of the first of the nobility, gentry, and yeomanry, who, by public advertisement, called meetings at Maidstone, in order to settle the business; but either from want of a full attendance, or of subscriptions, their efforts were not attended with the desired success.

SECT. II.—WEIGHTS AND MEASURES.

THE difference of the weights and measures is an evil in trade and agriculture, that most certainly requires a remedy, though the evil is much less in Kent than in many other counties. The pound weight is the avoirdupois, of sixteen ounces; and the stone of meat eight pounds at some places, and at others fourteen pounds. Most heavy goods are sold by the ton, consisting of twenty hundred weight, each of 112 pounds.

Since the late determination in the Court of King's Bench respecting the measure of corn, all local measures have been abolished, excepting the standard Winchester bushel, which contains 2150,4 cubic inches. Before that determination, we had three different sized bushels in the town of Sandwich, viz. eight gallons and a quarter, the country measure; eight and an eighth, the town measure; and eight gallons, the London, or Winchester measure. In some parts of the county, the bushel contained eight gallons and a half; in others, eight and three-fourths; in some places nine gallons; and in most of the eastern parts of the county, twenty-one quarters were allowed to the score, measured with a large bushel.

The rod is five yards and a half, or sixteen feet and a

half; and the acre the true statute measure of 160 rods or perches.

Corn is now invariably sold by the quarter, consisting of eight Winchester bushels. Hay, straw, and hops, by the ton. Apples and potatoes by the sack, of about three bushels and a half; and sometimes by the sieve, a basket containing about a bushel.

Butcher's-meat is usually sold in East Kent by the score pounds, and in West Kent by the stone.

CONCLUSION.

MEANS OF IMPROVEMENT, AND THE MEASURES CALCULATED FOR THAT PURPOSE.

A FAIR commutation for tithe is the measure best calculated for the improvement of this county.

This would be a spur to invention and industry, and lay a foundation for a variety of improvements, especially in poor barren districts.

There is a great deal of poor land that requires as much money to be spent in bringing it to its utmost state of improvement, as will purchase the fee-simple of it.

But there are very few farmers who will do that, with the prospect before them of another person's enjoying the tenth of the produce.

Waste Lands.—There is scarcely an acre of land to be found in this county, but what might be converted to some valuable purpose.

The gravelly and sandy heaths, when once put into severalty, and properly cultivated, would produce good turnips, seeds, and corn; and they are likewise extremely favourable to the growth of chesnut, and all kinds of firs, especially larch.

The cold clays and wet commons, no doubt, would likewise produce good corn, or make enclosed meadows or pastures.

Draining.—The bogs of this county are but few in number, and small in extent; but, whatever the quantity,

tity, they might certainly, at a very small expense, be made at least of six times their present value. In the middle and western part of Kent, there is a great number of small vales of marsh-land liable to be flooded in the winter ; which might be effectually drained at little expense, were they under a commission of sewers, with proper powers.

In other parts of the county there are very extensive tracts of marsh-land, often entirely under water for many weeks together, to the great loss of individuals and the public. This is an evil which certainly can, and ought to be remedied.

Every mechanical contrivance that tends to lessen the labour of the husbandman and his expense, may be justly reckoned an improvement. Under this head, the new invented thrashing-mills are of the first importance.

There are many situations in this county where a small rill of water runs by a farm-yard, with a sufficient fall to turn a water-wheel. Wherever farms are thus fortunately circumstanced, the expense of thrashing out corn may be reduced full one half; and the labourers, who otherwise would be constantly in the barn, by this means, may be spared for carrying on improvements in manuring, draining, and various operations in husbandry; so that, although the labourer may be deprived in one instance of his employment, he will be amply recompensed in the other; for employment accumulates with improvement.

These appear to me to be the principal means of improvement, and are such as will probably introduce many others. Thus a commutation for tithe, and the cultivation of the waste-lands, would produce turnips, clover, mutton, and wool, where those articles have never before been raised. In these productions, a foundation

dation would be laid for the cultivation of corn, to feed the human and animal species, and for the employment of manufacturers.

Hence would spring a reciprocation of interests to the farmer and manufacturer, and an accumulation of benefits to mankind in general.

APPENDIX.

DRIED POTATOES.

HAVING mentioned to Sir JOHN SINCLAIR, an idea I had long entertained, that vegetables dried on a kiln might be rendered useful to sailors in long voyages, he directed me to procure some potatoes, and dry them on his account. I accordingly purchased four sacks, which I dried on a common hop-oast, and sent them to him in March last, with the account in a letter, as under.

SIR,

IN two matted parcels, by the Endeavour, Sandwich hoy, I have sent you the produce of four sacks of potatoes, after being kiln-dried.

The expense and weight of them, before and after drying, are enclosed.

I got the potatoes pared, and have dried the whole, that you may see the effect, and try what experiments with them you may think proper; and I have had twenty-eight pounds of the white sort ground, the meal of which is sent in the parcel to which it belongs.

I think the expense of drying would have been less if the quantity had been greater, because the oast-cloth was not sufficiently covered to prevent the heat escaping too fast. I found it very difficult to get the thermometer up to 104. On account of the small quantity to dry, I used my least kiln, which is an oven-oast; by which the colour
of

of the potatoes is more yellow than it would have been if dried on a cockle.

I beg leave to recommend to you to send a small cask of them a long sea-voyage, to be returned to you, that you may see how they keep, and what use may be made of them on their return. I have long been of opinion, that all kinds of vegetables might be thus dried for the use of sailors.

I have the Honour to be,

SIR,

Your most humble Servant,

J. BOYS.

Betshanger, March 20, 1795.

EXPENSE.

	£.	s.	d.
2 sacks of white potatoes, at 10s. 6d.	-	1	1 0
2 ——— early brown ditto	-	1	1 0
2 men, three hours each, washing them	-	0	1 0
A man attending oast, and drying, two } nights and one day	-	0	4 0
2 bushels of cinders	-	0	2 2
2 bushels and a half of Welsh coals	-	0	4 4½
7 women, a day and a quarter each, } paring and slicing them, at 9d. per day	-	0	6 8
	£.	3	0 2½

Linen bags, mats, &c. as package, no part of the expense.

Weight before and after Drying.

	cwt.	qr.	lb.		qrs.	lb.
2 sacks white potatoes, nt. wt.	3	0	19	{ dry best	2	9
				{ parings	0	19½
2 sacks early brown	3	0	10	{ dry best	2	12
				{ parings	0	21½
				The		

The four sacks of potatoes were well scoured with a broom in tubs of water, and then, by women, pared, and cut in slices about one-fifth of an inch in thickness; which were laid on a small oast about twelve feet square: when thoroughly dried, they became extremely brittle, and were easily ground to meal between a pair of corn-stones.

As potatoes may be thus dried in slices, if well washed with the rind on, the expense of paring might be saved; and the slicing might be done by an instrument; so that the whole expense, when potatoes are at 10*s.* 6*d.* per sack, would be only about 36*s.* per hundred weight when dried.

The expense of washing, slicing, and drying, if the slicing were done by an instrument, it seems, by this account, would be about 9*s.* per cwt. on the dried substance; and it would be considerably less if a large quantity were done at one time. It may be thought, that even that expense is too great; but if it should be found that potatoes, or other vegetables, can be dried so as to preserve their nutritive qualities in long voyages, the expense in such case will be no object.

The following is a copy of Correspondence on this subject, between the Honourable Board of Agriculture and Victualling-Office, &c.

TO T. M. RUSSEL, ESQ. CAPTAIN OF HIS MAJESTY'S SHIP
ST. ALBANS.

Victualling-Office, 8th July, 1795.

SIR,

THE Board of Agriculture having, through their President, Sir JOHN SINCLAIR, sent to this Board a small quantity

quantity of potatoes sliced and dried, and of some meal ground from them, prepared by a Mr. Boys, of Betshanger, in Kent; and conceiving this method of curing that root may prove to be a valuable discovery on board ships, requested that a part thereof might be furnished to some ship going on a long voyage, in order to ascertain whether potatoes in the before-mentioned state will keep on ship-board, and particularly in hot climates, without being attacked with weevils or other insects—we beg leave to inform you, that, being at all times desirous of promoting any discovery that may have a tendency to benefit His Majesty's Service, we have ordered two kegs, the one containing a proportion of the dried slices, and the other of the meal, to be sent to our Agent at Portsmouth, with directions for his putting them, with your permission, on board His Majesty's ship *St. Albans*, under your command; and we have therefore to request you will be pleased, in due season, to cause the kegs to be opened, and to report to us the state of preservation in which you shall find the potatoes so cured to have kept, that we may communicate the same to the Board of Agriculture.

We are, Sir,

Your most humble Servants,

G. CHERRY,	R. S. MOODY,
F. J. HARTWELL,	J. HUNT,
F. STEPHENS,	W. BOSCAWEN.

(Copy.) W. GOSLING.

St. Albans, St. Helens, 18th Dec. 1795.

GENTLEMEN,

IN obedience to your direction, I have at different periods, and in the different climates to *St. Helena*, and
back

back again, inspected into the state of the prepared potatoes; and beg leave to give it as my very humble opinion, that both the sliced and the meal retain all the essential qualities of the potatoe, unimpaired, although somewhat altered in colour. They are now lodged in your office at Portsmouth, with my advice to your agent to forward them to your Board.

I am, with great respect,

GENTLEMEN,

Your obedient and very humble Servant,

T. M. RUSSEL.

Examined, W.W. (Copy) W. GOSLING.

Commissioners Victualling.

TO SIR JOHN SINCLAIR, BART.

Victualling-Office, 9th January, 1796.

SIR,

AGREEABLY to the Letter we had the honour of addressing to you on the 1st of July last, in return to yours to our Chairman, dated the 27th of the preceding month, we beg leave to acquaint you, that we caused a part of the potatoes, sliced and dried, and of the potatoe-meal, which had been prepared by Mr. Boys, of Betshanger, in Kent, and which we received from you through our Chairman, to be forwarded to His Excellency Governor HUNTER, at New South Wales; and the remainder, contained in two small kegs, to be put on board His Majesty's ship *St. Albans*, bound to *St. Helena*, under the command of Captain T. M. RUSSEL; each of whom we requested would, in due season, inspect into the state of preservation in which such potatoes and potatoe-meal should

should be found to have kept, and to report the same to us.

Captain RUSSEL has in consequence informed us by his Letter, dated the 18th of December last, that he had at different periods, and in the different climates to and from St. Helena, inspected into the state of the potatoes so prepared, which had been put under his charge; and is of opinion, that both the sliced and the meal retain all the essential qualities of the potatoe unimpaired, although somewhat altered in colour; and he having also returned the said kegs to us, we herewith transmit to you copies of the Letter we wrote to him, and of the Report he has made thereupon, together with the kegs, containing the remainder of the potatoes and meal for your inspection.

We beg to add, that as soon as we receive Governor HUNTER's report upon the subject, the same shall be transmitted to you.

We have the Honour to be,

SIR,

Your most obedient humble Servants,

G. CHERRY,	R. S. MOODY,
F. STEPHENS,	J. HUNT,
G. P. TOWRY,	W. BOSCAWEN.

Examined. (Copy.)

Soon

[Soon after the publication of the former edition of this work, the following copies of Letters on the subject of these Dried Potatoes, were transmitted to me by the Board of Agriculture ; which prove that vegetables may be dried to keep a long time ; and there now can be no doubt, but that dried parsnips, carrots, &c. might be supplied as a part of a ship's provisions, at a cheap rate, so as to be the means of preserving the health of seamen in long voyages.]

No. I.

Victualling-Office, 10th Feb. 1797.

SIR,

ON the 9th of January, 1796, we had the Honour to send to you a copy of a Letter we had received from Captain RUSSEL, of His Majesty's ship *St. Albans*, containing his opinion of the sliced and dried potatoes prepared by Mr. BOYS, of Betshanger, in Kent, and of the meal ground from them, specimens of which you were pleased to send to this Board, with a Letter addressed to our Chairman, dated the 27th of June, 1795.

We have now, with much satisfaction, to transmit to you, a copy of a Letter we yesterday received from His Excellency Governor HUNTER, dated Sydney, New South Wales, the 3d March, 1796, giving a very favourable testimony of the samples of the potatoes prepared in the manner before mentioned, which we informed you we had forwarded to him.

With respect to His Excellency's representation, that a part of the sliced potatoes, which had touched the staves of the keg, had obtained a little "green mould," and which he conceives might have been owing either "to a damp in the wood of which the cask was made, or
"probably

“ probably to the potatoes not having been sufficiently dried,” we beg leave to observe, that we were particularly attentive in having the casks in which the potatoes were contained, made of perfectly dried seasoned wood ; and we are therefore apprehensive that the casks must have imbibed damp on the passage.

We have the Honour to be,

SIR,

Your most obedient humble Servants,

G. CHERRY,	F. STEPHENS,
G. P. TOWRY,	R. S. MOODY,
	J. HUNT.

No. II.

*Sydney, New South Wales,
3d March, 1796.*

GENTLEMEN,

By the *Ceres* victualling-ship, which arrived here on the 23d of January, I had the favour of your Letter of the 8th of July, 1795, in which you mention having sent, by desire of the Board of Agriculture, a small quantity of dried potatoes, and also of some of the meal ground from that useful root ; desiring that, on the arrival of the ship, I would have them opened, and report to you the state I may find them in. I have great pleasure at all times in contributing, as far as may be in my power, to the promoting of His Majesty's Service, and in a particular manner in forwarding every discovery which can promise an advantage in the preservation of the health of seamen in long voyages. You will therefore believe that I must have received some gratification in opening the

KENT.]

Q

two

two small kegs you have mentioned, which was done in the presence of several other gentlemen, on finding their contents perfectly free from any sort of vermin. The sliced potatoes had, on those parts which had touched the staves of the keg, a little green mould, which gave that covered with it a small degree of bitter taste; but, when boiled, it lost that bitter, and was perfectly fresh and good; when parboiled, and the slices fried after, they were excellent. This mouldiness may have been owing either to a damp in the wood of which the cask was made (which, for such purpose, should be dried as much as possible), or probably to the potatoes not having been sufficiently dried. The slices in the interior of the cask were quite dry and perfect, which would seem to indicate that the damp was in the wood, and not in the potatoe. The farina was as pure and perfect as when first packed. I had part tied in a cloth, and boiled as a pudding, without any mixture whatever except water; and I assure you that nothing could be more sweet and fresh. I also had a loaf of bread made of it, put with a mixture of one-fourth of flour. The bread was exceedingly fine and palatable, and much resembled in colour the best brown bread to be met with in our English farm-houses.

I confess, from this little experiment, I am disposed to think, that this method of preserving the potatoe, may prove a great advantage to the health of seamen on long voyages; and I have to regret that, for the satisfaction of Sir JOHN SINCLAIR and the Board of Agriculture, two other casks had not been sent out, to continue during the whole voyage in this ship, and return with her to England: such trials would have been a little better proof than merely the voyage hither. I, however, have no doubt it would have been found to answer, if packed in
well

well dried and light casks, and stowed in as dry a part of the ship as could be had. The farina, I think, will, if well dried before packed, keep as well as flour.

