

J. Ford Sc.

HILLSBOROUGH CHURCH.

STATISTICAL SURVEY
OF THE
COUNTY OF DOWN,

WITH
OBSERVATIONS
ON
THE MEANS OF IMPROVEMENT;

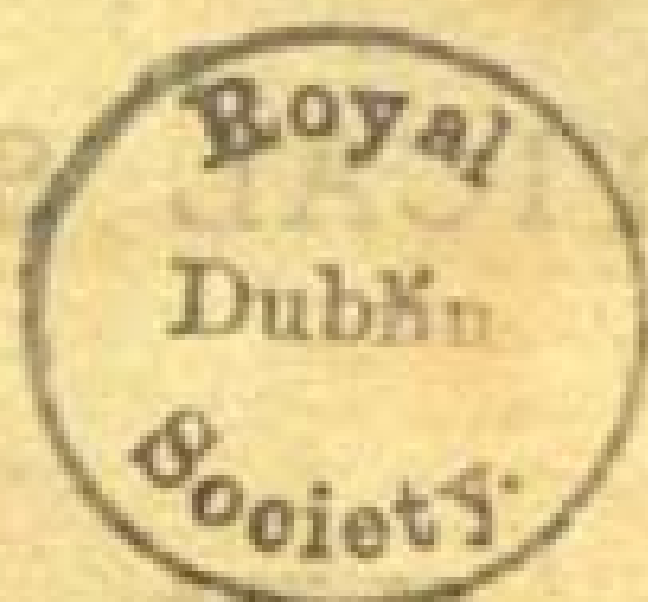
DRAWN UP FOR THE CONSIDERATION, AND BY ORDER
OF
The Dublin Society,

BY
THE REV. JOHN DUBOURDIEU,
RECTOR OF ANNAHILT.

Dublin

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TO THE READER.

This REPORT is at present printed and circulated for the purpose merely of procuring further information, respecting the state and husbandry of this district, and of enabling every one interested in the welfare of this country, to examine it fully, and contribute his mite to its improvement.

The Society do not deem themselves pledged to any opinion given by the Author of this Survey; and they desire, that nothing contained in it be considered as their sentiments; they have only published it, as the report of the gentleman, whose name is affixed, and they publish it, for the comments and observations of all persons, which they entreat to be given freely, and without reserve.

It is therefore requested, that the observations on reading this work may be returned to the Dublin Society, as soon as may be convenient, and which will meet with the fullest attention in a future edition.



PRELIMINARY OBSERVATIONS.

SO many circumstances have conspired to impress the necessity of an increased attention to agriculture, the pursuit is now become so fashionable, and so much has already been written in recommendation of rural economy (*de re Rustica*), that any additional argument in favour of this subject seems to be superfluous.

I shall therefore only observe, that, if those gentlemen and farmers, inhabitants of this county, into whose hands this Report may fall, should find in it only what is familiar to them, they will have the goodness to attribute that to the nature of the undertaking, and to consider it as a proof of its fidelity; and should they find it deficient, they will attribute that deficiency to the difficulty of obtaining accurate information upon so great

a variety of points, and not to any want of diligence in the reporter. If the readers, who are not of this county, should be disappointed in their ideas of variety of information on rural subjects, from a country so populous and so rich as the county of Down, that they must attribute to the mode of occupation, the farms being generally small, and, in most instances, held as merely subservient to the manufacture of the county. At the same time I must observe, there are many persons, gentlemen and farmers, who are bright examples, both of attention and skill, in every branch of rural economy.

SUGGESTIONS OF ENQUIRY

FOR GENTLEMEN WHO SHALL UNDERTAKE THE FORMING OF

AGRICULTURAL SURVEYS.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

Situation and Extent,
Divisions,
Climate,
Soil and Surface,
Minerals,
Water.

AGRICULTURE.

Mode of culture,
Extent of it, and of each species of grain sowed,
Course of crops,
Use of oxen—how harnessed,
Nature and use of implements of husbandry,
Markets for grain,
Use of green food in winter.

PASTURE.

Nature of it.
Breed of cattle—how far improved,
—————how far capable of further improvement,
Markets or Fairs for them,

General

General prices,
 Modes of feeding—how far housed in winter,
 Natural grasses,
 Artificial grasses,
 Mode of hay-making,
 Dairies, their produce,
 Prices of hides, tallow, wool, and quantity sold.

FARMS.

Their size,
 Farm houses and offices,
 Mode of repairing them, whether by landlord or tenant,
 Nature of tenures,
 General state of leases,
 ——— of particular clauses therein,
 Taxes or Cesses paid by tenants,
 Proportion of working horses or bullocks, to the size of farms,
 General size of fields, or enclosures,
 Nature of fences,
 Mode of hedge-rows, and keeping hedges,
 Mode of draining,
 Nature of manures.

GENERAL SUBJECTS.

Population,
 Number and size of villages and towns,
 Habitation, fuel, food and cloathing of the lower rank—their
 general cost,
 Price of wages, labour and provisions,
 State of tithe, its general amount on each article—what arti-
 cles are exempt, and what charged by modus,
 Use of beer and spirits—whether either or which is increasing,
 State of roads, bridges, &c.
 ——— of navigations and navigable rivers,
 ——— of fisheries,

- State of education, schools, and charitable institutions,
 - of absentee and resident proprietors,
 - of circulation of money or paper,
 - of farming or agricultural societies,
 - of manufactures, whether increasing,
 - of encouragement to them, and the peculiar aptness of the situation for their extension,
 - of mills of every kind,
 - of plantations and planting,
 - of the effects of the encouragement heretofore given to them by the Society, particularised in the list annexed.
 - of any improvements which may occur, for future encouragement, and particularly for the preservation of the trees, when planted,
 - of nurseries within the county and extent of sales.
- Price of timber and state of it, in the county,
- Quantity of bog and waste ground,
- Possibility and means of improving it,
- Obstacles to it and best means of removing them,
- Habits of industry, or want of industry among the people,
- The use of the English language, whether general, or how far increasing.
- Account of towers, castles, monasteries, ancient buildings, or places remarkable for any historical event,
- Churches—resident clergy, glebes and glebe houses,
- Whether the county has been actually surveyed, when and whether the survey is published.
- Weights and measures, liquid or dry—in what instances are weights assigned for measures—or *vice versâ*.
- The weight or measure, by which grain, flour, potatoes, butter, &c. are sold.

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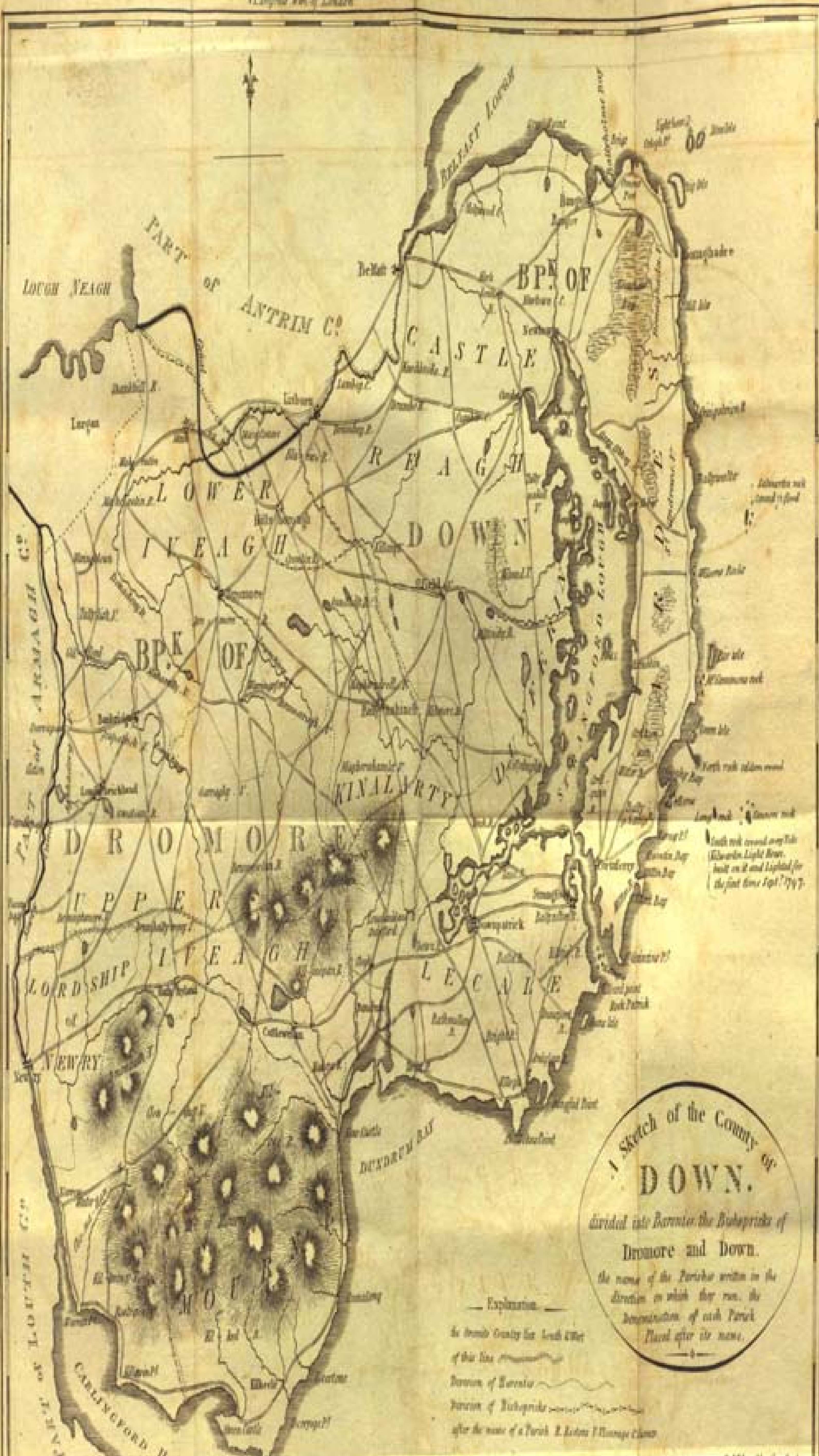
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STATISTICAL SURVEY
OF THE
COUNTRY OF DOW.

CHAP. I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I. *Situation and Extent.*

THIS county is bounded on the east and south by St. George's Channel, on the west by the county of Armagh, and a small part of Louth, from which it is separated by the river of Newry, on the north by Carrickfergus bay, the county of Antrim, and a part of Lough Neagh, which it scarcely touches. Its greatest length, from Point Cranfield in the south, to Gray Point, its most northerly extremity, is nearly forty Irish miles ; but from Lisburn bridge in the west, to Dundrum in the east, it is not more than sixteen. The fifty-fourth degree of north latitude passes close to Point Cranfield, and the sixth degree of west longi-

tude a little to the west of Hillsborough. It contains by estimation 344,658 Irish, or 558,289 English acres.

SECT. 2. *Divisions Civil and Ecclesiastical.*

The civil division of the county is into the following baronies :

Ardes, containing about 30,000 acres, and the towns of Newtown, Bangor, Donaghadee, Portaferry.

Castlereagh, about 62,560 acres, and the towns of Cumber, Saintfield, and Hollywood.

Dufferin, 9,280 acres, and the town of Killileagh.

Upper Iveagh, 66,049 acres, and the towns of Loughbrickland, Rathfryland, Castlewellan, Rostrevor, Banbridge, Scarva, &c.

Lower Iveagh, 56,800 acres, contains the towns of Hillsborough, Dromore, Moira, Magheralin, Waring's-town, and Gilford.

Kinalarty, 26,180 acres, contains the towns of Ballynahinch, Clogh, and Seaford.

Lecale, 32,100 acres, contains Downpatrick, the county town, Strangford, Killough, Arglash, and Dundrum.

Mourne, 30,000 acres, and the town of Kilkeale.

And the *Lordship of Newry*, 9,500 acres, with the noted town of that name.

The sum of these makes 322,469 acres, Irish measure, which taken from 344,658, the contents of the
county

county at large, leaves 22,489 for the different bays, lakes, &c.

It is generally supposed, that the county of Down was reduced into shire ground in the reign of Queen Elizabeth, and at the same period divided into baronies. It is probable also, that the different proportions, which each barony pays towards every 100*l.* to be levied off the county at large, were settled at the same time. The proportions are as follow; and, when compared with the number of acres as stated above, may give some idea of the comparative cultivation at the time of making this regulation.

	£.	s.	d.
Ardes, - - - -	14	17	1
Castlereagh, - - -	16	5	0
Dufferin and Kinalarty, -	11	17	11
Upper Iveagh, - - -	15	0	0
Lower Iveagh, - - -	18	3	9
Lecale, - - - -	14	15	0
Newry with Mourne, -	9	1	3
Total, -	£.100	0	0

It is worthy of remark, that according to this assessment Lecale pays within thirty shillings of the sum paid by Castlereagh, although the former has not much more than half the contents of the latter, and in proportion as much unprofitable land; whilst a considerable part of Castlereagh is in quality equal to

the best parts of the county. This difference must have arisen from the more early settlement and consequent cultivation of Lecale. Its situation, difficult of access, when once possessed by the English, must have given a degree of security to the persons and properties of the inhabitants, which they seem to have enjoyed sooner than the rest of the county, it having been finally settled about the middle of the sixteenth century; but long before that time, in the beginning of the twelfth century, a number of English gentlemen under Sir John de Courcy were planted there. Another circumstance must have contributed to give this barony a superiority over the rest of the county at a very early period; great part of it was portioned out in the different monastic establishments, which were certainly attended with this benefit, a more improved cultivation, not only from the superior knowledge of the ecclesiastics, but from their mode of life, which was in general exempted from the interruptions, to which other proprietors were subject; and those, who lived under them, were better protected by the prevailing religious tenets of those times. To say that the ecclesiastics possessed more knowledge at that time than the rest of mankind, is not saying too much for them.

The ecclesiastical division is into the two bishoprics of Dromore and Down; the first occupies the western part of the county, and contains in it twenty-one
parishes;

parishes; the second, to the east, contains forty-two. The boundaries of each diocese, with the situation and denomination of the parishes, may be seen by inspecting the annexed map.

SECT. 3. *Climate.*

THE climate of this county resembles the rest of Ireland in its variability; but, in general, it is not subject to extremes. It seldom experiences a long continuance of dry weather in the summer months, or of frosty weather in winter; and Christmas often finds the fields still cloathed in green. Our two severest months are commonly the two first of the year, and sometimes the third is nearly consumed, before it can be said that the rigour of winter is past. In spring the prevailing winds are from the east, and, at that period, generally bring fair weather with them, and prepare the ground for seed; nor do they entirely give way to the genial breezes from the south and west, until May is far advanced. Dry weather does not seem to be attached to any particular point of the compass; some of our longest droughts have been with southerly winds; and, although the western are the most violent, and most impregnated with moisture, yet very strong gales, and heavy falls of rain, from the beginning of December until February is past, come from the south-east:

east: these gales are often preceded by slight frosts, which quickly thawing, and ascending early, are the forerunners of tremendous storms of wind and rain from that quarter. In justice to our climate I must not omit the month of October, which, after the subsiding of the equinoctial gales, offers some weeks of clear and mild weather, which, probably, we prize the more, from the dread of approaching winter; and, although the north winds are the least prevalent, yet, after this month, at the breaking up of the weather, some days, very tempestuous, are usual from that point; from which, likewise, proceed heavy falls of snow, and the most lasting frosts. The influence of the sea air is very strongly felt upon the coasts, where the frost is neither so hard, nor of so long continuance, as in the inland parts, where the ground is sometimes so hard as to prevent the plough from going, whilst in Lecale, and other maritime districts, it is sufficiently open, to permit every agricultural operation to be carried on. Fogs are not frequent, except in the vicinity of the mountains, which, in general lying on the coast, are so well ventilated, that little inconvenience, and scarcely any damage, is experienced from them. Upon the whole, the climate of this county is amongst the most wholesome. From the shape of the grounds, the water runs off after every fall of rain with quickness, and seldom stagnates in any considerable quantity; and the soil, in most parts, not being retentive, and having

an understratum of rock or gravel, the moisture evaporates speedily. Instances, and those not a few, might be produced of its salubrity, from the longevity of many of its natives, to which the hitherto constant supply of fuel from the numerous, though not extensive turf-bogs, with which the country is strewed, must greatly contribute. But, notwithstanding what has been said of the general wholesomeness of this climate, the observation of a celebrated Irish physician seems to be founded in fact, that a long course of dry weather in summer, or of frosts in winter, are productive of disorders. After a continuance of such weather, low fevers are more common, than in the usual moist state of the air, to which the constitutions of the inhabitants seem habituated, and to whose health a certain portion, probably, is necessary. With respect to the fruits of the earth, extremes, either of wet or dry weather, seem to be unfavourable, as the years of 1799 and 1800 were equally unproductive; the crops of both years not equalling that of 1801, which seems to have enjoyed that happy medium of wet and dry, so favourable to vegetation,

SECT. 4. *Soil and Surface.*

IN a country of such extent as the county of Down, a great difference of soils must be expected; and, in reality,

reality, it contains every gradation, from sandy loam to strong clay; but the predominant soil is a loam, not of very great depth, but good in quality, and in most places intermixed with a considerable quantity of stones of every size, which is not to be wondered at, as, from the general rockiness of the ground, quarries are to be met with near, or at no great distance from the surface in every part. This loamy soil is of different depths and qualities in different places, and incumbent on different substrata, which much assist its powers of production: when clay is the substratum, the loam, partaking of its nature, is much stronger, more retentive of water, more difficult to improve and manure, but, when brought into cultivation, its produce is more considerable, and superior in its kind. As the subsoil approaches to an hungry gravel, or what is termed *till*, which seems to be an earth impregnated with ochreous particles, the loam loses greatly of its fertility, and, unless it is constantly manured, and its nature changed by the mixture of some corrective, it is a most ungrateful soil to the farmer. Clay does not occupy a space in this county of any great extent; it is mostly confined to the east coast of the Ards, to the parishes of Donaghadee and Bangor, and to the north part of the barony of Castlereagh, which lies in the latter parish. These lands are of a strong and good quality, requiring a high degree of manure, but repaying gratefully the expense and trouble laid out upon them.

them. The grain produced in this district is excellent, and I am informed, upon good authority, that, in the parish of Bangor, oats may be sown, without change of seed, or fear of degenerating, for any length of time. Other portions of clay there are scattered in different parts, but not of sufficient consequence to be particularly mentioned. Of sand the quantity is very small, consisting of a few stripes, scattered along the different shores, of which the most considerable is that on the bay of Dundrum. Part of this is cultivated, part under rabbits and grazing ground, and part of it consists of sand-banks, which lie upon the bay, and, continually shifting, preclude all attempts towards improvement. There is, likewise, a small tract of sand lying to the south of the Lagan, which continues, with some interruption, from the neighbourhood of Moira towards Lisburn, and thence to that part of the parish of Lambeg, which is in the county of Down; this, however, having a covering of loam for some depth, is excellent, and, when well farmed, is very productive, with this advantage, that it is managed at less expence of labour than any of the soils above-mentioned, is earlier sown, and the grain earlier rises, and, consequently, sooner out of danger. The crops of wheat, when properly prepared for, which is generally by a potatoe fallow, are equal in quantity, and little inferior in quality, to that of the best loam or clay. Gravelly soils, soils intermixed

with water-worn stones, and whose substrata are of the same nature, are scattered in many parts, but do not, in general, lie in any considerable contiguous tracts. Moory grounds are mostly confined to the skirts of the mountains; and bogs, although they are frequent, are not now, as bogs, objects of improvement, for they are scarcely sufficient to form a supply of fuel to the numerous inhabitants in their vicinity. To these soils may be added the rich and deep loams on the sides of the different rivers, which are amongst the most valuable, as they yield, every year, a luxuriant crop of grass, without the assistance of manure, and which amount to a considerable number of acres. I must not omit that small tract of loam, incumbent on limestone-gravel, peculiar to the neighbourhood of Moira and Magheralin: this is, by many, supposed the most productive soil in the county; this opinion is justified by the size of the timber, which is of larger growth about Moira than in any other part, Waringstown excepted. In describing the soils of this county, it would be most difficult, and, indeed, immaterial, to mark exactly, where one begins, and the other ends; and in this sketch nothing more is meant, than to express the distinguishing qualities of each, nor can it possibly be expected, that every particular place, which has any peculiarity, can be taken account of; to prescribe the most judicious method of cultivating and improving them, would be a work of much more utility.

Surface.

If inequality of surface is essential to the beauty of a country, none can boast a stronger claim to it than the county of Down: it contains every description of superficies; the plain, the detached hill, the ranges of hills, the mountains, all contribute to form a variety most interesting to the beholder. The plains are mostly confined to the banks of the rivers, the hills occupy the greatest portion, and the lofty mountains are closely thrown together in the southern quarter, whence they afford a striking feature, and are nearly taken into every extensive prospect this country furnishes. This inequality of surface is useful as well as ornamental; it facilitates the running off of the waters, and enables those occupiers, who live on the sides of rivers, to erect their dwellings out of the reach of floods, which here are not only harmless, but improving, whilst other countries severely suffer under their annual ravages.

SECT. 5. *Minerals.*

COPPER ore has been found in several parts of this county. In the mountains near Rostrevor, about five miles to the north-east, in the bed of a rivulet, copper

ore was picked up many years ago, as mentioned in the History of the County of Down, but no further steps were taken than to ascertain that it was so, by sending it to be tried in Dublin. It has likewise been found in the rocks near Portaferry, and also in the lead-mine at Clonliff, between Newtownards and Bangor.

Lead.

At Killough, near the quay, specimens of rich lead ore have been found interspersed amongst the rocks; it is very heavy, and very bright, but, as it lies within half tide, it cannot be wrought but with great disadvantage. From trials made many years ago, this ore appears to be of that sort, which yields half its weight in good metal. Lead has also been found on the Blundel estate, within half a mile of Dundrum, amongst the rocky grounds, a little under the surface. This mine was formerly worked, and given up after a considerable sum was spent on it. Several veins have been discovered on different parts of this estate, which are supposed to be branches spreading from a main body, which, if found, might well repay the trouble and expence of searching for it. This ore is said to have been rich, yielding nearly one-half its weight. Near Portaferry several veins of lead ore, I am informed, have been found. The lead mine in the mountain, or rather hill of Clonliff, between Newtownards

townards and Bangor, seems to have had the fairest trial of any mine in this county; many tons of lead were raised from it some years ago, and a considerable sum expended by the proprietors, and a company, who undertook it; but, after various attempts, it has for the present time been given up. A vein of the same kind of ore has been found in the demesne of Sir James Blackwood, at Ballyleedy, and two veins of lead have been lately discovered on Lady Roden's estate, not far from Bryansford, which, I understand, promise well. No iron mines have been found, but ochreous earths abound in many places, and every attempt to find coals has hitherto proved unsuccessful.

SECT. 6. *Fossils.*

THERE are several quarries of remarkable fine freestone in this county; the principal are those of Scraba, near Newtown, and that of Kilwarlin to the south of the road from Hillsborough to Moira. That of Scraba is a very fine grained and clear-coloured stone, and the deeper it is sunk, the better the quality of the stone. The quarry of Kilwarlin produces flags of a very great length and breadth, of different colours, from the clear stone-colour to a brownish red; the former are very superior in beauty and hardness. A stone of uncommon dimensions, taken from it, is to be

seen

seen as a step to the communion-table of the church of Hillsborough; it is twenty-one feet in length, and two in breadth.

Slates are raised in the following places; from Bangor to Ballywalter, of a great size, and excellent metal, rather heavy, but which stand the weather very well; also in the parish of Doonah, not far from Hillsborough, at Annahilt, and near Ballynahinch. These quarries all produce slates when sunk to a proper depth, which, if they do not equal those imported from Wales in lightness and colour, exceed them very much in hardness and durability. Besides those above mentioned, there are numerous quarries of this useful material in other parts of the county, which require nothing more than to be worked with skill and honesty, to supply the wants of the circumjacent country in that necessary article; but where, from want of skill, the blocks are not raised of a proper size, and the slates, from want of honesty, are broken to encrease the number, we need not be surprised that these quarries do not succeed.

Limestone is not very general; very large blocks of a yellow kind are in great abundance near Cultra, on the shore of Carrickfergus bay; likewise at Carthellic, on the shore of Strangford lough, near Comber, there is a reddish coloured granular limestone, very hard and sparkling; but the great, and probably inexhaustible magazine of this most useful fossil, is found in the vicinity

nity of Moira. This seems to be a continuation of that body, which, with little interruption, is to be met with along the coast, from Magilligan in the county of Derry, following the headlands of the county of Antrim, to that range of mountains, which run north of Lisburn, and thence turning towards the west, it is lost after traversing the fertile grounds of Magheragall and Soldierston, in the gently sloping hills, which overhang the river Lagan between Moira and Magheralin. The quarries in that neighbourhood are very near the surface; they consist of horizontal strata intermixed with flints, in some places stratified, in others in detached pieces of various forms and sizes; it is common to see three of these large flints, like rollers, a yard long, and twelve inches each in diameter,* stand perpendicularly over one another, and joined by a narrow neck of limestone, funnel shaped, as if in a liquid state they had been poured into a cavity made to receive them.—Shells of different kinds are found in this stone; and I once saw part of a rib bone exactly resembling the rib of a cow, taken out of a block of this white limestone, which was as hard as marble.—The marine exuviae found in hills so many miles distant from the sea, and so many feet above its surface, must be a very interesting subject of contemplation for those, who are engaged in any of those philosophical sects, that upon hostile

* Several are in the yard of the Society.

principles endeavour to account for the various changes this globe has undergone.

In a drain, which runs from one of these quarries, a body of red and yellow veined marble has been cut through, which promises to polish well, and will probably prove an acquisition. Quarries of a blackish and very close grained stone are opened, in several places, in contact with the limestone; they are very hard, and stand the hammer remarkably well.

Granite is to be met with in detached masses, and of various colours and fineness, in many parts of this county, but, as a great body, it is confined to the barony of Mourne, the lordship of Newry, part of Upper Iveagh, and a very small portion of the barony of Kinalarty. As the granite country is approached from the different points of the compass, a few stones of this species are perceived in the fields and ditches; by degrees these grow more frequent, and the common flaty stone of the adjacent county decreases, until at length they are nearly lost, and almost every stone on the surface is granite, and every rock is of the same. The granite country begins on the eastern coast, about a mile beyond the village of Dundrum; from thence it continues in an oblique line north-west to the mountain of Slieve Croob, where in the eastern branch of the river Lagan it is intermixed with the flaty rock, and also with a beautiful and fine grained reddish grit, that gives a very smooth surface, when applied to a grinding

grinding stone, and lies in separate blocks of many tons weight ; from hence it turns to the west, along the top of Slieve-na-boly, where it takes its course to the south-west, and afterwards through the parishes of Drumgoolan and Drumballyroney, to the lordship of Newry, which it also traverses, and at length joins the granite hills of the county of Louth. Notwithstanding granite is the predominant stone in the district I have pointed out, it does not entirely exclude the schist, or slate, which is often seen in contact with it, and raising its head from a surrounding mass of the former, which itself is again entirely inclosed, or set in schist. From these mountains flow the two principal rivers of the county, the Bann and the Lagan, besides Newry river, and various smaller streams.—Quarries of this stone are opened in many places, particularly in the neighbourhood of Newry, Rathfryland, and in different parts along the face of the mountains ; from the little river of Annalong there is an exportation to other parts on the coast. This county likewise abounds with many other kinds of fossils, clays of different fineness, marle, limestone gravel, &c. Upon the whole, the county of Down, from the nature of its rocks, and from the minerals already found, seems to deserve the attention of an able mineralogist ; it has already been traversed by a very industrious one, whose labours I dare say will be productive of benefit, by pointing out many useful substances, which have hitherto been looked upon with neglect.