I am,

GENTLEMEN,

Your most obedient Servant,

J. HUNTER.

(Copy.) W. GOSLING.

Commissioners Victualling.

No. III.

ADDITIONAL CORRESPONDENCE ON THIS SUBJECT, IN THE YEAR 1804.

Betsanger, January 27, 1804.

MY LORD,

AGREEABLY to my promise, I have sent by Mr. HOPE's hoy, from Sandwich, a cask of about twenty gallons, containing 74 pounds of dried slices of parsnips; and that the cask may not be opened for inspection, which, by the admission of air, might be injurious, I have sent, as a specimen, a paper parcel of them by the coach.

In preparing and drying, the crown and tips of the roots being thrown away, I find they lose four-fifths of their weight; so that one pound of dry is equal to five of the green vegetable; and therefore I am of opinion, that two ounces would be a sufficient portion for the daily consumption of one man. If this be admitted, then 20 such casks would supply a ship's crew of 120 men about 100 days.

Admiral Sir HENRY HARVEY has seen them, and is of

the opinion, that they may be of great service in preserving the health of seamen.

If, therefore, your Lordship will once more have the goodness to recommend them for trial to the Lords of the Admiralty, I shall be greatly obliged.

I have the Honour to be,

MY LORD,

Your Lordship's most faithful and
obedient Servant,

J. BOYS.

To the Right Hon. Lord Somerville.

No. IV.

Betshanger, February 8, 1804.

MY LORD,

NOT having cultivated parsnips in sufficient quantities, nor dried them on a large scale, I cannot correctly say at what price they may be dried for public use; but I have, on the other side, sent your Lordship an estimate (partly founded on my own observations, and partly on the information Mr. YOUNG has given us in the *Annals*, vol. xxv. page 227), from which it appears that they may be produced for about $2\frac{1}{4}d.$ per pound, including the price of the casks, which, when emptied, will probably be deemed lumber, and thrown overboard. Admitting this statement to be tolerably correct, a sailor may be furnished with two ounces of dried parsnips, possessing ten ounces of the essential qualities of them in their green state, for one farthing and one-eighth per day. The preservation of the lives, or even the health, of our seamen, is an object of such magnitude, that to say any thing farther in recommendation of a scheme of
this

this nature, is superfluous. It has many years been brooding in my mind; and I am not without hopes of seeing it, by means of a little more experience, brought to perfection, so as effectually to preserve our seamen from the ravages of the scurvy.

I do think, as your Lordship observes, that the slices are cut rather thinner than necessary; but they are quicker dried by being so cut. The correspondence on this subject, between the Board of Agriculture, the Victualling-office, and Captain RUSSEL, relative to my dried potatoes, in the year 1795, is printed in the Appendix of the Kent Report; and I have enclosed the copy of a Letter from Governor HUNTER, which gives the information you desire.

I have had a good tart made from the slices of apples three years after they were dried. I have another cask, containing 45 pounds of parsnips and 29 pounds of carrots, which I will send to town, if the Lords of the Admiralty will do me the honour to accept of it, to use as an experiment; and I have a pound or two left, which are at your Lordship's service, if you wish to make any trials in cooking them. When saturated in water, the solution tastes very similar to sweet wort from malt.

I have the Honour to be,

With great respect,

MY LORD,

Your Lordship's obliged and faithful
Servant,

J. BOYS.

Estimate of the Expense of drying Vegetables.

Suppose that an acre of land will, on the average, produce 400 bushels, at 56lb. each, or *10 ton of parsnips or carrots, and that the expense of rent, cultivation, taxes, digging, and carting home, &c. is	£.	s.	d.
Washing and slicing, 3d. per bushel	-	5	0 0
Drying and packing, 5s. per cwt.	-	-	10 0 0
	£.	25	0 0

They lose, in cutting, drying, &c. four-fifths of their weight, which reduces the produce of an acre in dry roots to 40 cwt. which is 12s. 6d. per cwt. Allow 1s. 6d. for extra expenses, and they may be produced for 14s. per cwt. or 1½d. per pound. They may be packed in American flour-barrels, which being fresh made up, and iron-hooped, will cost 5s. each, and will contain about 74 or 75 pounds of the dried vegetable, which will add to the expense about 7s. per cwt. making the whole charge 2¼d. per pound.

Sugar hogsheads might probably be preferred, being seasoned, of a larger size, and to be purchased at a cheaper rate: this might make a saving of 8s. 6d. per cwt. and will reduce the price to less than 1½d. per pound.

I take the liberty of giving a decided preference to parsnips, as a dried vegetable for the use of the Navy, as possessing more saccharine property than any other root equally solid.

To the Right Hon. Lord Somerville.

* Two pounds ten shillings per ton, prime cost.

No. V.

COPY OF A LETTER FROM LORD SOMERVILLE TO LORD
ST. VINCENT.

MY LORD,

I OUGHT to apologize to your Lordship for the trouble I am giving, not having the honour to be personally known to you; but the anxious wish I have, in common with every man, to benefit as far in my power lies, that service over which your Lordship so ably presides, will, I doubt not, plead my excuse; and if my pursuits enable me to suggest any thing which will directly tend most considerably to increase the comforts, and to preserve the health of seamen, when afloat, for any length of time, I feel that I may safely anticipate your Lordship's indulgence and attention.

Attempts were made about the year 1796, by a very respectable farmer, Mr. Boys, to kiln-dry vegetables of different sorts for the use of the Navy. I made it known, as in duty bound, to the Lords Commissioners of the Admiralty, who gave me reference to the Sick and Hurt Board. The report of that Board did not give us encouragement to proceed; but I believe that it might have reported differently on some few of the vegetables there produced; and I am the more disposed to think so, because it differed essentially from the report of Captain, now, I believe, Admiral RUSSEL, and from that of Governor HUNTER, who examined the cask sent to Botany-Bay with great care. The cask on which the Governor reported, contained potatoes—a vegetable which is said to contain less of saccharine properties than either the parsnip or the carrot—which two only I shall, therefore, have the honour to recommend to your Lordship's

notice, the sugar contained in them being a great object, both as to their own preservation, and to the health of seamen; inasmuch as it tends to forbid the approach of scurvy.

The loss of weight, when cut in thick slices, dried, is four-fifths of its original; and the pressure of the screw will enable them to pack very close; which two circumstances render these vegetables portable, and easy of stowage. The increase of weight again, by boiling, is fully one-half; therefore, when boiled and served out, as it probably might be with great utility, twice a week, to the ships' company, the loss of weight on the original green vegetable, is only as two to five—not one-half. I believe it will be found nearly as palatable when plain boiled, as the common parsnip served at table, and if served out in any disguised shape, not to be distinguished from it. The price at which it could be rendered, will be about 14s. per cwt. dried, not including the cask, or $1\frac{1}{2}d.$ per pound.

Should your Lordship be disposed, from this brief statement, to give the matter serious consideration, I shall hold myself ready to wait on you at any time next week, except when my attendance on His MAJESTY will not admit; or I will attend Sir HARRY BURRARD NEALE on the part of your Lordship, with great pleasure: to him I have the honour of being somewhat known.

I have named an early day, that, if such a contract should be made, immediate steps must be taken to put land in order for a sufficient supply in the vicinity of the several sea-ports where King's ships are usually supplied.

I have the Honour to be, &c. &c.

SOMERVILLE.

No. VI.

Admiralty, Feb. 21, 1804.

MY DEAR LORD,

THE Board of Admiralty have considered your Letter to Lord St. VINCENT, strongly recommending the use of vegetables kiln dried. I have much satisfaction in expressing the thanks of the Board for every communication likely to contribute so essentially to the health and comfort of His Majesty's seamen, and that no obstacle would impede the trial of the vegetables you recommend, but that, from the circumstance of pease constituting the only provision on particular days, that is issued to the ships' companies, it would be impracticable to substitute any thing of that description, equally serviceable. In other respects, it has been found more convenient to serve lemon-juice in preference to vegetables, as occupying less room. The Board is at the same time very sensible of the merits of Mr. Boys, and much obliged to him for the experiments he has tried.

I have the Honour to be,

Your faithful and obedient Servant,

H. NEALE.

The Rt. Hon. Lord Somerville, Hill-street.

The Lords Commissioners of the Admiralty having thus declined the acceptance of these vegetables for an experiment, I offered a cask of them to HENRY BONHAM, Esq. a proprietor of the Asia East India ship, when he did me the honour to accept of them, and gave me a-direction to send them to his Agent at Deal, to be put on board when the ship arrives in the Downs; by which they will have a fair trial at sea; and I shall hope to be favoured, in due time, with a report of their utility.

The

The Editor is favoured with the following, by a Gentleman of the Faculty in East Kent.

THE disorder, called *blowing* in cattle, is a species of colic, arising from an over-distension of the first stomach with air. In this stomach the food is only slightly macerated; during which process, a gentle fermentation takes place, and at the same time a quantity of fixed air is generated. When this air is in a moderate quantity, it helps to throw up the cud; first, by gently distending the stomach, it forces it to contract: the air then rises into the mouth, and carries with it some of the food, thus partly digested, to be masticated afresh.

If an animal of this kind eats too greedily of very succulent food, fermentation takes place so rapidly, and the stomach becomes so much distended, that it loses the power of contracting; consequently, the cud cannot be forced into the mouth; the stomach becomes more and more distended; by which means the orifices become entirely shut up, and, unless soon remedied, the animal dies.

To cure this complaint, two things are required; to stimulate the stomach, and to check the fermentation. The following I think likely to answer both purposes:

Lime-water, a gallon; ginger, in powder, an ounce; opium, half a dram; gin or brandy, a pint. Digest all together, and keep in a bottle well corked.—A sheep may take a quarter of a pint every hour; a bullock a quart, in the same manner. I prefer lime-water for the menstruum, because it will absorb much more than its own bulk of air; consequently, it will not increase the distension of the stomach.

If any kind of drink is required, or is in the least admissible, lime-water is proper.

THE ORCHARDIST.

ABSTRACT FROM THE ORCHARDIST :

Drawn up at the Desire of the Board of Agriculture, 1796.

THE orchards of the kingdom are a material branch of its agriculture ; and it is expected the standard fruit-trees will soon be much improved, from the exertions of THOMAS SKIP DYOT BUCKNALL, Esq. who has been very assiduous in establishing the science of Orcharding, as patronized by the Society for the Encouragement of Arts, Manufactures, and Commerce, and published in the 11th, 12th, and 13th volumes of their valuable Transactions, conformable to the practice introduced at Sittingbourne, in the county of Kent, in the year 1790.

In those books, not only what ought to be done, is fully pointed out, but many useful hints are given, to guard the planters and fruit-growers against the usual effects of neglect and mistakes, both in the trees and their culture.

There are also observations on the suitable manures ; and great stress is laid upon proper soil, position, and judicious

SHELTER.

The Author's express wish, in each publication, tends to make most trees in an orchard

HEALTHY,

Large, Handsome, and Productive.

The operation is properly called the System of Close Pruning and Medication ; as the governing principles for
establish-

establishment of health begin by cutting close, making the trees perfectly clean, and destroying the numerous insects, vermin, and microscopic creatures that make such great havock on fruit-trees, by constantly eating and fretting the tender bark, which prevent the wounds from healing.

He maintains, that the baneful effects of canker may in part be prevented in the more delicate fruit-trees; as the first cause of canker arises from an *animalcule* something like the cochineal fly, and which is effectually destroyed by the medication: and the medication will, in great measure, stop the oozing of gum in the several species of cherries, and other stone-fruits. Further he observes, insects are great depredators on the delicate fruit-trees, by eating off the blossoms and leaves in the spring.

The Orchardist, by a little attention, for there is no mystery, may nearly guard against the respective evils affecting the trees; and the whole system is grounded upon the regular operations of Nature in the productions of vegetation: the working, or laborious part, is expressed in so clear and concise a manner, that it can hardly be misunderstood; many of the thoughts are new, and the whole process well worthy the attention of the respective fruit-growers. Do not look for perfection; it is sufficient to come near it.

The Society has fully sanctioned the name of Orchardist, in page 211 of the 12th volume; and the Author has advanced as an incentive, to induce every one to be careful in the culture of their trees, that he entertains no doubt, but by easy means, after ten years, the improved value of the orchards and standard fruit-gardens throughout the kingdom, must amount to an increased product, beyond what they yield at present, of more than
three

three hundred thousand pounds per annum ; which most assuredly must be ranked as a national object.

The reader, in looking over the before-mentioned Transactions, should examine a short sentence in each of the prefaces ; the index will point him out the other parts. The planter is referred to the 12th volume, and continuations, with the proposed premiums, class 74, 75, 76, from page 22 to the bottom of page 25, in the 13th volume ; but lest the books should not be at hand, a copy is annexed, shewing how the trees ought to be prepared for planting. According to the Author's opinion, great part of the trouble and expense of pruning would be saved, if the heads of the trees were but looked to in time ; and he expresses it thus :

Page 213.—“ The prevention of a disease is preferable
“ to a cure ; therefore, if possible, chuse the trees the
“ year before they are to be planted, and see that they
“ are properly pruned in the nursery, by taking off,
“ perfectly close, all rambling and unsightly branches,
“ leaving the heads to three or four good leading shoots.
“ From this forecast, the trees will not require pruning
“ for some time ; and having no wounds to heal, the
“ year they are transplanted, will greatly accelerate their
“ growth. Be sure the trees are young ; and do not
“ plant any galled, fretted, or cankered plants.

“ Also guard against planting too deep ; and when the
“ trees are taken up, keep the roots as long as is convenient, which will give them a disposition to run horizontal ; from which, the roots being more under the
“ influence of the sun, the sap is richer, and produces
“ the sweetest, fairest fruit.

“ Chuse the ground carefully, &c. Here landlord,
“ tenant, and workman, should look to planting, as expressed in the Transactions, and observe position ;
“ determin-

“ determining to establish shelter on the three cold sides
 “ of the freest growing trees which the country pro-
 “ duces ; which will much contribute to keep off the
 “ blights, and protect the fruit from the severity of the
 “ winds in autumn, when often half the crop of fruit is
 “ thrown from the trees before it is ripe.

“ All over, redundant wood should be taken off, that
 “ the tree may have an uniform head ; and the more the
 “ range of branches shoot circularly, a little inclining
 “ upwards, the more equally will the sap be distributed,
 “ and the better will the tree bear. Also keep the
 “ branches clear ; for sunshine and shade are unalterably
 “ the cause of sweet and sour fruits.

“ It is perfectly within the nurseryman’s art to pro-
 “ duce all his standard fruit-bearing trees, with stems
 “ large and smooth, buds full and round, leaves broad
 “ and open, without the tree being much disposed to
 “ canker or gum ; and this is given as the character of a
 “ valuable tree.”

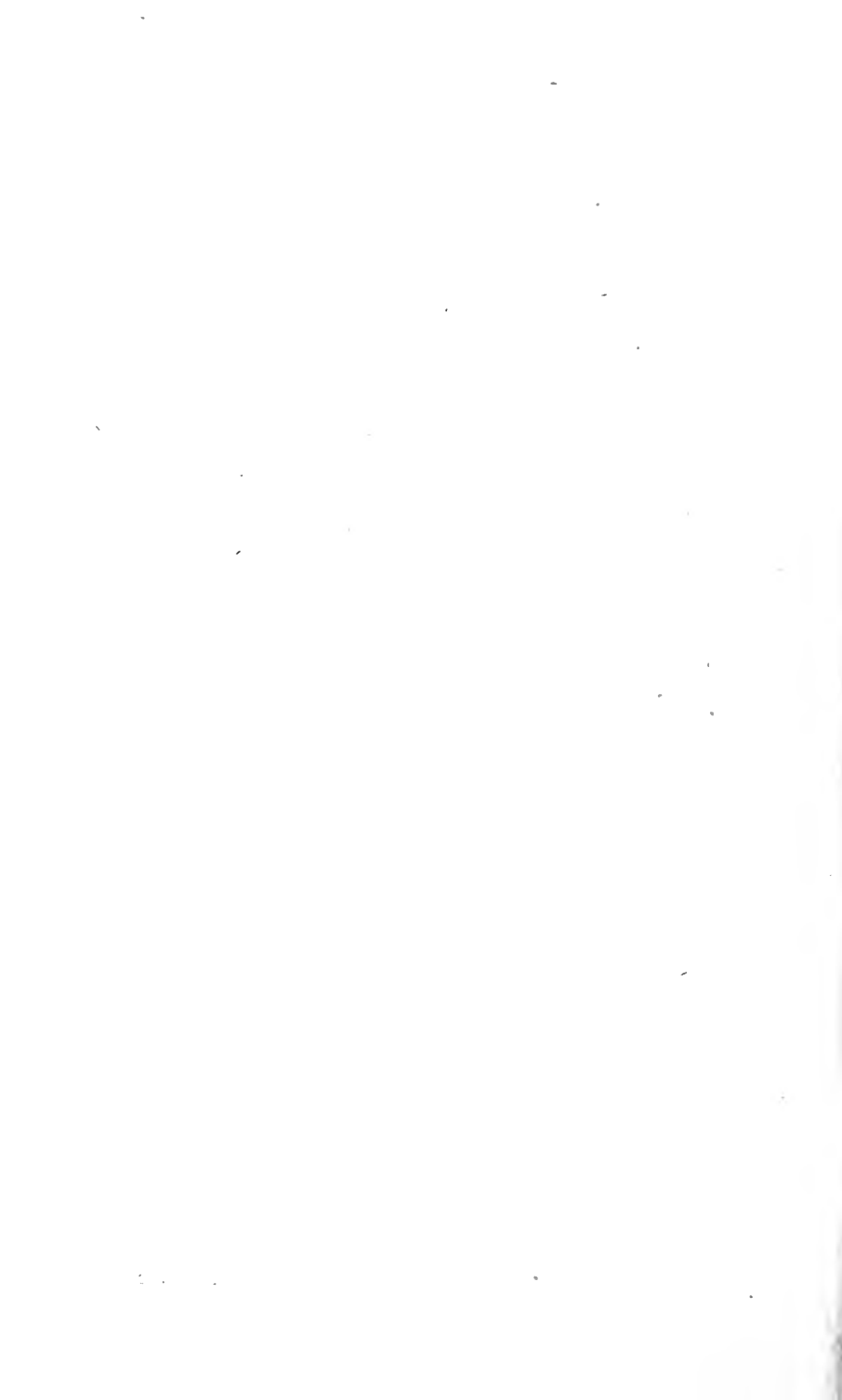
For this, and Moss, see page 167, in the 13th volume ;
 and a hint is given, to “ desire the nurseryman to be at-
 “ tentive in his *grafts* ; for more depends upon it than is
 “ imagined ; as from the graft being full, well wooded,
 “ clear, and properly chosen, the fruit will be both
 “ larger and higher flavoured, though the soil and cul-
 “ ture may be the same. Also, the health of the *wood*
 “ of the tree is most materially affected during the whole
 “ time of the tree’s existence, by the proper maturity
 “ the scion was in at the time it was first entered into
 “ the stock.”

In page 270, is an abstract of the working, or labori-
 ous part, that it may be seen at one point of view : and
 let it be remembered, if the tree is well pruned, it conti-
 nues of the same size after the pruning is finished, as it
 was

was before ; “ for the rule is, to keep the branches out
“ of the reach of cattle, then let them follow their natu-
“ ral growth ; for each species has a growth peculiar to
“ itself. *For Medication, look to volume 12th.*

“ Abstract of Practice. Let every stump, the decayed
“ or blighted branches, with all those which cross the
“ tree, or where the leaves curl, be taken off close,
“ smooth, and even ; pare down the gum close to the
“ bark, and rather a little within, but do not destroy
“ the rough coat ; open the fissures, out of which the
“ gum oozes to the bottom ; cut away the blotches, and
“ pare down the canker ; then anoint all the wounds
“ with the medication, smearing a little over the canker
“ which was not large enough to be cut ; score the tree,
“ and rub off all the moss, but do not shorten a single
“ branch : follow the surgeon’s rule, go to the quick,
“ and no more ; act with observation, and each practi-
“ tioner will improve the science.

“ A tree under such care, *must*, with its remaining
“ free shoots, run large ; which requiring a great flow
“ of sap, will keep the roots in constant employ ; and
“ from that very source, *necessarily* establish permanent
“ health.”

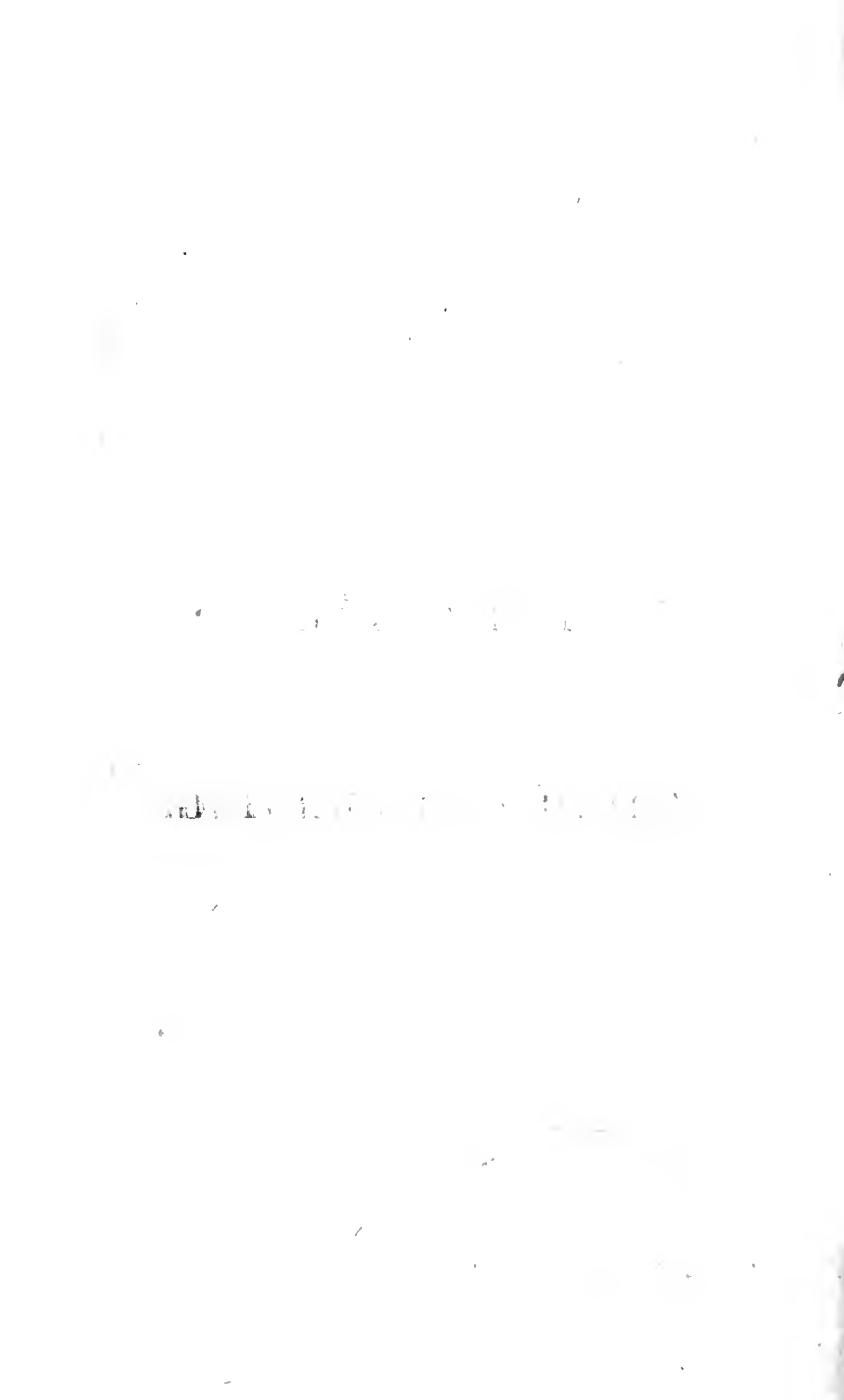


A

TREATISE

ON

PARING AND BURNING.



PARING AND BURNING.

SECT. I.—INTRODUCTION.

THIS practice is called Denshiring, *i. e.* Downsharing, and is commonly understood in husbandry, to signify the cutting up the turf, or surface of the soil, from half an inch to six inches, or more, in depth; in the form of cakes, if thinly pared; and of sods, if cut or dug up of a greater thickness; and the burning such cakes, or sods, in the field in heaps, to the state of ashes.

By this process, all the sperm of insects, and seeds of weeds of every kind, which the turf contains, are consumed, and all the roots and principal parts of the plants growing in the soil, are decomposed, and resolved into new matter by the agency of fire.

Many Authors, probably with little scientific knowledge, and less experience, have written much against this practice: some disapprove of it under the notion that shallow soils, are by it rendered still shallower; as if the want of depth were the only cause of sterility. Others have condemned it, because the ashes are thought to contain no alimentary matter, and because the animal and vegetable matter contained in the turf, in which they supposed the fertilizing quality to consist, are destroyed by the process. That these objections are totally unfounded, will be hereafter clearly demonstrated; suffice it at present to say, that the small reduction of the quantity of upper soil by the consumption of the vegetable
matter,

matter, is of very little consequence, as the evil, if any, is so easily to be remedied, by ploughing up the subsoil in proportion to the supposed loss of surface soil. "Many have imagined that it diminishes and consumes the soil itself, but repeated experience shews the contrary*."

In order to investigate the theory of this process, and to see how that theory coincides with experience, with respect to the effects of turf ashes on vegetation, it may be proper to inquire,

1st, What is the natural aliment of vegetables?

2dly, Whether turf ashes afford any portion of such aliment? and,

3dly, Whether turf ashes possess any qualities which imbibe or attract from the atmosphere, principles of vegetation not contained in the ashes themselves?

First, then, as to the natural aliment of vegetables, or food of plants, let us inquire what has been written on this subject by some of the most eminent Naturalists of the last century.

Mr. NICHOLSON, in his Chymical Dictionary, informs us, that "the nutrition or support of plants, requires water, earth, light, and air. There are various experiments which have been instituted, to shew that water is the only aliment which the roots draw from the earth. VAN HELMONT planted a willow, weighing fifty pounds, in a certain quantity of earth covered with sheet lead: he watered it for five years with distilled water; and at the end of that time the tree weighed one hundred and sixty-nine pounds three ounces, and the earth in which it had vegetated, was found to have suffered a loss of no more than three ounces. BAYLE repeated the same experiment upon a plant, which at

* KIRWAN on Manures.

“ the end of two years had acquired a weight of fourteen
 “ pounds, without any perceptible loss of weight in the
 “ earth in which it had vegetated.

“ Messrs. DUHAMEL and BONNET supported plants
 “ with moss, and fed them with mere water: they ob-
 “ served that the vegetation was of the most vigorous
 “ kind; and the naturalist of Geneva observes, that the
 “ flowers were more odoriferous, and the fruit of a higher
 “ flavour. Care was taken to change the supports before
 “ they could suffer any alteration. Mr. TILLET has
 “ likewise raised plants, more especially of the gramine-
 “ ous kind, in a similar manner; with this difference
 “ only, that his supports were pounded glass, or quartz
 “ in powder. And Dr. HALES has observed, that a plant
 “ which weighed three pounds, gained three ounces after
 “ a heavy dew. Do we not every day observe hyacinths,
 “ and other bulbous plants, raised in saucers or bottles
 “ containing only water*.”

From the preceding quotations, it should seem that
 water, earth, light, and air, are the aliment of vegetables,
 and that the influence of the earth, in vegetation, is almost
 wholly confined to the conveyance of water to the plants.
 But Mr. KIRWAN asserts, “ that water, coal, different
 “ earths and salts, are the true food of vegetables, to
 “ which he says may be added fixed air.” And again he
 observes, “ Carbon is one of the principal aliments of
 “ plants.”

To his testimony may be given that of Lord DUN-
 DONALD, who, in his Treatise on the Connexion of Agri-
 culture with Chymistry, says, that “ vegetable substances
 “ contain the carbonaceous principle, or what by heat
 “ may become charcoal or coke. And charcoal, by dif-

* Page 963.

“ferent processes (he adds), may be made to afford the “carbonaceous principle to plants*.”

The natural aliment, or food, of plants, being, by Mr. NICHOLSON, and the learned Naturalists he quotes, thus pointed out to be water, earth, light, and air; and Mr. KIRWAN and Lord DUNDONALD having given it as their opinion, that carbon and salts afford a principal aliment of vegetables, it follows, to inquire,

2dly, Whether turf ashes afford a portion of such aliment?

Upon considering this subject a few years since, at the request of Sir JOHN SINCLAIR, then President of the Board of Agriculture; and comparing these observations of Mr. KIRWAN, Lord DUNDONALD, and others, relative to carbon being a principal aliment of vegetables, with the mode of burning turf, and knowing that the process is very similar to that of making charcoal; my mind was impressed with a strong idea, that the principal part of the vegetables, and their roots, of which the best turf is chiefly composed, was, by the smothering process, converted into a carbonaceous substance, and that the fertilizing effects of turf ashes were to be attributed principally to that circumstance. To ascertain fully the truth of this doctrine, some specimens of turf and ashes were sent to the Board of Agriculture, in order to have them chymically analyzed. This was done in a most accurate manner, under the conduct of Dr. PEARSON, who obligingly directed the process; when it appeared that those ashes contained a very small quantity of carbon and salts; in a proportion far too minute to warrant the opinion, that their fertilizing effects were to be attributed to either of these substances: yet these very ashes, from which the

* Page 40.

specimens were taken, were spread upon a piece of extremely poor land, and had a considerable effect in promoting vegetation.