SECT. 7. *Mineral Waters.*

THE mineral waters of this county are of two kinds, chalybeate and sulphur. The chalybeate are numerous; those, which are known, amount to eight, namely, 1. Ardmillan, on the lough of Strangford, in the parish of Tullynakill; 2. Killaghee, three miles west of Donaghadee; 3. Granshaw; these two are both in the barony of Ardes; 4. Kirkdonnell, about three miles north-west of Newtown; 5. Magheralin; 6. Dromore; 7. Newry; and 8. at Tierkelly, two miles from Rathfryland. These waters differ from each other, chiefly in the different degrees of strength of the mineral impregnation. They are all, except Newry, strong chalybeates, as appears from their ferruginous taste, the purple colour they strike with galls and sumach, the blue tincture they exhibit with logwood, and the ochreous contents they yield by evaporation. The following account of experiments made on several of them is taken from the History of the County of Down; they were made in May 1743, I have not heard of any further trials since that period.

Newry spa was examined the fourth of May, on the spot, at one in the afternoon; and it struck a delicate purple with galls, and a deep violet, or blue, with logwood; hence it is a chalybeate, though of the weaker class; however, it is considerable enough to deserve

notice,

notice, for it deposits an ochre, which upon calcination turns red, and is attracted by the loadstone; and moreover it yields by evaporation a greater proportion of contents than the famous Tunbridge wells. For, as that yielded two grains and a quarter from a quart, this yielded almost three grains from the same quantity.

Dromore spa stood (for by cutting a drain it has disappeared) in the town by the river side, with an exposure to the south; but being covered with an arch and trees, the sun had no power over it. Its taste was strongly ferruginous, and it struck a very deep purple with galls, and a light blue with logwood; a light purple with brandy and rectified spirits of wine; all evidences of an impregnation with iron, and it appeared to have few other contents; for it made a lather with soap, and did not curdle milk boiled with it, and by the hydrometer it appeared to be of the same specific gravity with the water of the neighbouring river. Its operation was purgative, and it was often drank with success in the gravel.

Granshaw is one of the richest chalybeates in the county, as appeared by an examination made May 20, 1743, at six o'clock in the evening, (a time of day the least advantageous for these trials) when it struck a deep purple with galls, not far different from ink; and it is covered with a thick scum, white and yellow, and by evaporation yields five grains of ochreous sedi-

ment from a quart, which is a greater quantity than the celebrated Astrope water yielded, and more than double what Tunbridge water affords from the same quantity; by comparison made with the simple English chalybeates, it appears to be of the same strength as the strongest of them. It retains its qualities after being kept a fortnight, and has been prescribed successfully, as it sits lightly on the stomach, and passes off quickly; and has been found serviceable for the gravel.

Killaghee water lies about three miles almost north of the former; the taste and scum appeared to be the same as at Granshaw; it struck a deep purple with galls, but not so quick, nor so much tending to black as the other. Upon trial these waters have been found to bear carriage to Dublin, and, after having been kept a month, to retain all their distinctive qualities, their astringent and ferruginous taste, and their striking the same colours with galls and logwood; sparkling in the glass, and not the least fetid. This experiment proves, that our indigenous waters might be transported to Dublin, and to other places, and drank there to advantage, provided the same care was taken in bottling, corking, and rosining on the spot, as was taken in the two cases above mentioned.

Tierkelly water is also a very strong chalybeate, as appears from its thick blue scum, from its striking a claret colour with galls, and a durable blue with logwood; whilst

whilst it appears by these trials to be well saturated with iron, it is otherwise exceedingly light, and free from any considerable mixture of heterogeneous matter. This water does not appear to have been much used, but from several casual trials has been found effectual for the scurvy, both internally and externally used. Besides the chalybeate waters this county possesses, there is another kind much more rare, and more worthy of attention, as it is in many cases attended with great virtues; this is the sulphureo-chalybeate water of Ballynahinch; this water rises about two miles from the town, towards the north-west, on the skirts of Slieve Croob mountain. It is very clear, cold, and of a very disagreeable taste and smell, like the sulphureous water of Aix-la-Chapelle. The quantity taken from three pints to three quarts; it sometimes vomits, and sometimes purges, but these effects are accidental, as its chief operation is by urine. Its virtues resemble those of other sulphureous waters, particularly in its efficacy in scorbutic disorders; it is applied outwardly as well as taken inwardly, great benefit often arising from bathing in it. The impregnating principles of this water will appear by the following experiment made on the spot and in Dublin, above sixty miles distance, after being taken up eight days. A silver sixpence, being immersed in it for the space of twelve minutes at the fountain head, came out partly of a leaden, and partly of a copper colour. That, which

was

was transmitted to Dublin, became of a dusky brown and yellowish colour, being hurt by carriage and hot weather ; but it still retained its sulphureous smell, and heightened the colour of gold and of copper. As most of our sulphureous waters bear carriage, if they were carefully bottled and corked, and brought cool, they might, no doubt, be conveyed to any distance, without diminution of their virtues. This water is also impregnated with iron, as it gives the purple colour with galls, and the blue with logwood, so that there is a combination of both minerals in it. Six grains of sediment, obtained by evaporating three and one-half pints, yielded a brackish and bitter taste, made an ebullition with oil of vitriol and spirit of salt, sparkled much, stunk, and burned on a hot iron ; and an infusion of it in distilled water exhibited the same appearances with oil of tartar, per deliquium, and milk, as the bitter purging salt does ; so that, besides sulphur and iron, there is also some calcareous nitre, though not in quantity sufficient to make it a purging water. Upon the whole then, to advance the credit of our domestic mineral waters, seems an object worthy of attention, by shewing, that they possess all the essential ingredients of the foreign ones, that, mixed with certain substances, they excite the same appearances, and lastly, that the virtues of each are found to be much alike, and that, consequently, ours may, in most cases, be happily substituted in their room, thereby
putting

putting the benefits to be obtained from them within the reach of ten persons for one, that is now enabled to enjoy them.—We may add to them an alum spring, in the townland of Clarn, to the west of Clough, on Mr. Forde's estate; the strength of it has not yet been ascertained by any trial.

SECT. 8. *Waters.*

BESIDES the four principal rivers of this county, the Bann, the Lagan, Newry, and Ballynahinch rivers, few countries abound more in springs or running streams; for, exclusive of such brooks as have their sources on the sides of hills, there are many others, that issue from lakes, which are not only serviceable for domestic uses, and for all the purposes of husbandry, but are likewise easily adapted to machinery, and are, in general, from their nature, particularly favourable to the art of bleaching, in all its branches. The rapid fall in the rivers of this country makes them much less advantageous, when viewed in the light of waters fitted for navigation, than as powers capable of setting at work the machinery required in a manufacturing country; in this line the Bann ranks foremost, whether we consider the length of its course, the quantity of its water, or the number of bleach-greens established on its banks. The eastern and western
sources

sources of this river take their rise at a small distance from each other, in that part of the mountains of Mourne called the Deer's meadow, and, after diverging from each other, join a little to the eastward of Rathfryland, where it becomes a large river, flows through M'Cay's-bridge to Banbridge, thence N. N. W. by Sea-Patrick and Hall's-mill, to Gilford and Portadown, where it makes a noble appearance, and, after a course of near thirty miles, falls into Lough Neagh near the Bann-foot ferry, in the county of Armagh. Near Portadown it is joined by the Newry Canal, which unites the bay of Carlingford with the above-mentioned lough.

The river Lagan rises in two small streams; the eastern source springs from that part of the mountain of Slieve-Croob, which lies in the barony of Kinalarty; the western from the mountain of Slieve-na-boly, in the barony of Upper Iveagh; they unite a little to the north-east of Waringsford, from whence it flows to the north-west through the town of Dromore to Gill-hall, and, being there augmented by another rivulet from two loughs south of Dromore, passes in a north-westerly direction under the bridges of Donoghclony, Gihon, and Magheralin, where it turns north-east, and rolls on until it arrives near Moira; flows next under Spencer's-bridge, the Maze-bridge, passes through a small part of Lisburn, Drum-bridge, Shaw's-bridge, and, at length, under the bridge of Belfast, where it empties

empties itself into the bay of Carrickfergus, having run in the whole, after various windings, a course of near thirty miles from its source.

Newry River, or, as it is otherwise called, the Water of Newry, promised, and for ages performed, as little as any stream in Ireland. It is neither considerable from the length of its course, there being but a few miles from its source to its fall, nor from its size; and, with respect to its body of water, it was only navigable in consequence of the tide flowing up, and, of consequence, only so long, and so far, as it flowed. It rises near Rathfryland towards the west, and in the barony of Upper Iveagh; taking first a south-western course, then tending to the north, runs under Crown-bridge and Sheep-bridge; it then turns nearly west, towards the valley which separates Down from Armagh, where it takes a sudden turn to the south, and soon after runs into Carlingford bay.

The canal has taken away those impediments, which were irremediable in the river of Newry, and, by joining this river to the Bann, has opened a communication with Lough Neagh, by which vessels of fifty and sixty tons pass through the heart of Ulster. This affords a direct instance of what has so often been laid down upon the subject of canals, that, by a junction of loughs and rivers, through the interposition of judicious and well executed cuts, many parts of this kingdom may, at no immoderate expence, be rendered,

in this respect, as commodious as any in the world: the beneficial consequences of this canal being seen, and considered, is a stronger elucidation of this matter, than any words can afford. Whilst I am on the subject of canals, it may not be improper to mention, that the good effects of the canal from Lough Neagh to Belfast are, in a great measure, lost by the management of that part of it, which runs from Lisburn to Belfast. The original defect seems to have been, from the idea of making the river Lagan navigable, which, having a fall of so many feet, and being a mountain river, and, of course, subject to great floods, is the most unfit that can be imagined for the purposes of navigation, being a great part of the year rendered so, by the bursting of its banks, whose breaches cannot be repaired without draining a level, and interrupting the passage of boats; besides the expence incurred by continual repairs. Had a canal been executed between the towns above mentioned, without any connexion with the river, and with the same skill as the part laterally finished, the benefits would have been great indeed, and the communication certain and speedy; but, as matters are situated at present, more time is consumed in the passage up the river Lagan, when there is a passage, than would be sufficient for the whole, on a well executed and level cut. Leaving this navigation, therefore, in the unfinished state, in which it is, must be not only a public loss, but a loss to the proprietor;

prietor; and it would be an undertaking worthy some person of weight and influence, to reconcile, if possible, all interests, and finally to complete so useful a work.

Ballynahinch River rises from four different sources, each of which issues from a separate lake; these four branches united form a pretty considerable river, which taking a course E. S. E. by Ballynahinch, Kilmore, and other places, falls into the south-west branch of Strangford Lough.

There are many other streams of less note in the county, which it would be unnecessary to mention, but which, in their course, are productive of many advantages, turning, as they flow, mills of every denomination, that are in use in this country, and which are capable of doing still more; which capability, as we increase in wealth and industry, it is to be hoped will be turned to advantage.

The number of small lakes, or loughs, is very great; they form one of the many natural beauties, with which this county abounds. A few of them have been taken advantage of, and, united with planting, make a principal feature in some of the most pleasing situations; but, in general, they lie in remote places, and are totally destitute of wood, that beautiful accompaniment to water.

These lakes, in general, abound with fish; pike, trout, eels, perch, and roach, of a considerable size, are found in most of them; those, which are deep,

produce the two first mentioned, equally large and well flavoured. These are treasures, however, for some future day, as there are not any means made use of to obtain a regular supply; eels, indeed, are sometimes entrapped, by means of boxes placed across the outlets of these lakes, on their migration to the sea, during the autumnal rains.

CHAPTER II.

STATE OF PROPERTY.

SECTION I.

Estates, and their Management.

NOTWITHSTANDING there are some very large estates in this county, property is much divided, and has all the different gradations, from the most opulent nobleman, to the tenant in perpetuity, who farms his own freehold. The management of estates is very simple; it consists in letting the different farms, receiving the rents, and in regulating the turf-bogs. This latter branch of management requires a considerable degree of attention, to prevent waste, which now is a matter of serious consideration, as fuel, that essential to life and comfort, is likely to be scarce, and that at no very remote period; in many parts, it is already so difficult to be procured, that a whole day is consumed in going for, and returning with one load. The consequence of a failure in the article of turf-bog, in a country so populous,

populous, and so full of manufactures, it is hard to conjecture, and should certainly be a strong stimulus to exertion in landlords, first to prevent depredations on so essential an ingredient to the comfort of their tenants, and also to make every trial to supply its deficiency with coals, if this county is so fortunate as to contain any quantity of that valuable mineral.

One circumstance, which simplifies the management of estates very much in this kingdom, is the custom of the tenant keeping the premises in repair; no waste is here committed with the idea of the landlord paying for it, nor any deduction in the yearly rent under that head; the sole expense is the expense of receiving, and the only trouble, that of setting the lands and regulating the turf-bogs.

SECT. 2. *Tenures.*

I believe I shall not be very wrong in saying, that most of the property of the county of Down, except the bishop's lands, is freehold; on several estates there are leases for ever, many of them of considerable value, others as low as forty or fifty pounds per annum; these having been set in the middle, or in the beginning of the last century, are at a low rent, and when put up to sale, from coming within the reach of so many purchasers, bring a much greater proportional price than more extensive tracts.

SECT. 3. *Rental.*

THE rental of the county of Down is very considerable, not less I have reason to think from the very best information, than twenty shillings the Irish acre, allowing for the mountains and bogs, &c. which may be computed at 44,658 acres, the surplus of the total acres of the county above 300,000; so that the rental of the county may very fairly be given at 300,000*l.*; though the greatest estate is let much lower than this, yet there are others let so much higher as fully to make up the deficiency. Lands in the neighbourhood of the large towns, such as Belfast and Newry, set beyond their value, merely as a matter of convenience to the opulent inhabitants, not as farms. Therefore, they are not to be considered, as giving in the least degree a general idea of what the rental produces; what is mentioned above merely refers to the average rent of the cultivable land.