The result of this experiment turning out so very different from expectation, totally destroying the hypothesis I had formed, led me to consider further on the subject, when it occurred to me, that the person who was employed to procure the ashes for the experiment, might have taken them from the outside of the heap (which, upon inquiry, was found actually to have been the case), from whence, by the admission of air in the process of burning, all the carbonaceous substance had escaped in the form of carbonic acid gas, and by having lain sometime in the open air, after being burned, the saline particles might have been dissolved. Under this impression, a proposal was made to the Board of Agriculture, to have another trial, which was readily complied with: a fresh portion of turf was, in consequence, burned for the purpose, and a parcel of the ashes, taken partly from the outside and partly from the inside of the heap, so as to form an average specimen, was sent to London, carefully packed up for the experiment, of which the following is the result.

Analysis of some Turf Ashes sent to the Board of Agriculture, made October 8th, 1804, by H. DAVY, Esq.

Professor of Chemistry to the Board.

“ These ashes were in the form of small lumps, from the size of a pea to that of a hazel nut. They were, for the most part, of a reddish colour; but some pieces were black, or blackish brown, and a few were white: they were all soft, and easily broken; their mean specific gravity was 2.1. They had no perceptible taste or smell.

“ When digested with acids in their mixed state, a
 “ considerable portion was taken up with effervescence.
 “ After being heated red with powdered charcoal in their
 “ entire state, they emitted a smell of sulphurated hydro-
 “ gene when acted on by a diluted acid.

“ Pure water, when digested upon them, acquired no
 “ alkaline properties, but became capable of precipitating
 “ nitrate of silver, and muriate of barytes, and of being
 “ rendered turbid by a solution of ammoniac.

“ 200 grains of them analyzed by the agency of water,
 “ muriatic acid, nitrate of potash, and other proper re-
 “ agents, afforded,

	<i>Grains.</i>
“ Carbonate of lime	80
“ Sulphate of lime	11
“ Charcoal	9
“ Saline matter, principally sulphate of potash } and muriate of magnesia	3
“ Oxide of iron	15
“ Remainder, matter insoluble in the acid, and principally a finely-divided earthy matter, } apparently consisting of alumine and silex	82
“ but of which no particular examination was made, as it “ was concluded that no part of the substance, active as a “ manure, could exist in it.”	

From this experiment it is found, that turf ashes do contain a considerable portion of carbon, agreeably to the doctrine of the chymists before quoted. From measuring the land whence these ashes were made, and from the quantity produced, it appears that 2660 bushels are about the average produce of an acre, in the common mode of paring and burning; which, at 65 pounds per bushel, their weight when dry, gives on one acre of land a produce of 172900lbs. *avoirdupois*. It follows then, that the 2660 bushels of turf ashes on an acre of land, contain, of

Carbonate

Carbonate of lime	<i>lbs.</i> 69160
Sulphate of lime	9509.5
Charcoal	7780.5
Saline matter, principally sulphate of potash and muriate of magnesia	} 2593.5
Oxide of iron	12967.5
Alumine and silex	70889
Total, as above	<hr/> 172900 <hr/>

The carbonate of lime or chalk found in these turf ashes, can have no effect on vegetation on such soils; and it cannot be supposed that either the oxide of iron, or the remaining matter, consisting of alumine and silex, can contribute any share to their fertilizing effects: it is therefore evident, that the whole advantage must lie in the carbon, gypsum, and salts; and as gypsum has often been tried as a manure, without any effect, except on some soils when sown upon seeds, it appears that the chief nutriment must proceed from the carbon and salts; and as carbon is undoubtedly the principal, great care should be taken, to conduct the process of turf burning in such a manner as to prevent the escape of the carbon; which may most effectually be done by keeping the heaps, while on fire, well covered with fine mould, or ashes, just sufficient to exclude the air, so as not to extinguish the fire, or, in other words, to keep up a slow smothering fire, by which nearly the whole of the vegetable matter contained in the turf will be converted into a carbonaceous substance.

It remains, 3dly, to inquire,

Whether turf ashes possess any qualities which may imbibe, or attract from the atmosphere, principles of vegetation not contained in the ashes themselves, that are conducive to the growth of plants?

It

It has been already mentioned in the foregoing pages, that water, air, and heat, have a considerable share in the nutrition of plants ; and of these, that water seems to be the principal, as it contains the other two. That turf ashes do imbibe and attract water, is very evident from the following experiment, made by JOSEPH WILKES, Esq. of Measham, Leicestershire. He put some ashes into a flower-pot, which at first did not fill it, but in process of time they acquired from the atmosphere what increased their bulk so much, as entirely to fill the vessel. This substance, so imbibed, must have been water ; and such turf ashes have the quality, from the closeness of their texture, of retaining what they imbibe, much longer than the earth and turf from which they are made can do.

The importance of water to the growth of plants, is obvious to every one : when vegetation seems, in dry weather, to be at a stand, no sooner do showers of rain fall, than a luxuriant growth of every kind of herbage immediately succeeds ; and it is well known by practical men, that on many poor dry soils, even if well manured, without rain vegetation makes but a slow progress ; but on the same soils without manure, and with plenty of succeeding showers, vegetation will go on with great luxuriance. All poor, dry, sandy, chalky, and gravelly soils, in very dry summers, if sown with corn, or even grass-grounds of such description, will produce but very little ; but in rainy summers they will, on the contrary, always produce well ; and sometimes better crops than much richer lands. Hence, therefore, manures must be more or less valuable, in proportion to their capacity of imbibing and retaining water for the purpose of forcing vegetation. It is well known that woollen rags are an excellent manure for very dry lands, which can only be attributed to their power of attracting and retaining water ; and upon

upon this principle I conceive that the excellence of turf ashes in some part depends.

After having thus proved that water and charcoal are the principal aliments of vegetables, and that manure of many kinds operates chiefly as an instrument, or vehicle, for the supply of the former ; it remains to observe, that Mr. KIRWAN's doctrine of carbon being an aliment, and, after water, the most copious ingredient in vegetables, is confirmed by practical observation ; and by none more than the circumstance of a clover lay being one of the best tilths known for any kind of crop ; for clover, according to WESTRUMB, was found to contain one seventh of coal, a greater portion of the carbonic principle than is contained in any other vegetable.

In LISLE's Husbandry, vol. i. p. 77, a quotation is made from WORLEDGE, fo. 234, thus: " In burn-beaking of land, the rustic observes, that over burning the turf is injurious, and that a more moderate burning makes the ground more fertile. The reason is plain ; for, in burning any vegetable, a gentle, easy, and smothering fire doth not waste the volatile nitrous spirits so much as a quick fire would do, and causeth more of it to fix and remain behind." Here is an observation from experience, that a smothering fire makes more fertile ashes than when the turf is over burnt, which is attributed to the detention of the volatile nitrous spirits, but which, unquestionably, is owing to the conversion of the vegetable matter contained in the turf into a carbonaceous substance. Hence this observation of WORLEDGE is another confirmation of Mr. KIRWAN's doctrine, of carbon being a principal aliment of plants.

It being thus, by experiment, shewn, that turf ashes contain a considerable portion of one of the principal aliments, or food of plants, and that they also possess the
power

power of imbibing water, and retaining it in the earth, for the supply of vegetation, it follows, that the process of paring and burning is one of the greatest of agricultural improvements: the objections, tending to bring the practice into disrepute, can only have arisen from mistaken notions, or bad management; to confirm which, it only remains to relate, in the following pages, a number of experimental facts, which a long and extensive practice in this particular branch of husbandry has furnished.

SECT. II.—ORIGIN AND PROGRESS.

ALTHOUGH we do not find in the writings of the Ancients, any traces of paring and burning the surface of the soil, for the improvement of the land, yet their experience discovered that the ashes of burnt vegetables were a fertilizing manure; for both CATO and PALLADIUS mention the burning of twigs, and other vegetable substances, in order to make ashes for manure. CATO says, “If you cannot sell wood and twigs, and have no stone that will burn into lime, make charcoal of the wood, and burn in the corn fields the twigs and small branches that remain: where you have burned these, sow poppy*.”

Mr. DICKSON, in his Husbandry of the Ancients, observes, that there is a passage in PALLADIUS, that plainly discovers that it was a practice to burn, not only branches and shrubs, but also trees, for manuring land; and that this land was afterwards treated in the same manner as other corn fields.

When shewing how the different kinds of land are to be treated, he says, “If you have a field covered with

* Cato, cap. xxxviii.

“useless

“ useless trees, divide it according to the soil ; that part
 “ that is of a rich soil, clear of the trees, and bring it im-
 “ mediately into tillage ; but allow them to remain upon
 “ the barren part. The reason of this is, that the one
 “ part answers very well by its natural fruitfulness ; the
 “ other is improved by burning the trees upon it. But
 “ you must still continue to distinguish betwixt the
 “ burned and unburned part of the field, so as to ma-
 “ nure again the burned part after five years. Thus you
 “ may manage it in such a manner, as to make the barren
 “ part of the field carry equal crops with the fruitful
 “ part*.”

The first account we discover from ancient authors of paring turf, and burning the surface for manure, is from CRESCENTIUS, who wrote in the 13th century. “ In the
 “ groves of the Alps,” he says, “ the trees are cleared of
 “ their small branches in the months of May and June,
 “ which afterwards, when dry, are burned in the month
 “ of August, and, when in ashes, are ploughed in. Si-
 “ ligo (wheat of a small sort) is sown upon them, which
 “ produces that year a very great crop ; then the land
 “ rests for seven years, and is again sown in the same
 “ manner. But, when there are no groves, the grass,
 “ with its roots, and some earth, is pared off, and, being
 “ dried, is burned ; afterwards, upon the ashes and dust
 “ of this, siligo is sown, at the season already mentioned.
 “ The land is allowed to rest eight years, and then the
 “ same work is renewed.†”

Mr. MARSHALL, in his Rural Economy of Devonshire, says, “ This operation in Agriculture has been practised,
 “ in this Western part of the island, from time beyond

* Pallad. lib. i. tit. 6.

† Cres. lib. iii. de siligine, p. 90.

“ which

“ which neither memory nor tradition reaches. It has
 “ probably been imported from the opposite shore on the
 “ Continent.”

Mr. YOUNG, in his *Travels in France*, vol. ii. p. 138, speaking of *Tour d'Aigues*, observes, “ that paring and
 “ burning is practised every where : and, as in Ireland,
 “ in corners, holes, wastes, and even ditches, to make
 “ heaps of manure for their cultivated lands. They are
 “ now (September) burning every where. The common
 “ opinion is very much against it ; but the President re-
 “ marks, that it has been practised here uninterruptedly,
 “ probably, for 2000 years, yet the land is no worse than
 “ it has always been.”

The Marquis TOURBILLY says, that it has been known from all antiquity.

The progress in this county has been very considerable within these last few years ; there being, probably, treble the quantity of land burnt annually now, to what there was thirty or forty years ago : and we have much reason to believe that the practice increases in most parts of the kingdom, and would be still more extended if it were not for the many obstacles to it ; of which, the want of leases, the payment of tithes, and prejudices of landlords, are the principal.

SECT. III.—THE VARIOUS MODES OF PARING AND BURNING.

THE implements used to pare the land are : 1st, The fenn plough ; 2d, The breast plough ; 3d, The ecobue, or cobbing hoe ; 4th, The common spade ; 5th, The prong spade ; 6th, The common plough.

The two first are well described by Mr. HITT, in his
 Treatise

Treatise on Husbandry.* He says, "There are two different instruments made use of for paring: the one is a small plough, that is worked with a pair of horses, with which a man (in the fens of Lincolnshire, Cambridge-shire, and Huntingdonshire) will pare two acres of land in a day.

"These are called Rock-cliff ploughs, but for what reason I am not able to say: the coulter of one of these ploughs is a circular plate of iron, edged deeply with steel: it moves upon an axis fixed to the beam, and cuts the turf about two or three inches deep when it is used in the fen land; the share is about a foot or 14 inches wide in the web or fin, but the point is narrow; it is made of the same sort of metal as the coulter; both of them are kept sharp, or else they are not fit for use; for the coulter must either cut the turf extremely clean on one edge, or else the share cannot turn it over; and as the share goes so near the surface, it meets with many strong roots of grass that require a sharp instrument to cut them. This instrument is the most expeditious upon carr or moss land, but not of any use where there are stones or roots of trees."

The other instrument is called by different names in different parts of England: in the North, a floating, or paring spade; in some places, a breast plough; and in others, a denshiring shovel, or denshire plough.

"The parts which answer for the coulter and share of a plough, are both in one plate, about the thickness of a scythe, and of as good metal; the flat, or share part, is somewhat more than a foot broad, but the fore part is made with a point; the coulter is a part of the plate which forms the share, it is turned square, so that it

* Page 26.

"stands

“ stands right up when the share is flat upon the ground,
 “ and cuts the edge of the turf, as the share does the bot-
 “ tom : there is a socket at the upper end ; into it is fixed
 “ a shaft of wood about seven feet in length ; at the up-
 “ per end of which is placed a hilt about two feet long,
 “ and not thicker than a man can conveniently grasp
 “ with either hand, and by that he guides it ; and with
 “ strongly pushing both thighs against the hilt, he causes
 “ the plates to cut the surface of the land, and turns it
 “ over in pieces about three feet long ; the breadth of
 “ each is about a foot, and the thickness one or two
 “ inches. It is excessive hard labour ; but a good hand
 “ will plough about an acre in four days : the labourer
 “ has a piece of wool against each thigh they strike
 “ against. The hilt of the plough and their under sides
 “ are covered with wool, to prevent bruising the man’s
 “ flesh.” In the Eastern Counties, on chalky soils,
 having a mixture of flints, the breadth of the fin, or
 share, is somewhat less, or from 10 to 12 inches, and the
 pointed projection more angular ; by which means the
 small flints lying in the turf are more easily displaced. In
 other respects, these implements are the same as before
 described by Mr. HERR.

The usual mode of burning the turf cut by the fenn,
 or downshare plough, is to lay it up in small heaps in the
 field, generally not more than ten or twelve feet apart, and
 then firing the heaps with a few red hot ashes taken from
 heaps that have been previously fired. It is more conve-
 nient to the workmen to get it together in small heaps ;
 but if the heaps were made at greater distances, and much
 larger, there would be more of the inside, if properly at-
 tended, converted by the smothering process into a car-
 bonaceous substance. The ashes would then become, as
 has been before mentioned, a more fertilizing manure ;
 and

and to the want of this precaution, perhaps, may partly be attributed the mischiefs that some authors have assigned to the practice itself.