CHAPTER III.

BUILDINGS.

SECTION I.

Houses of Proprietors.

BESIDES the several spacious habitations of the principal proprietors of this county, there are numerous and elegant modern built mansions belonging to the gentlemen; and others also, of an earlier date, modernized with taste and judgment. Those, though pleasing and enchanting objects of consideration, as so many proofs of the attachment of their owners to the soil, from whence they derive their resources, do not so properly come within the idea of an agricultural report, as the farm houses and offices.

SECT. 2. *Farm Houses and Offices, &c.*

WHICH, as may be supposed from the general size of the farms, are neither large nor convenient; they consist for the most part of a low cottage, the dwelling

dwelling house, which contains a kitchen, and two or three rooms on the ground floor opening into each other, without any apartments over head; and seldom containing any other fire place than that of the kitchen; those in the other rooms having been shut up on the alteration in the hearth-money tax. Had parliament at that period made every house with two fire-places pay for one, at the usual rate, little loss would have accrued to the revenue, as very few would in that case have built up the second; but the additional two and eight-pence-halfpenny, on one side, paid for two hearths, and the temptation of not paying any thing by having but one, has operated both against the revenue and the comfort of the people, who for so trifling a consideration have deprived themselves of the satisfaction of a second fire, and consequently no longer possess the advantage of ventilation, which from an open chimney they formerly obtained in their bed rooms, in which a circulation of air is not at present known, the vent which produced it, in concert with the casual opening of the door, being now closed; besides, the windows are seldom made to open, and where they have been made with that intention, they are so often out of order, or have so many things laid upon the inner sash, that being a work of time to accomplish it, it is seldom attempted. It must in a great measure be owing to the closeness of these apartments, to the total exclusion of fresh air, that fevers, when

once got into a family, seldom leave it, until they have attacked every individual. Where farms are large the houses are in proportion good, and amongst this class you see proportional attention to comfort and cleanliness in every department, within doors and without; many farmers of this class have houses with a second story, slated roofs, and all the offices necessary towards carrying on their business to advantage, whilst those on a smaller scale, from the want of proper offices, are ever labouring under some inconvenience attended with loss, which, though not much felt at the instant, amounts in the end to something serious. Amongst the resident gentlemen much attention is paid to their farm yards, &c. and there are some very capital ones; but in every cow-house I have seen, except that at Mount Stewart, there is a material defect, in the want of a passage to carry in food and deliver it before the stakes, instead of squeezing between each beast. The bullock house at Mount Panther is remarkably well constructed likewise, for attending the cattle, having two rows with their heads towards each other, and a communication from one end of the building to the other between them, where turnips, &c. for the day's provision may be kept. The pigsty is also very well contrived, especially the feeding troughs, into which the pigs can only put their mouths, and are thus prevented from trampling their food. Barns are not very large, nor is there that occasion for having them so roomy

roomy as in countries where the produce of a large farm is housed at harvest ; here it is absolutely necessary to suffer the crop to remain in stacks for some time, that it may be perfectly fayed ; when put in too soon it heats and grows fusty ; besides, grain in the straw can be secured much better from vermin on well contrived hovels than in any house. I understand that they are so sensible of this in England, they stack much more of their grain than they formerly did. A well sized barn, one proportioned to the farm, is absolutely necessary ; nothing prevents the internal operations of husbandry from going on with spirit, and indeed with economy, so much as being hampered, which is too much the case with the farmers in this county ; in this particular, however, they are improving every year. The materials used are, stone and lime for the walls, for the roofs, timber raised from the bogs, and also foreign timber, but the high price of the latter has been a very great bar to improvement, for some years past ; yet a great deal has been done within this last year, notwithstanding this obstacle. The usual covering is thatch, but in many of the new buildings slates have been substituted ; and if the quarries of that material were properly worked, the use of straw would be much abridged. The cottages of the labourers, and weavers, who have no land, are but poor, yet even these are superior to what they were ; and as the general circumstances of the country alter for the better,

so is their situation ameliorated. Great attention has been paid by many of the gentlemen, to have comfortable, and often elegant cottages built for their labourers. This is an attention not only humane, but politic; for the more comfortable their situation, the less willing they must be to leave it, and, consequently, the more sedulous not to commit any of those faults likely to bring on their dismissal.

SECT. 3. *Cottages.*

ON the subject of cottagers much has been said, and many humane persons have turned their thoughts towards ameliorating their situation, which certainly in every country might admit of improvement; in this county, most of those who come into this description, are tradesmen, principally weavers, and labourers, the latter dependant on their employers; the former free to choose their place of abode; labourers, of course, are bound to their masters, and whilst they remain with them, their comforts must depend partly on the character of their master, partly on their bargain with him, but most of all upon their own conduct. Persons of this description must be, in a great degree, attached to the soil; but so much of the farmer's comfort likewise depends on his servant's fidelity, and propriety of behaviour in the different functions he has to fulfil,
and

and it is so much his interest to encourage a faithful servant, that, in the general course of circumstances, no interference can be ventured on between persons so mutually connected, without the risk of mutual injury.

With respect to tradesmen, who compose the most numerous portion of cottagers, their case is totally different; being quite unconnected with agriculture, interference, with regard to them, cannot in any way injure its interests, and might much promote it, by providing them with habitations, &c. which would prevent them from grasping at small farms, as soon as they can save a little money by their exertions. In villages where fuel is convenient, they might be better accommodated with suitable settlements, and, without interruption, pursue their different vocations to much more effect; and proprietors might find their account, when considerable tracts of land are out of lease, in laying apart some portion of it for this purpose. A convenient house, a garden, and, if thought necessary, grass for a cow, would secure to the landlord a profit, more than adequate to the expense and trouble; and if the village increased, of which there is little doubt, it would afford a ready market to the neighbouring farmers. A code of regulations might be drawn for the general good, with which every new settler should be made acquainted, and speedy expulsion should be the consequence of a breach of them, which might be easily

easily secured, by taking a bond, with a penalty, on their refusing to quit after a certain notice. From considering the manner, in which persons of this description are tossed about and harrassed, I have taken the liberty of suggesting this idea, which, properly pursued, might lead to something beneficial.

CHAPTER IV.

MODE OF OCCUPATION.

SECTION I.

Size of Farms.

THE farms of this county naturally divide themselves into two kinds; the first, such as farmers possess, and from which, without having recourse to any other branch of industry, they support their families; the second, such as are held by weavers and other tradesmen, and are not sufficient for their maintenance, without the intervention of some other occupation, unconnected with agriculture: the former run from twenty to forty, fifty, and, in some instances, so far as an hundred acres; the latter contain every distinction, from one to twenty acres; some of this last mentioned class may not be weavers themselves, but most of them employ looms.

The minute division of lands, which so much prevails in this county, is owing to various causes; many farms have been brought to this situation, by the holders

holders of them portioning each child with their share of the land; others, by the temptation of a profit rent, a much easier way of living than by labour, let off part of their lands to under-tenants, that, on the expiration of the leases, were taken as tenants by the landlords, who thus answered two purposes; one, of providing for those already found on their estates, and the other, of increasing their interest by the number of freeholds. But, from whatever cause this division has arisen, it certainly has proved very prejudicial to agriculture, and not very conducive to the general comfort of the class of men, whom we are speaking of, as must be evident to those, who have paid attention to the situation of the country; in years of plenty they may do tolerably well, as they will have less to buy, and what they want may be obtained at an easier rate; but in times of scarcity their lot is much more hard, and fraught with more difficulties, than the mere manufacturer's, for the former has all the labour and expense of ground, besides the rent, without a subsistence, whilst the latter has only the increased price of provisions to struggle with. The number of petty landholders, who have been ruined, and obliged to dispose of their little properties, by the last two years of scarcity, is too strong a corroboration of what is here advanced, to admit of contradiction. In this case, as in many others, it is much easier to see the evil, than to point out the remedy; and this mode of occupying land

land seems to have taken too deep root in the system, to be either easily or speedily altered. The further subdivision of land may be prevented; clauses may be inserted in leases, to prevent the alienation of land in smaller portions; but it will be impossible, I fear, to bring together the disjointed parcels, so as to form, in their stead, farms, on which a regular and professed husbandman can exist. The most profitable size of farms has never yet been ascertained, but to common sense it must be very plain, that no farm can be profitably occupied, that will not give constant employment to a certain number of men, and a certain number of cattle; for every hour, that either the one or the other is without an object tending to the general end, is a certain loss. No farm, to speak of farming as a profession, should contain fewer acres, than would give constant employment to two horses or oxen, because every day they are idle is a charge against the profit; but in this country, could things be brought to that situation, that two farms, taken together, should employ two draft beasts, all work, that requires two, being performed by a mutual lending of cattle (provincially neighbouring), a very great point would be gained, as much, I think, as can be expected; and even to advance so far must be the work of time, not to be accompanied with circumstances of hardship to the present tenants or their heirs. But, whilst these observations offer themselves, from the recent impressions of the ruin and emigration

of so many individuals of this class, nothing can be further from the ideas of the writer than the supposition, that it is impossible for the holder of a few acres to thrive upon them; but it requires a greater proportion of steadiness, exertion, and industry, to supply the place of constant employment in the farm, than is generally supposed, and a greater degree of thought and quickness are requisite, to prevent loss of time in the necessary attendance, than fall to the share of those, who are most frequently to be met with. A cottager, whose holding is just sufficient to maintain his cow or two, with a well inclosed and well cultivated garden, who makes no attempt to raise a crop of grain, and who is either at constant work with some farmer, or is master of a trade, has an enviable lot compared with the farmer, whose half-manured and half-cultivated fields are a constant source of disappointment to himself, and of loss to the public. What strikes me upon the subject is this, that the industrious cottager, whether labourer or weaver, is, in his way, as beneficial to the public, and as comfortable to himself, as any other denomination of persons, but that every gradation from him to the real farmer, with some exceptions, is only a gradation of difficulties. But, whilst I have thus stated the most striking disadvantages, at least in my idea, of small farms, it is but fair to mention one circumstance in their favour; the very great exertions of the occupiers towards raising a quantity of potatoes sufficient

sufficient for their consumption; this, along with the succeeding crop of grain, in some degree counterbalances the mismanagement attending them; for, to obtain that desirable and necessary object, every method is used in making manure, by which, at least, one crop succeeds a fallow.

Character of the Farmers.

It is a difficult matter to give a general character of the inhabitants of any extensive district, especially where there is a very great difference in their situation and circumstances. The farmer of an extensive tract, whose possessions put him nearly on a par with gentlemen of small incomes, will naturally assume the character of that rank, to which he at least approaches; whilst the renter of a few acres sinks, nearly to the level of the tradesman or labourer. It is, therefore, neither in one or the other of these denominations, that we are to look for the general characteristic of our farmers, but in the middle class, the possessors of from twenty to fifty acres: these we shall find to be a respectable body of men, whether considered in point of understanding, or morals; sharp and clever in their dealings, as may be expected from the close population of the country, the constant intercourse, and continual making of bargains, as well as their regular attendance on markets and fairs, which are held in every town, and which are

resorted to for amusement and society, as well as for business. It is not, therefore, in this country that we are to look for the rural simplicity of the pastoral ages; the children, being early initiated into the habits of industry, soon seem to know the value of their labours; and by acquiring, at that period, some little claim to property, gain a degree of knowledge, which never afterwards leaves them; and that their habits of industry are even increasing, must be apparent to every observer, from the increasing comforts, both in their habitations and dress. After having said so much, it will not be deemed too strong an assertion to add, that, as tenants, they are unexceptionable; and that an estate, portioned out amongst men of this description, where nothing is deducted for repairs, where there are no poor rates, and where tithes are moderate, must be productive, and not difficult to manage.

SECT. 2. *Rent in Money, in kind, in personal Services.*

THE rent is always paid in money; some landlords have dainty fowl; but personal services are never exacted, except in the case of cottiers, who generally are bound to pay the rent of their little holdings in labour.

SECT. 3. *Tithes,*

ARE very moderately set in the county of Down; incumbency bargains are very common; the rate from 1s. to 1s. 6d. per acre on the whole farm; one or more substantial men binding themselves in each townland, for the payment of the whole tithes of it. Potatoes do not pay tithe; in some parishes there is a modus for flax, in others none. Upon the whole, the people are at least as leniently dealt with by the clergy, as they are by those proprietors, in whose hands the tithes of their respective estates are vested; and the interference of a tithe farmer being in general dispensed with, as well as the annual setting, the whole business is generally settled in that amicable manner, so highly creditable to the clergy, and so comfortable for the people.

SECT. 4. *Of Poor Rates.*

WE have none.

SECT. 5. *Leases,*

ARE generally freehold; some for lives and years, others for lives alone. Some idea of the division of
land

land may be formed from the number of freeholders, amounting to 6000 in the election of 1790; since that period they are considerably increased.

SECT. 6. *Expense and Profit.*

I SHALL not attempt to calculate the expense and profit of the farmers of this county; their system is for the most part so little regular, that nothing very exact can be given upon the subject; but I shall state the particulars of two farms, of fifty acres each, one managed so far systematically, that clover, to a certain amount, is sown every year, and allowed to continue two years, and when two years old regularly broken up; and the other, in the common method of ploughing the heart out of the ground, and letting it come to grass of itself. Particulars of Mr. Gracey's farm, in Lecale, of fifty acres: eight acres wheat, eight acres barley, eight acres oats, eight acres potatoes, sixteen acres of clover, one and two years old, and two acres of meadow; stock, seven cows and a bull, seven young cattle, fifteen sheep, three pigs, and six horses; all on sixteen acres of clover. Particulars of a farm of fifty acres, managed in the usual way, without clover, &c.: wheat four acres, barley four acres, oats eight acres, potatoes four acres, meadow four acres, grass twenty-six acres; stock, four horses, eight cows, six young cattle,

cattle, and a few sheep. Thus we see, that by means of clover there are twelve acres more in crop, than on land of equal quality without it; and that sixteen acres of clover feed one-third more stock, than twenty-six acres of common grafs, and in a much better manner. If we go on to calculate the produce of both farms, we shall find very near 100*l.* per annum difference in the value; and had one half of the clover been cut and given to cattle in the house, it would have much increased the difference. If, then, the introduction of clover alone gives so decided a superiority, how much greater would the superiority be, if to it was added green food for cattle in winter, and the introduction of ameliorating crops between each crop of grain? It is by superior management, more than by superiority of soil, that Norfolk produces better than any part of England. I must add, that Mr. Gracey's farm is cultivated in a very complete manner.