The ecobue, cobbing-hoe, or beating axe, is a tool made use of by the French, for cutting and raising up pieces of turf growing on coarse and rough lands covered with heath, furze, brambles, bushes, &c. which, by the resistance of their woody roots in the soil, cannot be pared by the common breast or downshare plough. This implement, and its use, is described by the Marquis of TOURBILLY, in his work entitled "*Sur de la Trechemens*," p. 29. By his account, it appears very similar to the adz which coopers use in England for hollowing out the inside of the staves of casks.—A tool of this kind is used in this county by the labourers for cutting up cakes of turf, from the surface of the heath lands for fuel.

The common spade is frequently used for digging turf from waste banks on side hills, along hedges and highways inaccessible to the plough from situation, or obstruction by roots or bushes; and the prong spade is a tool in the shape of a spade, but made with three or four prongs instead of a plate. This is used for digging the turf for burning on the sides of waste banks, highways, &c. where the soil is too full of flints or stones to admit, readily, the common, or plate spade. It is a very useful implement in particular situations, as it enters the ground with much less labour than the common spade, and raises the turf equally well. The turf dug by either spade is left generally grass upwards, if cut early in the spring, until there be a favourable opportunity for drying, which is sometimes effected by repeated turnings; at others, it gets sufficiently dry without any removal, all which depends upon situation, soil, and seasons. When the turf is dry enough to burn, it is placed in large heaps,

from four to twenty or more cart-loads each, and fired by means of faggots of furze, or any other fuel that happens to be most convenient. More or less firing is required, in proportion to the kindliness of the soil for burning, of which an experienced workman can easily judge. Some sorts of turf are easily fired with only half a pint of red hot ashes being thrown in upon the heap, and instantly covered with a piece of turf: while others require a faggot or two of wood, and no small degree of discretion in disposing it properly. Chalky soils generally burn readily. The best method of placing the turf dug with the spade for burning, is to lay it as close as possible, in order to keep out any draught of air through the heap, as otherwise the force of the fire is apt to escape outwardly, and a partial burning only effected; but if the turf lies close, and the fire is kept in by stopping the places where it breaks through, and covering the whole with fine mould and ashes, after the heap is thoroughly alight, it never fails to burn well: even if great showers of rain fall, the great mass of burning matter will convert almost any quantity of rain into vapour.

The last implement to mention, and, perhaps, in many situations the best instrument for the purpose, is the common plough. By using it, the business proceeds with greater dispatch, and is attended with less expense for the cutting part, though more for burning; but then there is the great advantage of having much of the soil, which is not burned, pulverized and prepared for the ensuing crops, an advantage not attainable by the breast, or denshire plough.

In ploughing turf, for it can hardly be called paring, for burning, there are various methods that are adopted. Some plough it one way, and then cross-plough it, endeavouring thereby to cut it up in square cakes; but this seldom

seldom succeeds. A better plan is, when the weather begins to set in dry in the spring, to plough the turf as thin as possible (unless it be a very old piece of turf full of woody roots, which may, in such case, be broken up a tolerable depth) in balks; *i. e.* to turn the turf the contrary way to common ploughing, with the turnwrest plough, laying the land in narrow ridges about 18 inches in width. When a piece of land is thus gone over, it should be harrowed slightly down, and immediately ploughed in the same manner, crossways, at right angles, finishing the whole by splitting or cleaving with the plough these last made ridges down the middle. By harrowing the land thus prepared afterwards with a coarse harrow once over, the turf will be nearly all brought to the surface, and, after a few dry days, be in a good state for burning, at which time every possible expedition should be used to get it up in heaps, for firing. Burning ploughed turf I have frequently had done at one guinea per acre. This operation includes the laying up the turf in heaps, firing it, and cleansing the hills when burnt, of the loose bits of turf from the outsides that have escaped the fire, and re-firing them on the crowns of the hills, so as to burn the whole completely. But this work, of late, has cost from 30*s.* to 40*s.* per acre, in proportion to the quantity of turf burnt. In some instances lately, I have made from four to five hundred large cart-loads of ashes per acre.

The price of digging and burning turf in East Kent, a few years back, was 6*d.* per cart-load of about 30 bushels; but now it is advanced to 9*d.* and, in some cases, where the soil is difficult to dig and burn, one shilling per load has been given. The common mode of downsharing with the breast-plough, is invariably done by the acre, including the paring and burning. The price of this work

is likewise advanced within these seven or eight years, and is now (1803) from 30*s.* to 50*s.* per acre.

SECT. IV.—ADVANTAGES.

RICH meadow, and wet marsh lands, or lands of a cold, wet, and stiff nature, are seldom pared and burnt: the practice is chiefly confined to poor districts, such as old chalky down lands, sheep-walks, and wastes covered with heath, fern, and bushes; or any rough land whatever, which, by this process, may be brought into a state of cultivation much more expeditiously than by any other method. The turf, which is generally full of the sperm of insects and seeds of weeds, in place of being a troublesome nuisance in the soil, is, by a short and cheap* process, converted into a rich and fertilizing manure, by which lands of the most barren nature are made, if properly managed, equally productive with some of the most fertile. When old downs, heaths, or sheep-walks, are pared and burned early in the summer, and the land twice ploughed, however poor the soil may be, it becomes a fine tilth for turnips.

The production of a full crop of turnips upon such lands, where they have never before been seen, and where they could hardly, by any other means be obtained, is of such great benefit, both to the cultivator and the soil, that it would be needless to say any thing further in recommendation of this practice, were it not necessary for the information of those, for such there are, who are not acquainted with the use and benefit of turnips in poor countries. A

* A covering of manure, to have an effect equally fertilizing, would cost from three to four times the expense of paring and burning!

crop of turnips on a pared and burnt soil will support, in proportion to the goodness of the crop, and quantity of fodder used with them, from five to twelve sheep per acre, during five of the worst winter months. On all dry lands these sheep may lie upon them the whole time (except in very rainy days), by which the land, before very light, is trodden down firm, and enriched with the dung and urine of the animals, in such a manner as to become an excellent tilth for either barley or oats, and if sown early with either of these grains, and kept clean from weeds, will, in all probability, produce a crop equal in value to the fee-simple of it in its original state : and this is not all ; for the land, if sown with clover and trefoil, under either of the before-mentioned crops, will produce the following year an abundance of good food for sheep, which, with the assistance of some other productions from heaths, downs, &c. such as are generally to be found in the vicinity of land fit for paring and burning, will support a sufficient number of sheep to fold the land in the summer ; by which means, early in the following autumn, it becomes a good tilth for wheat, and will produce, in all probability, a crop equal in value to *double* the fee-simple of the land before it was improved by paring and burning. The wheat crop being kept perfectly clean from weeds, especially charlock, the bane of poor chalky soils, the land, the following summer, and fourth after burning, will be in good order for another crop of turnips ; and, as two good crops of corn may thus have been produced, it is but strict justice that a quantity of dung, equal to what the two years straw of each acre has made, be carried out on this land, after being mixed and trenched over with hedge or ditch mould, scrapings of highways, waste-turf from banks, clay, loam, or any other earth that can be conveniently procured : or, if in-

stead of this manure, it be well folded over, another good crop of turnips may be obtained, which is a foundation for a fresh succession of crops of corn and seeds as before. In short, any land, however poor, may, in the hands of a good farmer, by keeping his crops perfectly clean from weeds, with good ploughing and early sowing, be brought into a progressive state of improvement, after paring and burning.

This system of cropping is the most advantageous hitherto discovered: by it good corn is produced every other year, and, in the intervals, vegetable crops are raised, which tend to improve the soil and keep it clean from weeds. At the same time, those crops contribute largely to the support of a flock of sheep, which, in their turn, make ample amends for their support, not only by their improvement both in carcass and wool, but, by treading the soil down firm, and enriching it with their manure. Thus, by this practice, and by such culture, meat for the food of man, besides the corn, and wool for clothing him, are abundantly increased, and an employment found for an additional number of labourers and manufacturers. The proprietors of such land ultimately reap a benefit in its increased value; the occupier, by an immediate increase of various productions; the tithe owner, by an increased income; the husbandry labourer, by an increase of employment; the manufacturer, by an increased quantity of wool; the public, by an increased supply of mutton, corn, and clothing; and the revenue, by the consequent increase of taxes.

By many persons, it is imagined that paring and burning old sheep downs, and putting them into a state of cultivation, is the means of reducing the number of sheep kept on those lands, and that the produce of the wool is thereby lessened. Some authors have even gone so far

as to exclaim against paring and burning upon these grounds*, and thence they argue that manufacturers are thrown out of employment, for want of the wool that these sheep-walks should produce. These ideas are totally unfounded, for there are no sheep-walks to be found that may not, by paring and burning, and putting a certain portion of them into a state of aration, be made to support, or breed, a greater quantity of sheep than they can do in a state of old turf or heath.

It remains now to prove what I have advanced in this section, by facts deduced from experiments made during the last thirty-five years, the relation of which will, I trust, put the advantages of this practice beyond all question.

Example I.—In the year 1766, three acres, part of an old down or sheep-walk that had been in grass a great many years, were pared and burned for 1*l.* 5*s.* per acre. The land was much over-run with a sort of coarse grass, provincially called hassock, (*festuca durissima*) a kind that no animal will eat from such poor land. The sub-soil, a pure chalk rock, to within five or six inches of the surface-soil, which was a loose chalky mould, without flints, seemingly a compound of light calcareous earth, nodules of chalk, and a small portion of vegetable mould, from the decay of the roots of such plants as the soil produced, and, of course, some animal matter arising from the dung and urine of a flock of sheep, deposited from time to time by them when feeding upon, but chiefly in passing over, the field. The utmost annual value of the land, at that time, was not more than 2*s.* per acre. It was pared and burned early in the summer, and several times ploughed, destroying each time a thick crop of

* Norfolk Report, by Mr. KENT.

charlock. Early in March, in the following spring, it was sown with barley: some charlock which appeared among the corn was taken out by hand, when in bloom, and the crop of barley amounted to six quarters per acre, including the tithe. The land was ploughed again early in the winter, and, in the following spring, sown with barley as before, and rye-grass. The crop of barley this time was not laid by itself, but to appearance seemed nearly equal in quantity to the first. The rye-grass the first two years produced a great quantity of sheep-keep, after which it annually declined till about the year 1777, when the land was pared and burned again, and sown early in the month of July with turnips. This was an excellent crop; the turnips grew to an extraordinary large size, and were fed off the land by sheep lying in a fold night and day. In the month of February, the land was sown with barley and sainfoin seed; the crop of barley was great, and the quality exceedingly fine and clean. The sainfoin was mown for hay the two succeeding summers, and a more beautiful piece was never seen. The crop each time produced about thirty hundred weight of hay, when dried, per acre; after which, it was eaten off with a flock of sheep six or seven years, till it became covered with a thick strong poor turf again, and then, in the months of May and June, it was ploughed about five inches deep, and, when dry, the turf was laid up in heaps about two rods apart each way, and burned the third time, each heap producing, on the average, fifteen two-horse cart-loads of ashes; and there being exactly forty heaps per acre (the stools of which are still to be seen), made six hundred cart-loads per acre. These ashes, except about two cart-loads in each heap, were carried out and spread on an adjoining field for turnips; what remained in the hills (eighty loads per acre) were spread and ploughed in.

The

The land being ploughed up from the subsoil, or loose chalk rock, which being mixed with the remaining mould and ashes, formed almost a new surface-soil, was fallowed the remainder of the summer, and, in the following spring, in the month of February, sown with black oats and sainfoin-seed again. The crop of oats and sainfoin were very great ; the latter was mown for hay two years, and then left for a sheep-walk, in which state it now remains, fit to burn again ; but being a narrow slip of land between two pieces of arable, is left as a drove-way for a flock of sheep to pass to a distant part of the farm. A slip of this piece, about half a rod in width, along the high road, was dug with a spade, and burnt, in the summer of 1797, and the ashes were carried away for manure. This was the third time of burning this part by myself, and the fourth within my memory : the produce of ashes was at the rate of 460 cart-loads per acre. This narrow slip is now (1803) sufficiently covered with turf to burn again.

The success of my father in paring and burning these three acres, first in the year 1766, laid the foundation, and was the occasion, of all the practice related in the following pages of this work.

Example II.—Seven acres, part of the same down last-mentioned, were pared and burnt in the months of May and June, in the summer of 1768. The ashes, amounting to about 120 cart-loads per acre, were burnt, spread, and ploughed in in the beginning of July, and sown with turnips : the crop was rather thin, but the roots grew to an immense size ; some of them were measured, and girted more than a middle-sized man. The crop was folded off with sheep lying constantly upon the land, which was cleared, ploughed, and sown with barley, early in the spring, as well as can be recollected, about the end
of

of February. The crop of barley appearing very extraordinary, was put into a barn by itself, and the produce was found to be seven quarters per acre, of the first quality. Sainfoin having been sown among the barley, the land, the three following years, produced fine crops of that hay: the average estimated at twenty-five hundred weight per acre; after which it was fed off by flocks of sheep until the summer of 1778, when it was pared and burnt a second time, and cropped with turnips, which were folded off as before, and in the spring following, was early sown with barley and seeds, viz. clover and trefoil. The crop of barley was estimated at about five quarters per acre, and the seeds were fed off during the summer by a flock of sheep folded on the land. In October following, the clover lay was ploughed, and sown with wheat for the first time. No man living had ever known wheat, or even barley, on this field before. The wheat was a good crop, estimated at full three quarters per acre. In the following winter, a collection of loam, turf-ashes, and dung, was made, which, in the spring of the year, was trenched over, and when well incorporated, was carried out, and spread on the land after the second ploughing, at the rate of 40 cart-loads, of about 24 bushels each, per acre. Turnip-seed was now sown over it, and the whole ploughed in very shallow, by which the seed lay among the manure, which, in this dry calcareous soil, was of great advantage to the young turnips. The crop turned out a tolerably good one, was fed off by sheep as before, and the land sown early in the spring with black oats and seeds, viz. rye-grass, clover and trefoil. This made an excellent sheep-down for the space of three or four years, when it began to decay; and in the summer of 1789, was again pared and burnt the third time: about five acres was done with the common

mon downshare plough, about an inch in thickness, for 30s. per acre; and the other two acres were ploughed with the common turnwrest plough, about five inches thick: the whole furrow of the latter was burnt, and the ashes spread on the land, except about a third part, which was carried away to an adjoining field. The land, as soon as it was burnt, was sown with spring tares, which, owing to an extremely dry season, proved but an indifferent crop. They were fed off in the summer by a flock of sheep, to make a wheat tilth, that the land might class with another field. The wheat was not so good a crop as before, being only about 20 bushels per acre. The land was dunged for turnips the following year, which proved a good crop, and then was sown very early the succeeding spring, with black oats, and clover and trefoil-seeds. Some of these oats were drilled, and some sown broad-cast; and in the following harvest, a part of each was harvested and thrashed separate, to ascertain the difference, when it was found that the drilled oats were in the greatest quantity by about ten gallons per acre, and that the crop was five quarters and two bushels per acre. The seeds were folded off in the summer, and the clover lay in October sown with wheat: the crop was not laid by itself, but estimated at three quarters per acre. The following summer, the field was partly dunged, and partly folded for turnips: the crop a very good one; they were folded off as before, and the ground sown with barley and seeds early in the following spring, which produced about four quarters per acre. The seeds were again folded off in the following summer, and the lay sown with wheat, which produced a good crop in the summer of 1798. The land was then fallowed for barley, and sown again with seeds; but from the clover being too often repeated, the crop failed in the summer,

and

and in consequence, the black couch (*agrostis stolonifera*) got possession of the soil, so that part of the succeeding crop of wheat being eaten by the worm, was ploughed up in the spring, and the ground sown with barley. The wheat that was left proved very indifferent.