CHAPTER

CHAPTER V.

IMPLEMENTS.

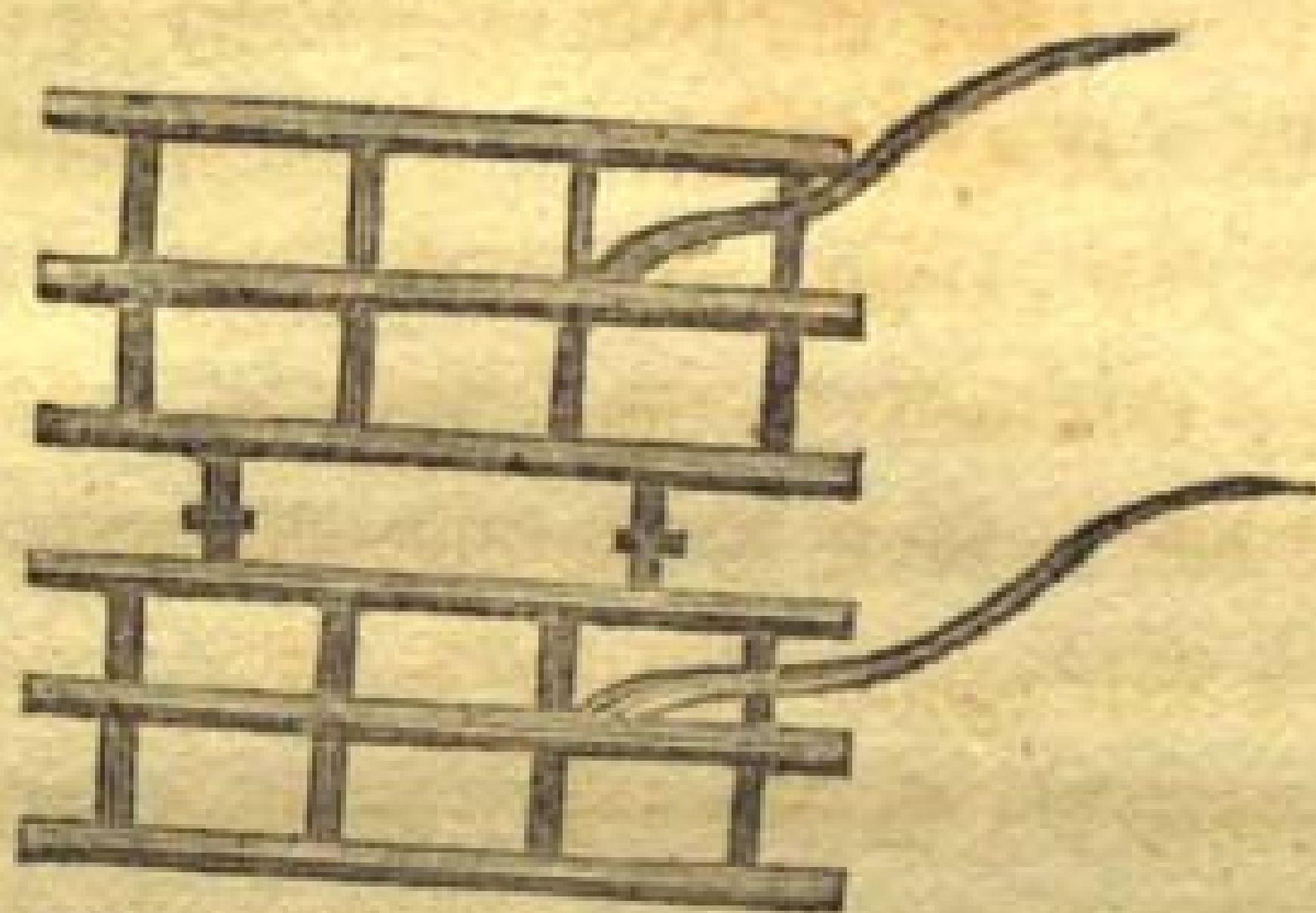
THE implements of husbandry in general use are few and simple. Cars for draught, ploughs for tillage, of no great ingenuity in their fabric, but light and strong; harrows either for one or two horses, differing from each other in size, not in construction; except in some instances, where the latter have a hinge in the middle, to accommodate the shape of the implement to the ridge. In the hands of gentlemen, and of some first rate farmers, there are many new implements. In their system carts are often preferred to cars, and although these in large farms may give way to them, with small farmers they must hold their place; the expense of the former being above the reach of their finances. If no other inconvenience was to be the result, it would not be of much consequence; as a car well fitted with all its furniture, of sideboards, for carrying manure, potatoes, &c. and a crib, calculated for holding a load of turf, is sufficient for most purposes, either of carriage or of agriculture,



on a small farm. One improvement still remains to be adopted in their construction; having the wheels to turn on the axis, instead of the axis turning with them; this would facilitate their movement, and prevent them from hurting the roads, which in turning short they are apt to do. Carts of a light kind, for one horse, on level roads, would probably be an improvement, especially for conveying bulky materials; but whether their being introduced into the general system of rural economy, in this hilly country, would be of material utility, I am not so well convinced; that vehicle, whose application is least confined, as being adapted to every variety of surface, which is most handy, least liable to be put out of order, and the cheapest, certainly has considerable and well founded pretensions; and, though gentlemen are very commendable in making trial of every thing, which seems an improvement, they should consider maturely before they go to great expense in procuring a new machine, whilst one is at hand, which at one-third of the cost may answer their purposes much better.

Ploughs of many sorts have been introduced by attentive cultivators; the Scotch plough, invented by Small, and imported by Mr. Christy, seems to be getting into general use amongst gentlemen farmers; it certainly, when well managed, and in a soil not too much incumbered with stones, does its work in a very masterly manner, from the formation of the mold-board in

particular ; it stirs the ground, and reduces it to a degree of fineness more expeditiously than those in common use, whilst the share is calculated to cut and raise the furrow from the bottom, which, by this means, with less toil to the horses, is completely laid in its place. The expense of this plough is about five pounds ; this will for some time operate against its general use, as well as the difficulty of getting them made, which cannot be done by every common smith or carpenter ; I have given a drawing of this implement, which will convey a better idea than any description. The Rotheram plough, used by Mr. Ward, at Bangor, does its work very neatly, and with great appearance of ease ; I saw two horses not remarkable for size plough up a rushy field without difficulty, the land was not stony, and the fin upon the share cut through the roots of the rushes without a check ; when the ground is stony, a sock is put on without a fin. At the Bishop of Dromore's, English ploughs are also used with success, and also by the farmer in the park at Hillsborough, who, when in the Bishop's service, introduced ploughing without a driver ; a custom, which is daily gaining ground. By Mr. Crawford, of Crawford's-burn, a drill plough was used for several years, which distributed the seed with great exactness ; but, as it does not answer for stony ground, he has of late laid it aside. Besides these ploughs, Mr. Christy uses a stripping plough, for taking away the earth from the potatoe



POTATOE DRILL HARROW



Potatoe Washer

potatoe drills ; a double mold-board plough for earthing them up ; also a plough for taking them out of the ground, which last instrument, I understand, does the business very completely : a drawing of which is hereunto annexed. The same gentleman uses a horse-hoeing plough, in all operations where it is required. Likewise a drill-barrow,* for beans, &c.

Of harrows I have not much to say, only, that the above mentioned ingenious cultivator places the teeth with the edge towards the line of draught, having them previously formed like the blade of a knife, the better to cut the furrows. His harrow for going between the potatoe drills, and eradicating the weeds before they are horse-hoed, is a very nice machine ; by means of the handles, and a hinge in the middle, they can be accommodated to any distance : a drawing accompanies this. Besides this, he uses a potatoe or turnip cutter, and a straw ditto ; likewise a potatoe washer, his own invention, of which I have also made a drawing ; by taking out one of the bars the potatoes are put in, this is replaced, and by turning the handle, the washer standing about half way in water, the business is quickly and effectually done. But the straw cutter, imported by Mr. Moore of Eglantine, is a most complete machine ; the knives are placed in a wheel, the straw in a box, which regularly delivers it, and it is

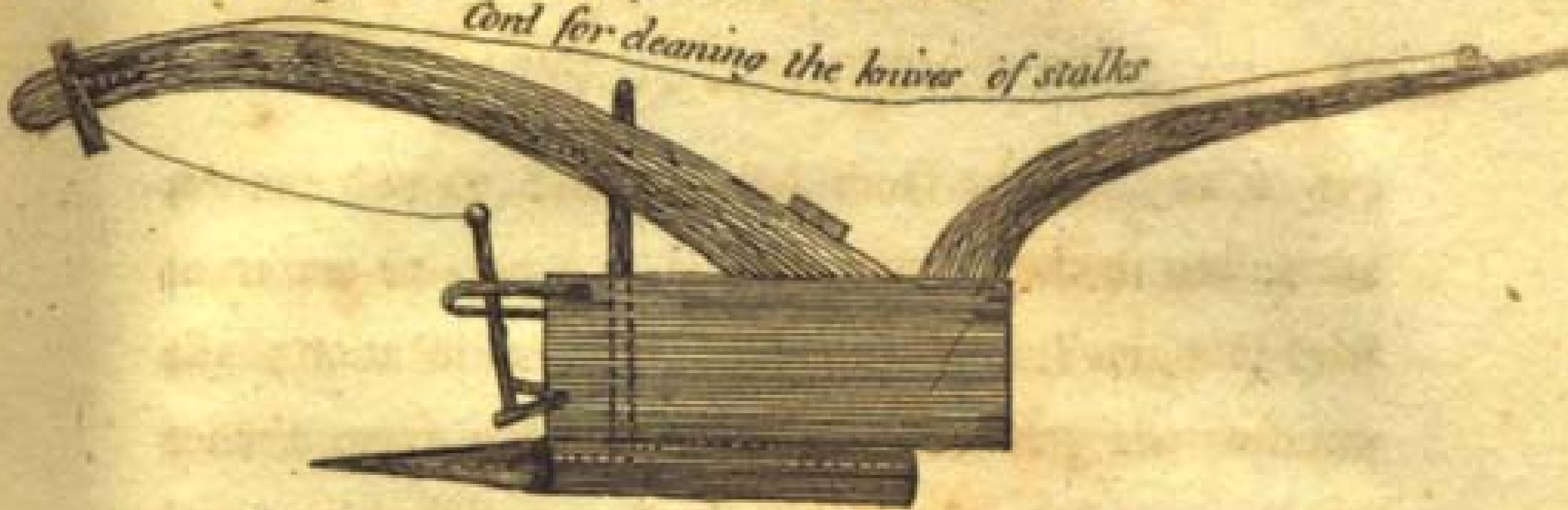
* Seminars for the drill, of a new construction, may be seen at the repository of the Society.

cut to any length, from half an inch to two inches, according to the manner it is set. A potatoe-cutter at Mr. Douglas's, of Grace-hall, deserves mention; the potatoes are put into a hopper, and fall from thence upon a cylinder, in which knives are placed at equal distances, their edges downward; there is then fixed in the side of the machine opposite, and just below the hopper, a number of blades equal to that in the cylinder, and adapted to the interstices; the hopper being filled with potatoes, the cylinder is turned by means of a handle like a grinding-stone; which motion making the potatoes fall, in their descent they are cut by the knives, and received into a box below: a bushel of potatoes can be cut in this way in a few minutes.

Mr. Christy claims the merit of erecting the first threshing machine in this kingdom; I shall here quote his own words from a letter to me containing much valuable information. "In the year 1796, I was at great pains in inspecting many of the best machines in Scotland, making draughts of them, and a model to erect one on my farm, on the best principles. I employed a good workman, who had done something in that way before, but had never attempted, nor ever seen one on my plan, who executed the work by my directions, and put me in possession of a machine, which, although not so elegant in the workmanship as some others he has since made, yet does the business as effectually and expeditiously as any I have seen in
my

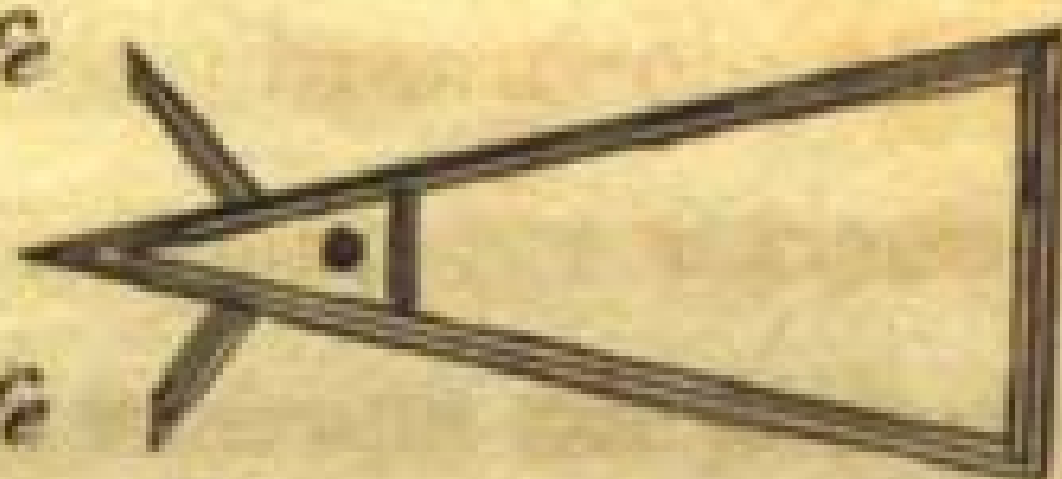
Plough for taking out Potatoes P. 51.