It is worthy of remark here, that the crop of tares, and the succeeding crops of oats and wheat, were much stronger where the turf was burnt five inches thick, than where it was only pared about an inch in the common way; and the succeeding crops, by their superiority, have ever since shewn where it was burned of the greatest thickness. In the year 1802 this field was barley, but an indifferent crop; and in 1803, black oats, about three quarters per acre. The land having produced three crops of corn in succession, without any aid from manure, was then completely run out, and fit only for a summer-fallow.

Example III.—Eleven acres of poor land, of about the same value as the last, like that upon a subsoil of chalk, but with a surface rather more loamy, were pared and burnt in the summer of 1777. The land was sown, early in July, with turnips; the crop proved a thick one, but the turnips were very small, owing to the weakness of the turf affording only a small quantity of ashes. The turnips were folded off with sheep, and the land was sown with barley, which produced about three quarters per acre, and sainfoin. This remained in the land ten years, being mown for hay the first four years; after which it was left for a sheep-walk. The first and fourth years, the crops of hay were slight, about half a ton per acre; the second and third about a ton. In the tenth year, the turf, much improved, and thicker than it ever had been, was again pared and burnt. Being full of the seeds of charlock, it was left that summer as a fallow, in
order

order to eradicate that weed ; and the following summer it was early prepared for turnips, of which a good crop, considering the poverty of the land, was obtained : these were folded off with a flock of fattening sheep, which were fed with cut chaff and sainfoin hay, in wooden troughs, in the field. The land was sown with barley and clover-seed early in March : the barley produced three quarters and a half per acre. In the following summer the clover was folded off, and the land sown with wheat, which produced about three quarters per acre. The succeeding summer the land was several times ploughed and folded, upon which, without ploughing, turnip-seed was sown, and the surface afterwards well scuffled with a wheelbarrow-shim, and harrowed and rolled down fine. The turnips proved a thick crop, but were very small, owing to the late sowing and dry weather, together with the natural poverty of the land, which, without the turf-ashes, could not have produced any. Barley was sown very early after the turnips which produced about three quarters per acre. Clover was sown among the barley, which came very well, and grew strong in the autumn ; but from the land having been so lately sown with it before, it died away the following summer, which occasioned a vast quantity of the black grass before-mentioned, so as to over-run the field, from which it was judged not prudent to sow wheat upon it ; it was therefore changed for barley, which yielded a great crop, and in 1798, the field was made a summer-fallow. In 1799, it was sown with barley and sainfoin-seed, without any manure or folding. The barley was a slight crop ; about eighteen bushels only per acre. The sainfoin produced, the two first years, about half a ton per acre : being very weak, it was ploughed up in the autumn of 1802, and sown with tares in the spring, part
of

of which was mown for the plough-teams, part folded in the summer with sheep, and part saved for seed: the whole a good crop for such poor land. In 1804, it is meant for a summer-fallow.

Example IV.—In the summer of 1789, when the last-mentioned eleven acres were burnt a second time, another piece of nine acres adjoining, being an old down or sheep-walk, was pared and burnt, and was cultivated and sown in conjunction with it till the present time. This field is situated between the two pieces in Example I. and Example III. and is similar to them in quality and value. The first crop of turnips in 1790 was very excellent, but full of charlock, which was all taken out with great care. The turnips were folded off, and the land sown early with barley, which produced a crop that was estimated at five quarters per acre. Clover was sown among the barley, which produced well. This was folded in the autumn, and the land sown with wheat, which yielded about three quarters and a half per acre. The next summer it was fallowed, and covered with a rich coat of dung for turnips, which proved a fine crop. These were fed off early, and the land sown with barley, which produced between five and six quarters per acre. Seeds were sown with the barley, which grew well in the autumn, but died away the following summer; on which account, as was related in the last Example, wheat was not sown, but barley substituted for it, which produced about four quarters and a half per acre. Since this, the land has been added to, and managed the same as the last-mentioned eleven acres, with the like success.

Example V.—Eleven acres of similar soil to the last, in a distant part of the same field, but separated by the intervention of a slip of good land, were pared and burnt in the same summer as the last mentioned, 1789, and sown
with

with the same crops, viz. fallow the year it was burnt, and the next year turnips, followed in succession by barley, clover, and wheat; then dunged forty cart-loads per acre for turnips; afterwards sown with barley and clover; and dunged again, forty loads as before, on the lay for wheat; then grey pease instead of barley. The crops before mentioned were generally about the same as in the last Example; frequently worth more than the fee-simple of the land before it was burnt. In 1799 barley followed the pease, and as it was found that red clover would not stand a second time, trefoil and white Dutch clover were sown instead, which produced a tolerable quantity of feed for a flock. The lay was dunged for wheat, which was a good crop. This was succeeded, in 1802, by a tolerable crop of turnips; and in 1803 black oats, about three quarters per acre.

Example VI.—A field of 20 acres was pared and burnt in the summer of 1783, and sown with barley and sainfoin*. The soil, a very poor, dry, loose, chalky mould, very shallow, and worse than those before mentioned, or, indeed, any land of the kind in this neighbourhood. The produce of barley was 66 quarters, and the *profit* on the crop was sufficient to purchase the field at 22 years purchase, the value of estates at that time. The sainfoin was mown three years, and produced good crops each time. It was then left for a sheep-down until the summer of 1793, when, being pretty well covered with turf, chiefly the black grass before-mentioned, it was ploughed with a double plough, from the county of Suffolk, about three inches deep, and the turf was all laid up in heaps, and burnt by labourers, who undertook the work at a guinea per acre. The ashes were spread, and

* See *Annals of Agriculture*, vol. v. page 112.

the land ploughed and sown with turnips, which, owing to the dry weather, totally failed; in the mean time, much charlock, of which the land was very full, was destroyed. Judging that a crop of turnips would be the means of manuring and treading down the loose soil with sheep, the land was left till the following summer, being well ploughed in the spring, and destroying, by that means, the remaining charlock. By another extremely dry season, the turnips again failed, except on some parts of the field that happened to be worked down fine while there was some degree of moisture in the soil. The turnips were fed off early, and the whole field was sown with black oats of the small Devonshire kind. The produce on that part of the field where the turnips were folded off was very great, full seven quarters per acre, and about three quarters per acre on the poorer part where the turnips missed. The average of the whole field, as near as could be ascertained by estimate, was about four quarters per acre. Red and white clover and trefoil were sown amongst the oats: these seeds were folded off with sheep in the following summer, and in the autumn the field was ploughed and sown with wheat, the first time it had ever been seen in this field. This growth of wheat was shewn, in July 1797, to several gentlemen and farmers conversant in agriculture and the value of lands, and it was their unanimous opinion, that if the growing crop and the land producing it were separately put up to public sale, the crop would fetch the most money. This field was again sown, in 1798, in the following manner: when properly prepared by ploughing, &c. the land was struck out in furrows about 18 inches apart, and turf ashes, previously prepared, were strewed out of baskets by children, at 6*d.* per day each, in the furrows, where the seed was drilled. The turnips, by another extremely

tremely dry season, were unfortunately of but little account. The land was then sown with barley (produce about 20 bushels per acre) and seeds, viz. red clover, white clover, and trefoil. The red clover came weak, but the white clover and trefoil succeeded tolerably well. The greater part of the field was then folded for wheat, which produced a tolerable crop, as far as the fold went; but the remainder very indifferent: the average about two quarters per acre. In 1802, as many ashes as could be procured were spread on a part of the field, about five acres, and the whole was sown with turnips and coleseed mixed, which produced a better supply of sheep-food than it had ever done before; but, upon the whole, a poor crop, except where the turf ashes were spread. This crop was folded off with lambs in the winter; and the land was sown with black oats in the spring of 1803. The crop of oats proved to be about five quarters per acre. Sainfoin seed was sown with the oats, which, from the extreme drought, is at present very weak.

Example VII.—Another field of 33 acres, adjoining the last, and separated from it only by a common road, was pared and burnt in three succeeding summers, nearly a third part in each year. The first year after burning, it was sown with turnips, succeeded by barley, clover and wheat. Then a collection of manure, consisting of loam, dung, and turf ashes, in equal quantities, after being well incorporated, were carried out on the land, at the rate of forty two-horse cart-loads per acre. The turf ashes were made from waste banks, and the borders of highways, &c.; the loam dug from a pit in a distant field, and the dung brought from the farm-yard. After spreading the manure on the land, which was previously got into fine tilth by repeated ploughings, turnip seed was sown upon it, and

the seed and manure turned in together, with very shallow furrows, about twelve inches in width. By this means, fine crops of turnips, in proportion to the soil, were raised; and in consequence of their being fed off by sheep lying upon the land night and day, a great crop of barley was obtained. Each division was sown in rotation with sainfoin, which produced two or three good crops of hay, about a ton per acre; and has ever since, from seven to ten years, been fed with sheep. It is at this time most of it a good turf, fit for burning again, and a sheep-walk far superior to what it was before this management. The whole of this field, except a small vale of about an acre, and a narrow belt along one side, was ever considered as the poorest piece of land in this country. It was once offered by my father, who rented the tithery, to a neighbouring farmer, three years free from rent and taxes, on condition that he would cultivate it each year, and let my father have the tithe of the crops: the rejection of that offer is pretty good evidence of the poverty of the soil. The chief part of it is a loose chalky mould, very shallow, on a subsoil of hard chalk rock. In its original state, most of it was so extremely barren, that the surface at many places was entirely bare of any kind of plants, although it had been many years a sheep-walk, being, as I was informed by my father, for it was before my memory, originally sown with rye-grass among grey oats after a summer-fallow, the crop of which, from the greater part of the field, was no more than the seed sown, about five bushels per acre.

The average growth of the crops after paring and burning, as nearly as can be recollected by estimate, was, of barley, three quarters and a half per acre; and wheat, two quarters and six bushels. The produce of one of the pieces of barley was laid by itself, and amounted to four quarters

quarters per acre; and one piece of wheat yielded three quarters per acre.

Example VIII.—A part of a down or sheep-walk, on a chalky soil, very poor, although superior to the last-mentioned, was ploughed shallow in the spring of 1775, immediately cross-ploughed, harrowed well, and the turf collected and burnt in heaps, being dragged together by a rake made for the purpose, with four bars of wood, having iron teeth about ten or eleven inches in length: in the first bar, the teeth were seven inches apart; the second, six; the third, five; and the fourth, or hinder bar, four; so that such pieces of the turf as slipped between the foremost rows of teeth were collected by those that followed. The rows of turf were put up in carts by labourers, and carried together in large heaps of twenty or thirty loads in one, which, when burnt, were carted out, and spread on the field: the amount of ashes was about fifty cart-loads per acre. The land was sown with turnips, which were a thick crop, but small sized. The turnips were folded off, and the land sown with barley and sainfoin-seed: the crop of barley short in the straw, but the grains very full; the produce a little under three quarters per acre. The sainfoin produced an excellent crop of hay three summers, and then was left for a sheep-down, in which state it still remains.

Example IX.—In another parish, three acres, similar in soil to some of the foregoing, were pared and burnt in the spring of 1789, and sown, the end of June, with turnips. The field was full of charlock, which was taken out by hand. The turnips were a good crop, folded off with sheep, and the land sown with barley and seeds. The barley crop was between four and five quarters per acre. The seeds were folded the following autumn, and the land sown with wheat, the produce of which was but

very indifferent, being mildewed. The following spring, 1793, a collection of loam, turf ashes, and dung, in equal parts, after being well incorporated, were carried out on the land, at the rate of forty cart-loads of about twenty bushels each, per acre, and spread on the land for turnips, the seed of which was sown on the manure, and ploughed in very shallow. The turnips proved a good crop; and by similar management to that before described, a crop of black oats, of nearly seven quarters per acre, succeeded, after which, a crop of seeds: these were folded off for wheat, which, in 1796, was a very good crop; and in 1797, the land was again fallowed for coleseed, which, in the autumn, was folded off, and then intended to be left for a crop of seed, but was again eaten off in the spring, since which, no particular memorandums have been kept of this piece. It has, at this time, a good piece of sainfoin on it.

Example X.—Six acres of old rye-grass lay were pared and burnt in 1790. The soil, a loose, dry, poor, chalky mould, very shallow, like several of the preceding. This field having been badly managed by former occupiers when under culture, and known to be full of the seeds of charlock, was fallowed the first summer after burning; and in order the more completely to eradicate that weed, it was continued a fallow until the month of June 1791, and then sown with turnips, after being manured with a thin covering of loam, mixed with a small portion of dung and turf ashes. The turnip-seed was sown upon the manure, and turned in shallow, by which a good crop was obtained. These were folded off by sheep, and the land sown, very early in the ensuing spring, with barley and seeds: the crop of barley was somewhat more than four quarters per acre. The remaining charlock which came among the corn was carefully

fully taken out by hand, and the field afterwards kept perfectly clean from weeds. The clover was eaten off by sheep during the summer, and in the autumn folded, ploughed in, and sown with wheat, which produced upwards of three quarters per acre. The following year the land should have been sown with turnips, to keep its turn in rotation with a suit of fields of which it formed a part; but by a disagreement with the vicar, the tithe of turnips being taken in kind, and carried away from the farm, to the impoverishment of the soil, it was sown with barley, after being manured with twenty-five cart-loads of turf ashes per acre, which were made from waste banks. In order that the field might keep its turn the following year, it was again sown with barley and seeds. Both the crops of barley were good; between three and four quarters per acre. The seeds were eaten off by a flock of sheep, and the land was dunged and sown with wheat, which, in 1798, was an abundant crop: this was succeeded by turnips, barley, and seeds, with similar success; and, in 1802, to make the field class with another adjoining, the system of the farm being altered, the tilth was changed, by sowing upon the clover lay, tares and colesseed at Midsummer, which were folded off in the autumn; and the land, in the spring of 1803, was sown with barley, rye-grass, and seeds.

Example XI.—Twelve acres, part of the same down, old rye-grass lay, had been many years a sheep-walk of little value. In the summer of 1791, the land was ploughed very shallow, and then immediately cross-ploughed. The turf was laid up in heaps, and burnt by a party of soldiers, at a guinea per acre. The ashes thus obtained, amounted to about 160 good cart-loads per acre, which were all spread and ploughed in, in the month of July, and the land worked fine, close after the plough, in

order to encourage the vegetation of charlock, of which it was supposed to be very full. After repeated ploughings, it was sown with turnips in July of the following year, when a good crop was obtained; and these were folded off in the winter, and the land, in the month of February 1793, was sown with barley, clover, and trefoil. The barley was kept clean from charlock by hand-weeding, and produced 44 quarters and 5 bushels. The seeds were folded off in the summer following; and in autumn, the land was sown with wheat, which proved a very fine crop, full three quarters per acre. The following spring it was folded, and sown with turnips, which were again folded off early in the winter; and in the end of February, the land was again sown with barley, which was laid by itself, and amounted to 57 quarters and 2 bushels; nearly five quarters per acre. Red and white clover and trefoil seeds were sown among the barley, which were again folded off for wheat in 1799. This crop was also a good one for such land, but inferior to the former. In 1800, turnips were again sown, with a thin sprinkling of turf ashes made from the borders of an old road: these, from an untoward summer, were very small; they were succeeded by a fine crop of barley as before; when, to bring this field into course with another adjoining, to lay the whole down for a sheep-walk, barley was repeated, with rye-grass and seeds.

Example XII.—Ten acres of rye-grass which had lain only six years, were ploughed very shallow in the spring of 1796; cross-ploughed when dry, and the turf laid up in heaps two rods apart each way, and burnt by labourers for a guinea per acre. The first part, during dry weather, was well burnt, and produced about sixty cart-loads per acre: the remainder, about one half of the field, being caught in a rainy season, was very indifferently burnt,

burnt, so as not to produce more than about twenty loads of ashes per acre. A part of this turf was rotted, and ploughed in with the ashes as manure. The whole was sown with turnips or coleseed. That part of the field which was most burnt, produced by far the best turnips. The whole piece was covered with sheep to eat them; and afterwards was ploughed and sown with white oats, rye-grass and hay-seeds. The oats were to appearance more than double the crop where the turf was most burnt, and the grass-seed the most luxuriant there, which is one proof at least, that rotting the turf for manure is not so advantageous as burning it.

This field remained a sheep-walk till the spring of 1802, when part of it was pared and burnt again, and the remainder finished in the summer of 1803, at the expense of two guineas and a half per acre: the whole has now a tolerably good crop of turnips upon it.

RECAPITULATION OF EXPERIMENTS.

	<i>Acres.</i>
<i>Example</i> I. Three acres thrice burnt	9
———— II. Seven acres thrice burnt, and three once	24
———— III. Eleven acres twice	22
———— IV. Nine acres once	9
———— V. Eleven acres once	11
———— VI. Twenty-two acres twice	44
———— VII. Thirty-three acres once	33
———— VIII. Four acres once	4
———— IX. Three acres once	3
———— X. Six acres once	6
———— XI. Twelve acres once	12
———— XII. Ten acres twice	20
To which may be added several other pieces, con- } taining together	70
<hr/>	
Total number of acres burnt	267
T 4	Add

Add to which, several thousand cart-loads of turf ashes, made from waste banks, old roads, &c. &c.

Mr. YOUNG, in the *Annals of Agriculture**, observes, that “ six miles from Barnstaple, they pare and burn at “ 8s. an acre, and lime 80 bushels at 7d. and then *rafter*† “ for wheat.

“ 2. Barley,

“ 3. Barley,

“ 4. Clover for three years,

“ 5. Wheat,

“ 6. Barley,

“ 7. Barley and grasses, from six to ten years; and “ then pare and burn again : the paring is about an inch “ deep.”

“ Mr. EXETER‡, on paring and burning, made an ex- “ periment which is remarkable. Twelve years ago, he “ broke up a grass field; paring and burning one half, “ and fallowing the other, by giving three ploughings, “ and half a dozen harrowings. The land of equal good- “ ness. The whole was sown with wheat. The pared “ and burnt part produced 35 bushels an acre, the latter “ 17 : the former was a clean crop; the latter had much “ couch. The next year the whole was under winter “ vetches, which, on the burnt land, were, in the spring, “ fourteen inches long; while, on the other part, they “ were only six inches long. They were eaten by “ sheep; and the next growth was twelve inches long on “ the burnt half, and four on the fallowed. A third “ growth, with an equal difference, was eaten. The land “ then was broke for turnips, the whole being dunged.

* No. 169, p. 80.

† Provincial term for half ploughing, in this county called balking.

‡ *Annals of Agriculture*, No. 169, p. 83.

“ The burnt side was clear from fly in three weeks, the
 “ other was not equal; but at Christmas the crop was
 “ not materially different: they were carted off. Barley
 “ succeeded, which was considerably better on the burnt
 “ than on the fallowed side. Clover was sown with it;
 “ and being all fed, the burnt side was closer eaten than
 “ the other, as if preferred by the sheep on account of its
 “ superior sweetness. The field then was left to run to
 “ grass, and it is now very good, but so much better on
 “ the burnt half (being perfectly free from moss, a cir-
 “ cumstance by some objected to burnt land), as to be
 “ fairly worth 5*s.* an acre higher rent.

“ This experiment is a remarkable one, and very
 “ decisive; for being made on good land, strong
 “ enough for wheat, and dry enough for turnips, it
 “ shews the excellence of the husbandry on land upon
 “ which it was not so necessary as on various other soils:
 “ the result being so uniform in every step of the pro-
 “ gress, and finishing in good grass coming, renders it,
 “ upon the whole, decisive. Mr. EXTER informed me,
 “ that he would pare and burn the richest soils, in pre-
 “ ference to any other way of breaking them up.”

Mr. MARSHALL, in his Rural Economy of West De-
 vonshire, says, “ from what I have seen, in this coun-
 try, of the effects of sod burning, I am more and
 “ more convinced that, in many cases, and under dis-
 crete management, it forms a valuable part of British
 “ husbandry; and may become an instrument of real
 “ improvement in places where it is not at present known,
 “ especially in bringing the *waste lands* of the Island into
 “ a proper course of cultivation.”

These remarks, by persons of such high repute, coin-
 ciding so perfectly with the experiments before related,
 would seem to render all further discussion, with respect
 to

to the advantages of paring and burning, unnecessary; but I will not rest upon these grounds, without examining what has been said by others, of the disadvantages of this practice; and I think it will be in my power, under the next Section, to obviate, and set in a new light, the arguments and facts advanced on the other side of the question.

SECT. V.—SUPPOSED DISADVANTAGES.

MR. KENT, in the Norfolk Report, has himself contested this subject with much vigour; and having there also collected together most of the objections raised by others to the practice, I shall confine myself to what is to be met with in that publication.

After pointing out some reprehensible practices in husbandry, he concludes by saying, “I have taken the liberty to point out these practices, as discreditable to this county; but I do not know of any other which are very reprehensible, excepting one, which is prevalent in some other counties, and has a very hurtful tendency: I mean that of burn-baking, upon which, I trust, I shall not be considered as going much out of my way, if I express my sentiments upon it with freedom in this place. I will frankly avow, I do it with the double view of preventing its introduction here, and checking its progress elsewhere*.” Before attempting to prevent its introduction into Norfolk, or checking its progress elsewhere, Mr. KENT surely should have shewn, by *experiment*, that it was every where an in-

* Norfolk Report, p. 183.

jurious practice. He then goes on : “ for though the
“ crops obtained from it are such as to produce a tempo-
“ rary advantage to the occupier, it is a mortgage with-
“ out redemption upon the fee-simple of the land, by re-
“ ducing the staple, and depriving the soil of its natural
“ grasses.”

This is easily said, but not so easily proved ; on the contrary, *experiment* has proved repeatedly, that the reducing the staple of the land is only an imaginary evil ; that when pared and burnt land has been a few years in cultivation, artificial grasses, of various sorts, are raised, affording a much more abundant and valuable article of produce and fodder than the natural grasses, which, on lands that are usually pared and burnt, are mostly of the worst kinds.

Mr. KENT further observes, that “ the better way is
“ to scale-plough the surface, and afterwards bury the
“ roots, and give them time to rot ; and land thus used
“ is generally very fertile and kind.” If a good summer-fallow is made, and all seedling weeds totally eradicated, land certainly becomes more fertile and kind ; but it will be much more so, if the surface turf, with all the natural grasses and weeds, is burnt for manure, as has been proved in many instances. Turnips upon poor lands can never be obtained without turf ashes or rich dung. He next observes, that “ burn-baking is, in my opinion,
“ a very pernicious practice, and, I trust, will soon be
“ exploded. If it is any where to be allowed, it is upon
“ the coarse fenny parts of Lincolnshire—upon a shallow
“ soil it is insufferable, because it tends to lessen the
“ depth of the soil.” These are mistaken ideas of Mr. KENT’s, arising, evidently, from a want of practical knowledge. Experiment has proved to us, in a number of instances, that the shallowest soils are the most im-
proved

proved by this process, as may be seen from the Examples related in the last Section. The surface soil on most of the fields, before paring, was not more than four or five inches in depth ; but from incorporating the ashes with it, and improving its quality, it enables us to break up the subsoil something deeper, by which we obtain an additional thickness of mould ; and this, from the decay of leaves, roots, &c. which an increased vegetation of course affords in greater abundance, is progressively accumulating.

But Mr. KENT adds, “ besides weakening the soil, it
 “ unquestionably destroys all seeds of the best grasses
 “ which Nature has deposited in the surface of the earth,
 “ which is very obvious, from this land being less favour-
 “ able to grass for a series of years after it is burnt, than
 “ before.”

The seeds of the best sorts of grasses, as well as the worst, and seeds of weeds, which Nature has deposited in the surface of the earth, are all great nuisances to cultivation, and the total destruction of them by fire is what every good farmer ought to aim at. It would seem, from this observation, that Mr. KENT is not aware that any *good* old grass land, once broken up and laid down again, is less favourable to grass than before, whether burnt or not. Pastures newly laid down, after the first year or two, are never so productive of grass as old meadows, other circumstances being the same ; the burning the surface, therefore, is not the cause. He then adds : “ this
 “ pernicious practice must have had its rise from laziness,
 “ being an easier way to get rid of a coarse rough swarth
 “ by this means, than by such modes of culture as would
 “ have for their object the reducing it to a rotten state ;
 “ it must therefore be expected, that all temporary occu-
 “ piers will continue advocates for it ; but it is presumed,
 “ that

“ that all owners of estates, looking forward to a more permanent interest, will do all in their power to discourage it.” It is the severest of all husbandry labour, and therefore could not have its rise in laziness, as Mr. KENT states; and it is permanent occupiers and proprietors who must receive the greatest benefit by it, if followed by good husbandry; because, by such management, poor lands are doubled, and often trebled, in their annual value. As to temporary occupiers, there ought to be no such persons in the kingdom, for it is certainly much against the interest of proprietors of estates, and the public, that there should be such.

Mr. KENT, after thus exclaiming against this practice, without a single experimental fact to corroborate his theory, proceeds to quote what has been said by seven surveyors of other counties, who condemn it; but omits what has been said in favour of the practice by practical farmers; from which nothing is proved but his own prejudices, and a due want of knowledge of the subject.

He observes: “ Upon perusal of the Agricultural Reports lately published, I was much pleased to find this practice condemned by a very considerable majority of the Reporters. Mr. DAVIS observes, that it is a maxim often quoted in Wilts, that however good the husbandry may be for fathers, it is ruin to sons.”

Mr. DAVIS's Report of Wiltshire is certainly, on the whole, a most excellent work; but, in this quotation, little more appears, than that a maxim has been formed in Wiltshire which does not apply to the subject in Kent; where we, in this instance, think, and act differently, and even venture to presume that the Wiltshire farmers have not adopted a proper management of land after burning. Perhaps too, in many instances, they have had no lease; in which case it has been their interest to
crop

crop on without a thought about exhausting the soil, or of any thing else but their own present advantage. Estates in the hands of tenants at will, are always exposed to great depredations, and none more so than such poor lands as are usually pared and burnt.

Next, Mr. Fox, for Monmouthshire, is quoted, who says, "that where the soil is thin, it is injurious; that it may give a crop for a year or two, but after, will give very little produce but that of hungry weeds." Another assertion of the same kind, without proof or argument; for the soil that has fertility enough to produce *hungry weeds*, will always produce good corn and seeds, if the weeds are first destroyed, and the land properly cultivated. What we learn from this is, that the Monmouthshire farmers get a crop or two after paring and burning, and then little else but hungry weeds. Hence it is evident, that they suffer the weeds among their crops of corn to perfect their seeds, and get full possession of the soil, and little else can grow, the weeds exhausting the fertilizing powers of the turf ashes as much, and probably more, than the corn. If such be the management, it is no wonder that the land becomes poor and barren. I have before said, that the mischief to pared and burnt soils, arises from bad cultivation, and not from the process; and this is more a proof of it than of the burning being injurious.

The next authors quoted by Mr. KENT are, Mr. STONE, for Lincolnshire, Mr. LOWE and Mr. CULVERT, for Nottinghamshire. The one says, "that where the practice has prevailed, evident marks remain of the injury the land has sustained by it." The other, "that lands in Norwell lordship have been entirely spoiled by it; that, in many instances, a barrenness has been known to ensue, which a long series of years has not been

“ been sufficient to remedy.” These severe observations are assertions without proof, and can only be considered as so many instances of bad cultivation, and of attributing effects to wrong causes.

In all these remarks, there is not a word mentioned of the crops of turnips folded off the land by sheep—of crops of clover fed, and the land manured with its own produce—no account of weeding the barley or wheat—of drilling—of horse or hand-hoeing, &c. &c. &c. Gentlemen who decide so peremptorily on the subject, should surely say something of these matters, that the stress of blame may lie (as they wish) on the act of burning, and not, as it will now do, on the faulty management.

Mr. KENT next gives a quotation from Mr. HOLT, for Lancashire: “ That it has been too much practised, and “ its destructive effects are but too apparent upon many “ farms where it has been frequently repeated.” Mr. KENT should not have stopped here, but have communicated what follows, viz. that “ great crops may have been “ procured by this means for a few years, but the soil in “ the end is destroyed. Upon strong bent, heath, fungous moss, matted rushes, or turfy peat lands, the “ practice may be good, and if only repeated till those “ bodies are destroyed, is attended with success.” Here then, by one of the authors quoted by Mr. KENT to condemn paring and burning, it is acknowledged that the fertility of the turf ashes has been such as to procure great crops; but “ the soil in the end is destroyed.” By what? Not by the burning, because that occasioned great fertility. It follows, of course, then, that the fertility of the land is exhausted by the *great crops*, which ever did and ever will exhaust the fertility of every soil, whether burned or not.

In truth, it appears to me, that the whole of what Mr.

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KENT has advanced on the subject, either of his own or from others, in place of condemning this process, as he intended, tends to establish what has been before often observed in this Work, that it is not the burning that is injurious, but most certainly the *covetous and slovenly culture of the land* afterwards.