And for cleaning the knives of stalks

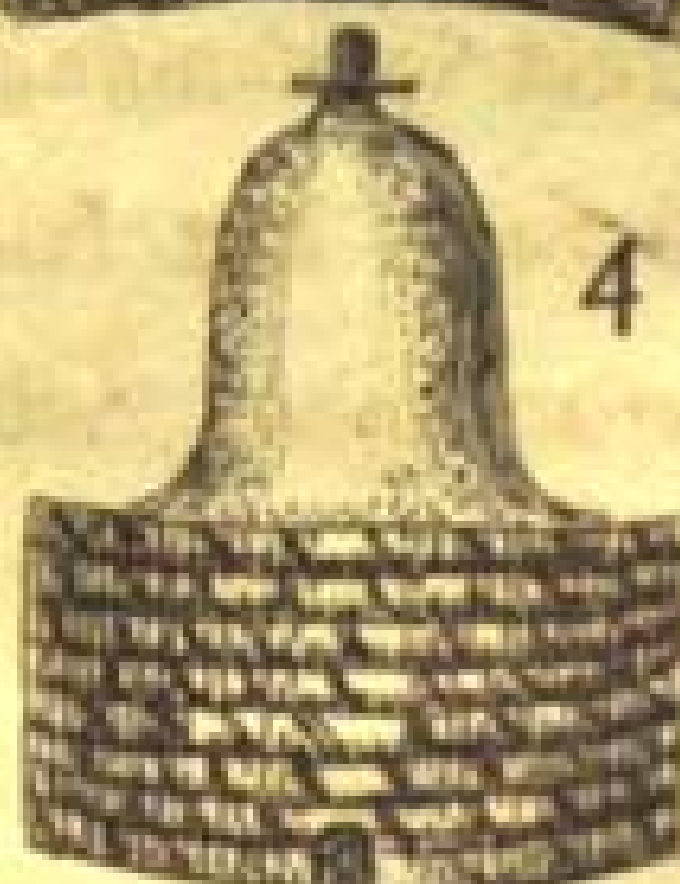
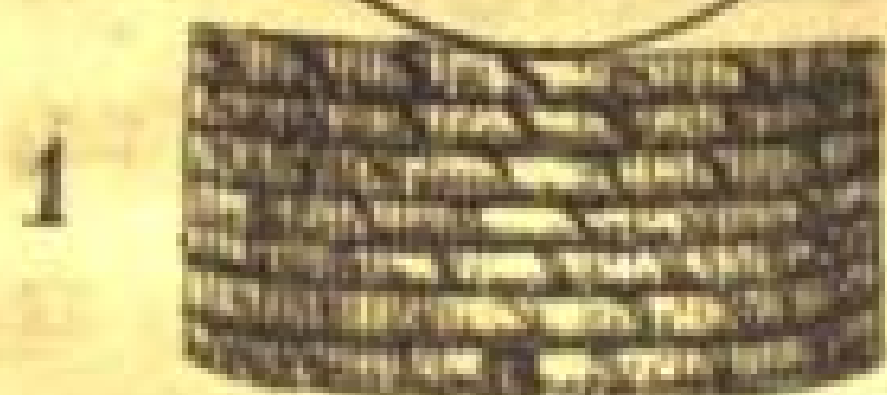
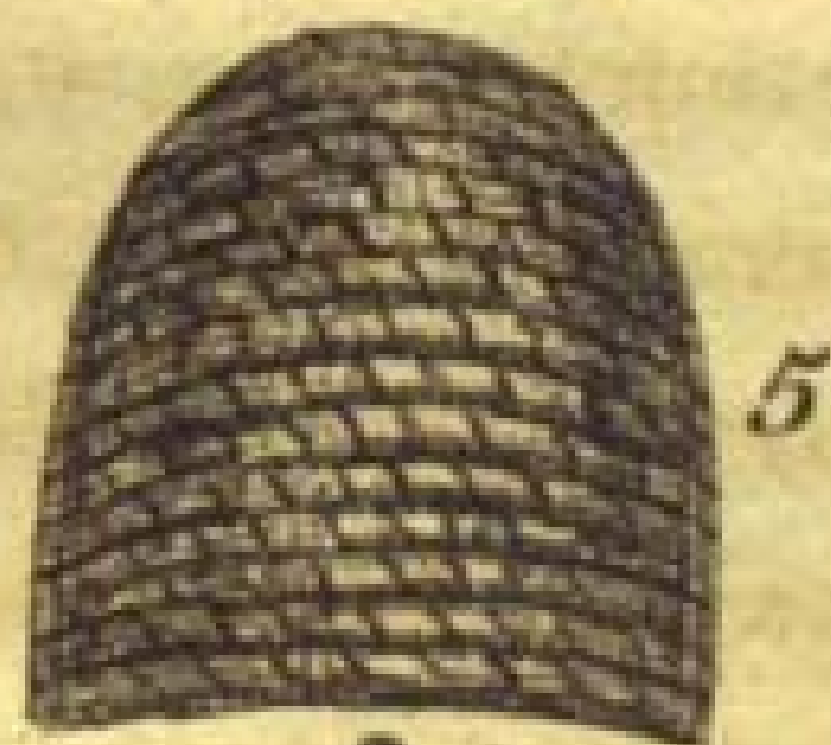
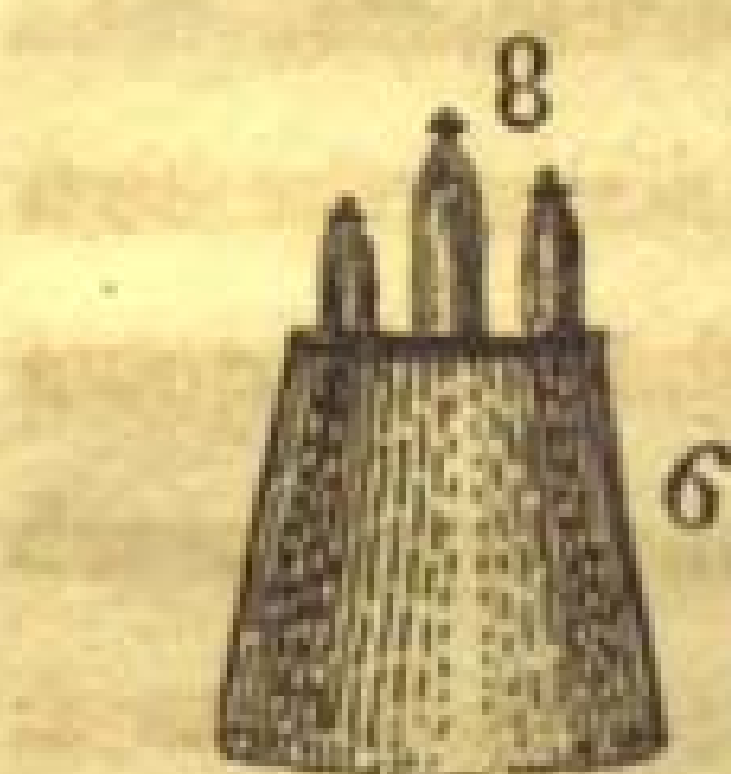


Knife

Knife



Plan of the Mould board



New constructed Beehive P. 210.

my late journey through some of the most improved parts of Scotland ; and it has one improvement on all those, that have come under my inspection, which is what I call equalizing levers for adjusting the draught of the horses, which effectually prevents one horse from drawing less than another." Mr. Christy has adapted to this machine one for rolling and scotching flax ; likewise a steel mill for flour ; and he has also added millstones for grinding oats, &c. After this it is unnecessary to add, that Mr. Christy has a head admirably fitted for inventing or improving machinery. Mr. Ward, of Bangor, has a threshing machine likewise, erected by the maker of Mr. Christy's ; the house which contains it being so lofty, that the horses work underneath in turning the large wheel, simplifies it very much. The attendance required in threshing days is, two or three horses and a driver ; a man to throw up the sheaves, one to unbind them and make them ready for the person, who feeds the machine ; and another to take away the straw. The man, who throws up the sheaves, can likewise take away the grain from the fan ; but to fill that up, and measure it, requires the interference of another. The whole number to carry on the business effectually, five men and a boy to drive ; with this force three times the quantity of grain is got out, besides its being half cleaned ; but the greatest advantage attending it is the facility, with which a great quantity of grain is got ready for market,

ket, in a comparatively short time, and the opportunity of employing men and horses under cover in bad weather. The expense of one of these machines, (such as are mentioned above) is nearly 100*l.* the interest of which would pay for the threshing of one hundred and twenty boles of oats, of ten bushels each, at one shilling per bole, which is the usual price; to which, if the actual expense of the operation by the machine, and the wear and tare of it are added, it will not be found to answer, except on larger farms than are to be met with in this country; but I understand they are now made in Scotland of various dimensions, and adapted to the size of every farm. In many situations a great improvement might be made by having them moved by water, which would save a great consumption of horses, on whom the labour is very severe. A convenient straw house ought always to accompany a threshing machine, to prevent the fodder from being spoiled; which even exposure to the air renders less grateful to cattle.

Fans for winnowing are in general use, some with single, others with double blasts; but, to clean grain completely, the boards for separating the strong from the weak grain should be moveable on a pivot, to enlarge or contract the space, through which the grain falls, according to the degree of cleanness, that is intended; one at Mr. Christy's, on this construction, separates the grain as effectually as the barn floor, or
winnowing

winnowing out of doors. Rollers are used with great success in light grounds; and even in heavy land, when dry, I have used a roller after a ploughing and harrowing, and previous to another stirring; in that case I found it nearly equal to a ploughing, the cloddy parts being completely reduced by the operation. The turnip drill-barrow, used in the park at Hillsborough, which is pushed by a man as a common wheel-barrow, is very light, goes on very quickly by changing the wheeler, and distributes the seed with great precision. I have been thus particular in describing the different implements, used in this county, to shew that we have, in the farming way, many persons attentive to whatever is looked upon as likely to promote improvement in husbandry, and likewise to disseminate, as far as it is in my power, the knowledge of what is useful.

CHAPTER VI.

INCLOSING.

SECTION I.

Fences.

THE inclosures (I wish I could say fences) of the county of Down are a general disgrace to it; with some exceptions, they consist of a ditch and bank, from two to four feet wide by the same dimensions in depth, without quicks of any kind, or sometimes with a few plants of furze stuck into the face of the bank, or some of the seed of the same sown on the top: this last mode, if generally adopted, would at least be a good temporary fence, and afford shelter to cattle, and promote the growth of grass, which, from want of such encouragement, is very late in rising through the greatest part of this country; but furze, when sown on the top of the bank, unless cut with care and attention, grows thin at the bottom, and dies in a few years. Another kind of inclosure, very much in use, especially in the stony and mountainous

mountainous parts, is the dry-stone wall; this, though a very unsightly fence, and, from the manner in which it is made, requiring, in common with the other, continual repair, has this merit at least, that, in making it, the ground is cleared of part of its encumbrance, and that it stands upon a very small surface; besides, it is mostly found in places, not only where stones abound in the soil, but where the rock, being but a little way under the ground, makes sinking difficult, if not impracticable. Notwithstanding this general censure on the mode of inclosing, there is not any country where the art of raising hedges is better understood, and more completely carried into execution, than it is here by numerous individuals, both gentlemen and farmers; and it is rather a matter of surprise, that their example does not more generally influence their neighbours. The additional expence of quicks is a mere trifle, when compared with the utility and beauty of the practice; its advantages need not to be dwelt on, they are apparent to every eye, in the security they afford to the crops, the protection they impart to the grass from the withering blasts of the early months, and the ornament they bestow on the face of the country. If landlords were to make it a condition, on the renewal of leases, that all hedges between farms should be made new, and planted with white-thorn quicks and trees of different kinds, the banks well backed up, so as to protect them from cattle, it would, in a course of time, and

that of no great length, make this one of the most charming counties in Ireland: suppose the trees and quicks were given as an inducement, the sum would not be great on the whole; and as leases in general fall gradually, the disbursements would be gradual, and come at the fittest time imaginable, along with an increasing income. Although there is great industry exerted by the farmers, in manuring and improving, yet the want of good inclosures gives a general appearance of slovenliness to their labours, which in other respects they do not deserve; and it is often to be regretted, that a field of potatoes, drilled in a most complete manner, should be surrounded by a ditch, not capable of affording it the protection necessary to it, and which it merits so well. If the time, which is annually lost in repairing old fences, was laid out with judgment, in making a certain portion of new ones every year, in a very short time it would preclude the necessity of the former, besides all the other benefits, that would accrue.