I mean not to finish this Section without due notice of what is said of paring and burning by Mr. TUKE and Mr. VANCOUVER, as there is more of experiment in what they advance than in what has dropped from the pens of the preceding gentlemen. The former seems to prove that burning and cropping was injurious on a particular field of old grass land. The experiment was made, he says, "between one part of a field of old grass land
"broke up in a proper manner with a plough, and another part burn-baked; the result of which was,
"that the crops upon the pared and burnt land, after the
"first two or three years, kept gradually growing worse;
"and, upon the ploughed part, the crops, for some
"years, grew better, and afterwards were visibly superior to the pared and burnt land." This circumstance seems to be easily accounted for, from the fertilizing quality of the turf ashes, which forced such extraordinary crops the first two or three years, as to render that part of the field more exhausted than the other, till replenished with manure, either of dung or of the sheep-fold, which probably would have restored its fertility and superiority to the unburnt part. But in this case we are not informed whether the soil was chalk, sand, gravel, or clay; or whether wet or dry land; or how the land was managed, or what its crops. Perhaps, upon a strict inquiry, it may be found that the soil was a cold wet clay, which of all soils is considered the least favourable for burning; or perhaps the part broken up by
the

the plough was manured, while the burnt part was not : if so, it was not a fair trial, because the extra manure gave that part the superiority. In short, accounts of such experiments, without relating the culture, manure, rotation, and produce of crops, are obviously unsatisfactory, and much more calculated to deceive than to inform.

Mr. VANCOUVER observes, “ that where, in Ireland, “ paring and burning the thin high lands have been “ fortunately practised, extensive and naturally fruitful “ tracts have been reduced to the lowest and most ex- “ hausted state of barrenness and poverty ; and as the “ like effects must on a certainty, under similar circum- “ stances, follow the same practice in this kingdom, it is “ not easy to comprehend the reasoning of those per- “ sons, whose judgment leads to the general recommen- “ dation of so pernicious a system.” Here we are not told that it is the burning *only* that has reduced these fruitful tracts to poverty ; it then may have been the exhausting crops of corn and weeds that have done it in Ireland. But suppose it be admitted that the burning those *fruitful tracts* in Ireland has made them *unfruitful* ; surely that is no reason why we should not burn *unfruitful tracts* in England, to make them *fruitful*. There may be many situations in England, where paring and burning may be recommended on fruitful lands ; but it is not those lands on which we recommend the practice.

Mr. KENT then goes on : “ After such a chain of re- “ prehension from so many respectable sound Agricultu- “ rists*, I was not a little surprized at Mr. ARTHUR “ YOUNG’s coming forward, in the Hampshire Appen-

* Quere—Are these Agriculturists practical farmers ?

“dix, not only with a sanguine recommendation of this reprobated system, but with a sort of censure upon such of the Reporters as are of a different opinion.” Mr. YOUNG’s observations are perhaps more extensive than those of any other person that ever existed; and he is therefore justified in censuring any person who condemns a valuable practice without an experimental knowledge of the subject.

Mr. KENT further argues, that “reducing the quantity of down, must reduce the number of sheep, and consequently lessen the value of the old tillage, by robbing it of the fold, which is its best support; so that two certain advantages are sacrificed for one, and that perhaps not permanent.” Thus it is evident, that this gentleman is wholly mistaken in his ideas of this business; for my experience has taught me, that lessening the quantity of down increases the number of sheep, and enlarges the fold; from which certain and permanent advantages are gained, both to individuals and the public: and, as a proof of it, I have within the last 32 years reduced the quantity of down full one-half on the farms in my occupation, chiefly by paring and burning, and in consequence of it keep invariably nearly double the number of sheep which were before kept on the same farms. This is a notorious fact to all the neighbourhood, and therefore cannot be controverted.

From the great respectability of Mr. KENT’s character as an Author, and an Estate Agent, I have felt it the more necessary to scrutinize what he has written against this process, in order that a check might not be put, as he desires, to what, from extensive experience, I know to be so great an agricultural improvement. And having only the general prosperity of the kingdom in view, I

trust

trust I shall stand excused by him for the liberty I have taken with the Norfolk Report.

Throughout the whole of these observations on paring and burning, it must be remembered, that I have only advised it on poor lands, such as produce but a small quantity of poor herbage, or are over-run with wild productions of very little value : to burn good lands, covered with fine turf producing good crops of grass, is what I by no means recommend, although, in some cases, it may be advisable. Fine old meadows, and old fertile down lands producing good grass, are treasures procurable only by time, and when once broken up, are not brought to their original goodness, perhaps, for ages ; and therefore the paring and burning such may be attended with great disadvantages.

The only cases that can justify the breaking up *such* lands are, where the occupier has not a sufficient proportion of arable land to his grass ; or situations in the vicinity of great towns ; or where plenty of manure can be had, so that the land may be made more profitable in arable than in grass.

A certain proportion of grass land is very necessary for the health of a flock of sheep, when feeding on turnips in winter, or clover in summer : these vegetables, of themselves, are very indigestible in the stomachs of sheep, and a change of food, from turnips or clover to grass, promotes digestion, and renders the sheep healthy. Many instances have been known, of sheep dying in great numbers, from having eaten such succulent food in too great a proportion ; and for this reason, the total destruction of all the grass land upon a farm may be attended with great disadvantages.

Of the three principal soils, viz. calcareous, siliceous, and argillaceous, I have always found the last least,

and the first most improved by burning; but I never knew a single instance of the burning any sort of soil, without having the effect of increasing its fertility in a greater or less degree; I therefore conceive that I am fully justified in pronouncing, that no injury can arise to any soil whatever from being burnt, if properly managed afterwards.

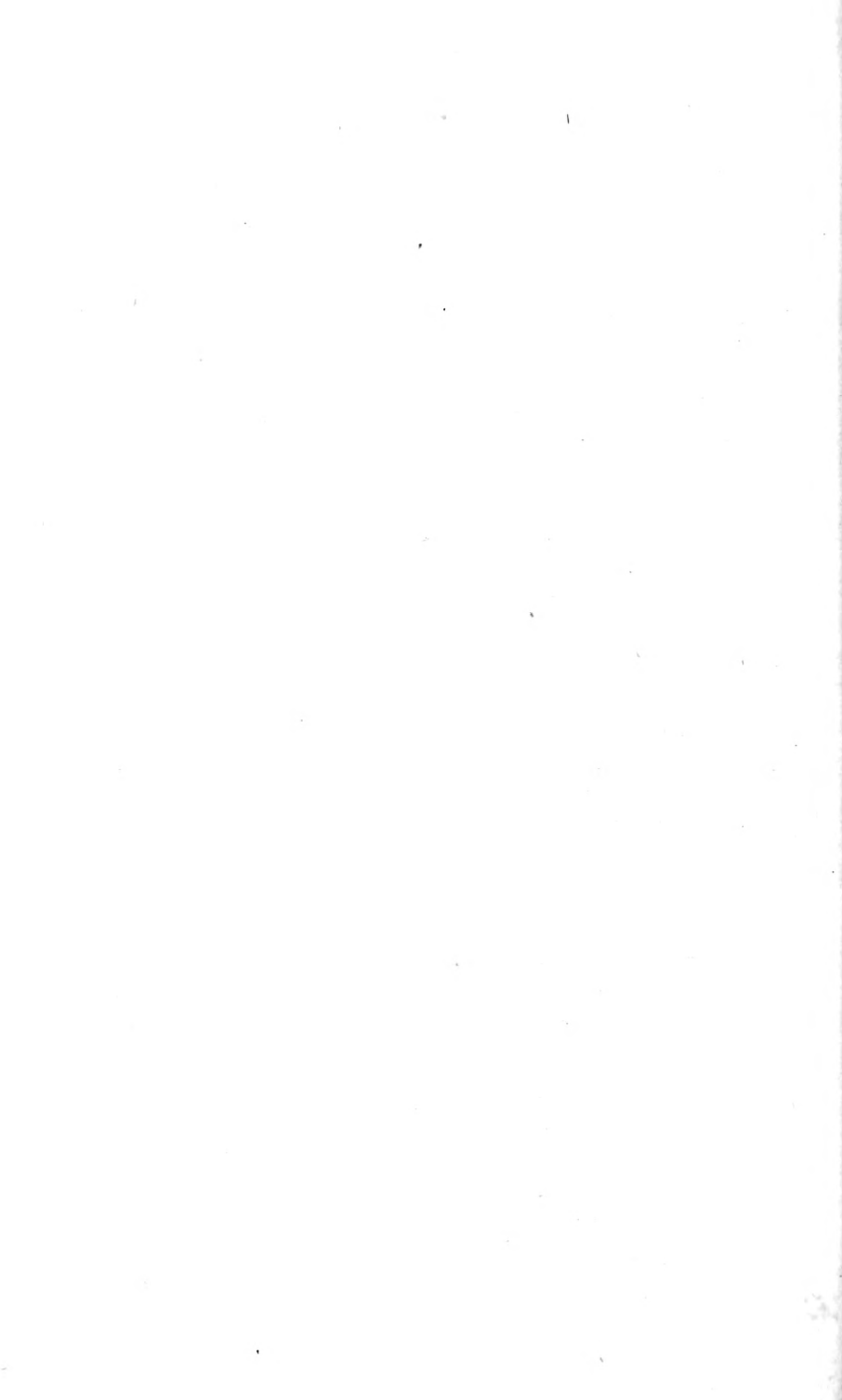
Many farmers, when they have been at the expense of paring and burning a piece of poor land, perhaps to twenty times its annual value, have not patience to bring it, by slow degrees, to bear a crop of wheat, but sow that grain the first year, by which the fertilizing powers of the turf ashes are considerably exhausted, and the more so in proportion to the quantity of weeds growing among it; and if but a small proportion of weeds is suffered to grow, and shed their seeds among the wheat, and the land the following year is sown with barley or oats, which is too often the case, the weeds get full possession of the soil, and, with the growing corn, entirely exhaust its fertility. To finish it completely, another attempt is often made, with disappointment, for a crop of oats, and rye-grass is sown with it, which, in a year or two, is worn out, and the land then, undoubtedly, is left much worse than before it was burnt. This, by those unacquainted with the practice, is said to be ruined by paring and burning, when, in fact, it is by the improper management only.

CONCLUSION.

I CANNOT conclude this subject better, than by again enforcing the necessity of clean husbandry under the turnip system ; without it, the great advantages to be derived from paring and burning can never be brought into full effect.

Most poor downs, heaths, &c. when put into a state of culture, produce weeds of such sorts as are natural to the soil and climate ; chalky soils produce charlock ; sandy soils, the wild *chrysanthemum*, or corn marigold, and poppy, &c. &c. : these weeds must be destroyed in the first instance ; for if they are once suffered to come to maturity among the corn, the land is so filled with their seeds, that it becomes almost an impossibility to eradicate them from the ensuing crops of corn. The only method to prevent such mischief is, by summer-fallows, with repeated ploughings, harrowing close after them, to cause every grain of seed, if possible, to vegetate before any crop is sown ; the weeds then being extirpated, turnips should be sown, followed by corn and seeds, still with constant attention to keep the weeds under. By such management, there is hardly any land, however poor, but may be made productive and profitable ; and to the want of these precautions arise the only DISADVANTAGES that ever did, or ever can proceed from paring and burning proper soils.

THE END.



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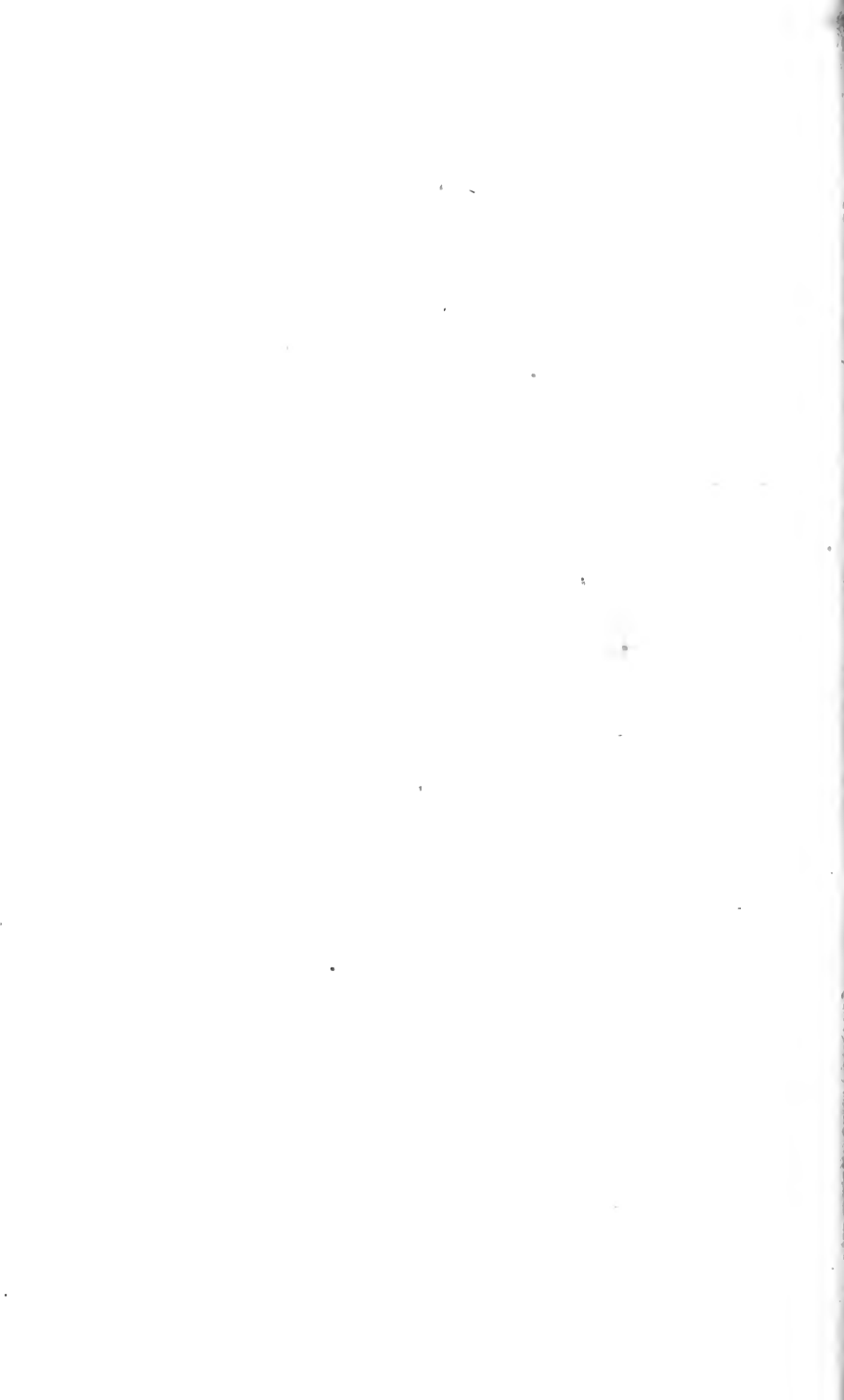
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