The fences mostly in use amongst those occupiers, who have superior ideas of their utility and beauty, are trenches and banks, varying in size and dimensions, according to the situation of the grounds, or the fancy of the maker; the trenches are made often so large as six feet wide by five in depth, but five by four is more usual, the bank, of consequence, proportionate to the trench; the latter dimensions form a sufficient defence in most cases, and where the quicks are carefully wed

for three or four years, cattle will not readily attempt to pass it. In weeding young hedges, great care should be taken to avoid breaking the tender shoots, which is most effectually done by beginning at the bottom, putting in the hand between the plants, or, where room is wanting, the fingers only, and neatly drawing the weeds downward; afterwards you may proceed to those above, which may be done with less danger of mischief, the shoots being more visible. An observation well worth communicating was made to me by a gentleman near Moira, who is a very accurate judge, that quicks grow more rapidly in small than in large ditches, in consequence of which he has altered his mode of making them; but, that the fence may be effectual from the beginning, he backs his banks up very high, and makes a little parapet on the brink of the gripe, which answers the double purpose of strengthening the fence, and of protecting the thorns from being spoiled by cattle browsing on them from the front. Another gentleman, in the same neighbourhood, always cuts his quicks after being set two years, and finds that, after this operation, they grow with so much vigour, that at the end of four or five years he has a fence, stronger by much than in the usual mode of not cutting them, until four or five years planted; but it must be noticed, that he cuts them quite close to the bank. One objection to fences made in this way, especially where the fields are small, is the quantity of ground consumed by

them; this objection is certainly just; but in this country, where timber is so scarce, there is no other method of protecting the quicks; but, when these are grown to a proper height and thickness, why should not the trench be filled up? which may be done partly with stones, thereby preserving its quality as a drain; and the stones being covered with earth, the land may be cultivated to the edge, so that nothing of it shall be lost but the bank, and even it not entirely so, as in time it will afford some grass. This mode I find to answer particularly well on the sides of hills, nor do I see why, in most situations, it may not with equal propriety be carried into execution.

Sunk fences are getting much into fashion in gentlemen's improvements; they are, without doubt, the best adapted of any others to form the necessary divisions in a demesne, as, with them, you may follow every inclination of the ground, without breaking in upon the beauty of the whole, and have at the same time the convenience of a ditch and drain, without the disadvantage of injuring your view, besides the benefit of a quantity of earth, which, when properly mixed with lime or dung, forms a supply of manure for the adjoining grounds; another circumstance in their favour is this, you lose only the breadth of the drain, the land being profitable to the brink. White-thorn quicks are those in general use; they are generally planted in single rows, and are no more than one or

two years old; some gentlemen, who are more attentive, plant two rows, and have their plants three or four years old; this is a great advantage in raising a fence expeditiously, but it is more expensive, and old quicks are hard to be obtained. There are various opinions upon the exact place where the thorns should be planted; some persons set them on the soil, others a foot above it, as they are not, in that situation, so much in the way of the weeds; but certainly, the nearer they are to the good soil the better for them, and their rapid growth will amply repay the trouble of keeping them clean. The quicks mostly used in this county are brought from Dublin and other places; they are to be met with in all the markets in spring, and cost from three to five shillings per thousand, according to their quality; this regular demand for them is a good symptom, and gives great reason to hope, that, with some attention in the managers of estates, and with some encouragement from their landlords, and also from some inducements held out on this head by the Agricultural Society of the county of Down, the nakedness of our land will not much longer be a reproach to us.

SECT. 2. *Gates.*

WHERE fences are neglected, it would be unnatural to expect, that much attention should be paid to gates; consequently there are very few, except amongst those persons, who are careful in forming and preserving their hedges. The usual method of putting cattle into the fields is, by a bush stuck in between two jambs of stone or fods, which is put into its place, or removed from it, at the evident peril of the fingers. Some good effect, however, attends this want of gates, for, where a gate is seen neatly made and painted, and judiciously hung, it makes a pleasing impression, whilst in a country, where such conveniencies are common, it would be passed by unnoticed. In the construction of gates, an evident improvement was pointed out to me by Mr. Christy of Kircuslock; the diagonal ought to be dovetailed into the upper part of that side of the gate, by which it hangs; the narrow part or neck of the dovetail being the lower, of course the weight of the farther part of the gate is completely counteracted, for the more it presses, the tighter the joint is pulled, which cannot give way, unless some lateral pressure is applied to remove it from its place. Something of this

this kind is absolutely necessary, to remedy the defect incident to most gates, that of drooping at the points, and being wrecked to pieces by rubbing on the ground in opening and shutting.

CHAPTER VII.

ARABLE LAND.

SECTION I.

Tillage.

TILLAGE is the dividing or breaking the ground, by spade, plough, hoe, or any other instruments, which divide by their force or action. Land is fitted for the production of vegetables, by dividing the soil ; and the more the particles of the earth are divided, the more the internal pores or surfaces are multiplied : the more surfaces there are formed by division, the more the earth is enabled to furnish food for plants, and consequently the more fruitful it is. Tillage and manure both contribute to this end ; they mutually assist each other ; and it is on a judicious management of both that success in agriculture depends. That strong land requires a greater proportion of one and the other, than land of a lighter texture, must be allowed ; but a considerable degree of attention must be paid, to remedy

medy the defects of the latter, as well as of the former, which will appear more clearly by considering the defects of each. In strong land the natural pores, or interstices, are too small, the artificial ones are too large; this defect is increased by insufficient tillage; of this most farmers of any experience are aware, and, by the different operations of husbandry joined with manure, endeavour to open what is too close, to admit the passage of the roots in its natural state, and to close what is too open to afford the necessary pressure. Strong ground breaks into clods or lumps, when badly tilled; roots cannot penetrate into, but get between these, where they perish for want of nourishment. Light land has its natural, as well as its artificial pores, too large. Pores, that are too large in any land, can be of little use to roots, except to afford them a passage to other cavities more proper for them; for if, in any place, they lie open to the air, they are dried up and spoiled before they reach them; for no root can take in any nourishment from any cavity, unless it comes in contact with, and passes against the superficies of that cavity, which includes it; but a root is not pressed by the superficies of a cavity, whose diameter is greater than the root, and consequently it cannot be nourished therein. From this statement we find, that strong land requires to be opened, for the admission of roots; light land to be closed, to prevent their passing too freely, and without a proper degree of pressure; the great

object, therefore, of tillage is, to bring the ground to that state, in which the root can pass freely in search of its proper food, and at the same time to have such a degree of firmness, as will in its passage afford the root its necessary support. The land in this county being generally in its quality light loam, and rendered much more so by a considerable quantity of lime, &c. and the idea, that much ploughing *breaks the heart of it*, being very prevalent, has made me dwell upon this subject, and endeavour to point out the result of a defective system of tillage; the evils of which are so ably exposed in the writings of the classical Tull, the father of the horse-hoeing husbandry; and who, however he might have erred by adhering too closely to the idea of tillage without manure, has done more towards explaining the true principles of managing the different soils, than any writer on rural affairs, I believe I may say, in this, or any other country.

Let us now see, how far the general practice here agrees with the above-mentioned principles of cultivation. The first object with the farmer is, to enrich his ground with lime, marle, or sand; after this, his next object is, to reap the benefit of his industry; accordingly he breaks up his ground as soon as it has received the intended advantage from the manure; on this he sows oats, which he repeats year after year upon one ploughing, until his land, from the quantity of manure and imperfect cultivation, loses all power of production.

production. When ground is treated in this barbarous manner, the foot sinks into it after harrowing as into a bed of ashes, whilst that, which is properly tilled, has an elasticity to the tread, that can easily be distinguished from the dead softness just mentioned; some land there is, however, of such a fortunate texture, that even this treatment does not ruin it, but what is the consequence? It encourages other farmers to go on with this destructive practice, until their land is so completely exhausted, that it is incapable even of yielding grass, and can only be recovered by lying in lea, and the application of earth, that has not yet felt the baneful influence of the system so generally in use. There is scarcely any part of this county, in which the effect of land thus abused may not be seen; as soon as the farina of the seed is gone, and the roots are left to shift for themselves, the hollowness of the ground is such, as not to afford them nourishment; in consequence the plants die, and leave their place to be occupied by weeds, which from their constitution are better enabled to struggle with accumulated difficulties.

SECT. 2. *Fallowing.*

FALLOWING is seldom practised, except in a few instances where a gentleman or farmer of experience and

spirit wishes to bring a piece of land into cultivation, that has never born crops before, or that has been hurt by the mode of mismanagement mentioned in the first section; speedily to accomplish either purposes this must be a good method; but except there is some urgent reason, it ought never to be resorted to, as its place can generally be supplied by a fallow crop, which, if well managed, will at least pay the expense, and leave the ground in as good a state as a simple fallow. It is a curious circumstance, that a fallow, and a fallow crop, although their mode of acting are so very different, should be attended with nearly the same advantageous effects; the first acts by exposing the earth to the sun and air, the latter by the exclusion of both; and the more perfectly the one is exposed, and the other shaded, the more completely the intended advantage is gained.

SECT. 3. *Rotation of Crops.*

ON a judicious rotation of crops depend the regular profits of farming; we may, certainly, by laying on considerable quantities of manure, force a very great produce for a few years; but that must have a period, for strong stimulants in the end must exhaust; but land treated in the Norfolk method, where turnips or
clover

clover invariably precede barley or wheat, may like that country retain its productive qualities without diminution, probably for ages. And when we add to these ameliorating vegetables just spoken of, potatoes, cabbages, carrots, peas, beans, vetches, &c. the rotation of crops may be varied ad infinitum; adapting the change of species to the nature of the soil. In this county, except from the diversity given by potatoes, (with some few exceptions) we have nothing but the one dull round of crops of grain upon the same field; until being worn out it is given up, and another portion is attacked with the same senseless obstinacy, and reduced to the same state. Nothing is more common than to hear a farmer say, his ground will produce but one good crop after potatoes, and nothing is more common than to see him, with that conviction on his mind, risk another crop without even a second ploughing; whereas, if he laid down this field with clover or hay-feed, he would nearly have a certainty of four years good produce from one manuring; first potatoes, second barley or oats, third clover or hay, and fourth oats, excellent, or probably wheat. Thus, by dividing a farm into six parts, and manuring every year one-sixth, there will be two-sixths in grain, and two-sixths under preparation for grain, two more for grass, or any other management agreeable to this system. The only part of this county, where any thing resembling a rotation is pursued, is in the barony of Lecale; I mean generally,

generally,

generally, for in many parts there are persons fully aware of the mischief of continued cropping without grafs or fallow. But even in Lecale, two, and sometimes three crops are successively taken. Marle has so much enriched their ground, and they are so very careful in the management of their potatoes, and sow so much clover, that they suffer much less by this practice than might be expected; although their produce is certainly not equal to what it would be under a more perfect system. The following is the course of crops on Mr. Gracey's farm, near Ballee; first,

THE POTATOE COURSE.

1. Potatoes drilled and manured with 160 cart-loads per acre.
2. Wheat, one ploughing to ridge it up.
3. Oats, two ploughings.
4. Barley, three ploughings.
5. Clover.

MARLING COURSE.

1. Oats.
2. Barley.
3. Barley.
4. Oats.
5. Barley, two or three ploughings.
6. Clover.

In the first course, if clover was sowed over the wheat, and came in instead of 3. oats, the course would be excellent, as the clover might be succeeded by any crop of grain ; or if peas were to form the third, the effect would be equal. The marling course might be much improved also, by sowing clover with the second barley crop. One observation, however, must be made respecting marle, that it has so great an effect in ameliorating the soil, to which it is congenial, that a less regular rotation may be admitted for some years after it is introduced ; the same observation will apply to lime, but the same objection lies against both, that they leave the ground in a worse state than they found it, when followed too far. Many farmers, I understand, have gone so far as to take ten or even twice that number of crops, upon the strength of marling ; but they begin now to be sensible of the impropriety of this mode. Amongst many different courses of crops, I noted the following, which will shew, that in Lecale there is more system than in the other parts of the county ; and this advantage I believe is entirely owing to the general use of clover ; which, though it is not so often as it should be in its right place, is invariably had recourse to in the end, as will appear by what follows.

LEA.

1. Oats, one ploughing.
 2. Wheat, two ditto.
 3. Oats, one or two ditto.
 4. Barley, three ploughings.
 5. Clover.
- Or,
1. Potatoes,
 2. Flax,
 3. Wheat, two ploughings, and some manure.
 4. Barley, three ploughings.
 5. Clover.

ANOTHER COURSE.

1. Potatoes.
 2. Barley, ridged up.
 3. Barley, three ploughings.
 4. Clover, two or three years.
- Or,
1. Potatoes, or, 1. oats.
 2. Flax, — 2. wheat.
 3. Barley, — 3. oats.
 4. Barley, — 4. potatoes.
 5. Clover, — 5. barley and clover.

Wheat is mostly sown after potatoes, sometimes after clover, but the crops are reckoned thin, which is not surprising, as the clover is generally sown after two or more crops of grain; if wheat succeeded clover, which succeeded barley after potatoes, the case would be very different; but if wheat is better after potatoes than any other preparation, why should not clover be harrowed over the wheat in spring? the harrowing will improve the wheat, and the upright growth of wheat

wheat is very favourable to young clover. In addition to the rotation of crops, which begin by a fallow, there is another course, which must be adverted to, that upon land, which, by the aid of lime or marle, is enabled to produce, independent of a fallow; many farms having been dressed with these manures at a great expense, a judicious management of them is of great consequence; this course, from the enriching qualities of these substances, which make a total change in the land, may admit of a greater latitude, and a lay of clover or grafs may very properly be considered as not much inferior to a fallow. The courses, which I have observed as most deserving attention on land so improved, that had been for some years in grafs, and, consequently, free from weeds, and which had acquired a pretty strong sward, are as follows; first, oats on one ploughing, the furrows well cleared, so as to afford an additional covering to the seed; secondly, wheat, often on one ploughing, and often very good; third, barley, two or three ploughings, the produce great: with this last clover or grafs are sown, and the land suffered to lie for three years; where the ground is light, wheat is often the first crop after grafs; and when the soil is of that nature, the wheat should be followed by barley, and laid down again. In this way land may be kept clean and in good heart for a number of years. A skilful farmer, in the neighbourhood of Lisburn, told me, that, by managing his fields in this way, at the end

of twenty-five years after liming they were as rich as the first day. Marshall, in his Rural Economy of the Midland Counties, speaking of the Leicester management in breaking up their grafs-grounds, expresses himself thus: "If fallowing can be dispensed with in any case, it may be under the management of this district, where only three arable crops are taken, before the land be laid down again to grafs." In another place he says, "What a new system of husbandry is this; at first sight slovenly in the extreme; yet it is possible that, before I have been twelve months longer in this district, I may conceive it to be for lands, which are equally productive of grafs and corn, an eligible system of management." What would Mr. Marshall say of our mode? Ten or more crops following. The labour attending this plan is small, six ploughings in all; one for oats, two for wheat, three for barley. The great objection to this system is, the fear of weeds, which may intrude from three successive corn crops; but, if the land has been free from them in the beginning, I should think, by particular attention in weeding the second crop, and by a complete winter fallow for the third, this evil might be avoided. To carry this plan into execution with effect, that part of the farm, on which it is to be practised, should be divided into equal fields, as nearly of the same quality as possible; for on this circumstance a good deal depends, as light land is much more liable to weeds than heavy. I shall

now take leave of this subject by observing, that, in most cases, beginning with a fallow crop is to be preferred, and what here is proposed is still under the conviction of the superiority of that mode, and is merely to be considered as an improvement of the old and injudicious management of this district, in which the permanent manures of lime and marle are so copiously used, that a proper application of their valuable qualities is of the greatest consequence.

SECT. 4. *Crops commonly cultivated; their seed, culture, produce, &c.*

THE crops commonly cultivated in this county are, wheat, rye, bere, barley, oats, peas, flax, potatoes.

WHEAT.

1st. *Preparation.*—The general preparation for wheat is a potatoe fallow; the manure, of course, dung: but a considerable quantity is sown in other methods; it is often sown after clover, which is ploughed up in June or July, and once or twice more before seed-time. If the ground is not thought sufficiently rich, dung or ashes are applied, sometimes before the last ploughing, and sometimes as a top-dressing; it is also sown after flax, the process the same; it has likewise been sown with

with succession lay, which practice is gaining ground, and after oats, which have been sown on lay.

2d. *Sort.*—The sort most in use is a kind of brown wheat, thin in the skin, which weighs well; besides this the red lammas; but for light soils the white velvet is much approved of: this is a beautiful grain, and the bran is so white, I should think it very advantageous to the miller. Colonel Ward imported some of this kind from York, in the year 1800; this he dibbled, and had a return of forty fold: I saw the field in June 1801, when in ear; nothing could exceed the beauty of it; a specimen he sent me is exceedingly fine. Cone wheat he tried in the same field, but it did not ripen so well; some of this latter species, sown by a gentleman near Moira, succeeded remarkably well. I saw a sheaf, tied by a strap made of the double length of the straw, that yielded eighteen pounds of wheat; the straw was of course very long, and as strong as a reed.

3d. *Steeping.*—This operation seems to be losing ground, as it is now considered of little use, except in separating the good from the bad grain, which may be as effectually performed by proper winnowing. It seems very extraordinary, that any substance, imbibed by the seed before sowing, could prevent the smut, a disorder that is entirely confined to the ear, and often to a few grains in the ear; it seems to proceed from want of impregnation, not from the root, and is more frequently

frequently observed, when frosts or high winds prevail at the time of blossoming. The experience of the three last years has nearly convinced me, that there is little connexion between the quality of the seed, and the disorder in question. The seed wheat of the year 1799 was remarkably bad, and yet in this part of the county the produce of the following year, 1800, was quite free from smut, and good in every particular; but this being sown produced the ensuing year, 1801, grain very much infected with that complaint.

4. *Seed, quantity sown.*—About four bushels to an Irish acre is the general allowance; this makes two and one-half bushels to the English acre; Mr. Christy sows five bushels per Irish acre. I shall quote his own words: “I am in the practice of sowing five bushels on an Irish acre, which is considerably thicker than is usually done in this neighbourhood. I have long been of the judgment, that one of the many causes, why the land in general is so extremely weedy, is that of thin sowing, as I have never seen the ground so clean as after a thick crop, nor ever saw a thin one without abundance of weeds succeeding it.” Mr. Gracey of Lecale sows two and one-half hundred weight a barrel, which is about half a bushel less. The opinions of these skilful cultivators coincide with my own experience; the question is not to obtain the greatest quantity in proportion to the seed, but the greatest quantity upon a given piece of ground.

5th. *Time of sowing.*—The time of sowing varies considerably, from the beginning of October to the beginning of March, through all the intermediate months. When fallowing was in fashion, wheat was sown early in October, but since wheat has so generally succeeded potatoes, the sowing depends upon the time the potatoes are dug, which can seldom be accomplished until the latter end of that month, or the beginning of November; but, for some years past, considerable quantities have been sown so late as the month of March, without diminution in produce. The Rev. Mr. Cochran, of the Ards, thus writes to me on this subject: “You enquire, Sir, whether wheat is sown in spring; I have done it frequently; I have sown it in October, and in the beginning of March following I sowed wheat in the same field, on the immediately adjoining ridges, in the same state of strength. I had as great weight from my March sowing as from the October; as it was not exposed to the dangers of winter, I gave it less seed, and it was ripe fourteen days after the October sowing. I would prefer sowing in the latter end of February, or beginning of March, to sowing in January, and have as good profitable crops from my spring as from my autumn sowing.” About Lisburn wheat is sown in spring with great advantage, and in many other parts of this county; the species sown is not spring wheat, but the same as is usual for the autumnal sowing.

6th. No other culture is bestowed on the growing wheat, than pulling out the larger weeds, and sometimes rolling, and harrowing, which last is found very advantageous, except in one instance, where a gentleman covered a thin piece of wheat with fresh soil, which increased the size of the heads to an extraordinary degree. Top-dressing is so seldom used it need scarcely be registered ; but I have tried turf-ashes with effect, both those made in the house, and those burned in the air for the purpose ; the quantity considerable, from twenty to thirty car-loads per acre. Where it was laid, it could be distinguished at the distance of half a mile.

7th. *Harvest*—is not very regular ; that, which is sown in autumn, is generally earlier than oats or barley, that sown in spring about a fortnight later. Wheat is bound in double straps here, and immediately stooked, in which situation it remains until fit to bring in. Those, who have a considerable quantity, stack it on hovels, to keep it safe from vermin. All grain in this country is stacked out of doors, as the climate will not admit of a large quantity being housed at harvest.

8th. *Threshing*.—For seed wheat is generally lashed, as in this way the grains are not bruised by the feet, nor by the flail. And for the market it is the better way, as the best grain is got out without the small being mixed ; after lashing the sheaves are tied up and threshed,

threshed, to obtain the small grain. The threshing machines seem peculiarly well adapted for wheat.

9th. *Produce*.—Various ; differing according to the soil and culture, from fifteen hundred to five and twenty hundred per acre ; medium produce, about 2 ton.

10th. *Manufacture of bread*—is mostly confined to towns, which are supplied from the flour mills, where there is a constant market for wheat. Farmers, who grow wheat, generally make the smaller grain into a coarser kind of bread for family use, baked in cakes on a griddle without barm. It would be much to the advantage of the country in general, if wheaten bread was more in use amongst the farmers ; for the produce of a middle crop of wheat is much greater, in point of food, than that of a good crop of oats ; besides, where thatching is so much in demand, from the number of cabins on the small farms, wheat straw would, from its superior duration, be a matter of considerable economy both in the article of labour and manure.

Rye—is seldom sown, except on bogs ; white rye is generally the sort. The quantity of seed not well ascertained, I suppose about two bushels ; time of sowing, the same as wheat ; cut about the same period ; produce much the same ; mostly made into bread ; some sold to distillers and tanners.

Bere, or winter barley.—Managed in every particular like wheat ; but in general earlier ripe, by ten days or a fortnight.

a fortnight. Application ; fold for malting, or sometimes made into meal, of which a great quantity was used in the dear seasons of 1800 and 1801 ; the produce much the same as of wheat.

BARLEY.

1st. *Preparation.*—Barley is often prepared for by a potatoe fallow ; when that is not the case, it has generally two or three ploughings ; if the ground has not been richly manured with marle, lime, or sand, dung is the usual manure ; the quantity varies from forty to sixty car-loads per acre, which is sometimes ploughed in, and sometimes spread on the ground, the seed sown, and both dung and seed covered from the furrows. From this method the produce is often great, but often weedy.

2d. *Sort.*—In the eastern part of the county the long-eared, or two-rowed barley, is always sown ; in the western it is generally the four-rowed : the first is esteemed the most profitable for the malster ; the latter I take to produce more to the farmer ; but it is very troublesome to dress for the market, as the awns adhere closely to the grain, and require a second threshing to get them off.

3d. *Seed* ;—quantity about five bushels ; in Lecale much more, two and one-half hundred weight being

the usual allowance, that is, nearly six bushels. All broad cast; except in one instance, when Mr. Crawford, of Crawford's-burn, made use of the drill plough; with this machine he sowed three acres with four bushels of seed, and found the crop sufficiently thick, and the barley much better grain than usual; he thinks it might be sown with even a smaller quantity, for he tried a number of drills with a less proportion, and could not observe any difference in the produce. This machine sows five drills at nine inches distance, or three at eighteen; a horse, one man, and a boy, will sow three or four acres a day; though the mold falls in behind the hollow coulter, Mr. Crawford always rolls the ground after sowing, which he thinks an excellent practice, whatever may be the mode of sowing. The drill plough requires ground very fine, and free from rocks and stones. An experiment made by the Rev. Mr. Moore, of Clough, deserves to be mentioned; being struck with the quantity of seed usually sown, particularly in the approaching famine of the spring of 1800, he dibbled an acre of ground with twenty-four quarts of barley, and although it was sown late, and the dry weather which immediately followed was very unfavourable, the produce was nearly equal to that of the surrounding country; and, if to that was added the saving of more than five bushels of seed, the experiment upon the whole was in favour of the dibbling.

4th. *Time of sowing*—from the latter end of March until the beginning of May; so much depends upon the season, it is very difficult to determine, what is the most proper time for sowing; this year, 1801, for example, was favourable to early sown barley, unfavourable to that, which was sown late, and yet the ground in the beginning of May had a more promising appearance than in the beginning of April. Much depends upon judgment, in taking the ground in proper order; but, as much depends upon the circumstances of the weather after sowing, it is a most eligible thing to have ground properly dry for the seed; if, however, it is nearly devoid of moisture at that period, and that rain does not speedily follow, the grain does not equally vegetate, and that, which remains without growing for any time, never overtakes the rest, but remains green at harvest, whilst the first sprouted seed is ripe. Barley appears to me more liable to this misfortune than any other grain; the cause of which is probably the advanced season, at which it is generally committed to the ground, and its consequent dryness. I should think it a good method, where a considerable quantity of this grain is to be sown, to let the sower in dry weather follow the plough as close as possible, after the last stirring, before the moisture evaporates, rolling the ground immediately; which tends not only to keep it from escaping, but from the fineness it gives the surface, permits any casual showers to penetrate

with more facility. Sowing under furrow has the advantage of imparting to the seed more moisture than the usual mode, and certainly protects it better from the depredations of birds, &c.

5th. *Steeping*—though not customary for barley, might probably be useful in dry seasons. In a letter to the Bath society this method of preparing the seed is mentioned with high encomiums; the steep, water taken from a dunghill; great care ought certainly to be taken after the steeping, to prevent any of the seed from lying on the surface, which would infallibly spoil it, after being brought nearly to a state of vegetation by the steep.

6th. No culture is given whilst growing, except taking out the larger weeds.

7th. *Harvest*—sometimes as early as the latter end of August, but generally through the month of September, and in backward years as late as the first week in October. The grain all stooked in the field; ten sheaves standing, and two to cover, compose a stook. Grain of every kind is brought home and stacked as soon as fit; for in this country it will not keep in barns, until it gets completely dry in that situation.

8th. *Threshing*—except in two instances above-mentioned, is performed in the usual way; when barley is threshed by the bulk, eight bushels are reckoned equal to ten of oats, and paid for accordingly. Four-rowed barley is not so easily separated from the awns as the
two-rowed;

two-rowed ; after it has been threshed it is necessary to beat it, either with flails or mallets, to make it ready for market.

9th. *Produce*—from sixteen hundred weight to one and a half ton. The produce of Lecale is nearly a ton, sometimes more, and often less ; about Moira, Magheralin, and in the neighbourhood of the towns towards the western part of the county, the produce is greater, from a ton to a ton and a half, that is, from ten to fifteen barrels ; and in that part of the country it is the four-rowed sort which is sown. This, however, is more owing, I should think, to the quality of the land, than to the superiority of the species.

10th. Seldom made into bread except in times of scarcity.

OATS.

1st. *Preparation. Tillage*.—Oats being the principal grain cultivated in this county, are sown after every preparation both of tillage and manure, and are often sown upon ground in such a state, as to be unfit to be sown with any grain. The best and cleanest crops are obtained after potatoes ; the manure dung or ashes. Very fine crops are also obtained after lime, or marle, or sand, upon one ploughing ; for, as has been mentioned in the beginning of this chapter, more than one
ploughing

ploughing is seldom given. The only person I know, who gives more than one ploughing, except Mr. Christy, is Mr. Gracey, of Lecale; their observations upon the second stirring accord with my own experience, that it not only increases the quantity but the quality of the grain.

2d. *Sort.*—The species cultivated are the Poland, the Blanter, light-foot, and by some persons the white Holland. The Poland oats are very white, early, and very prolific on rich ground; but where they are good, the straw is in general coarse. The Blanter has finer straw, is of a more yellow colour, does not produce so much in general on the same quantity of ground, but from the thinness of the hull yields remarkably well in meal; this kind of oat is very hardy, does not easily shake in high winds, nor is it necessary to cut in whilst greenish, to prevent its being lost in handling, like the Poland. The light-foot is a small grain with very fine straw, the ear confined to the top of the straw, which grows to a great length, and will succeed where the other sorts will not; it is not profitable to the farmer, who has rich ground, but to the mealman very much so, from the fineness of the hull.—The white Holland resembles the Poland in being early ripe, requiring to be cut before it is completely coloured, and in the greatness of its produce on rich ground, but excels it in weight of meal, from the superior fineness of the hull.

3d. Never

3d. Never steeped.

4th. *Seed, quantity sown.*—About ten Winchester bushels to the Irish acre; Mr. Christy thinks he has better crops by sowing eleven bushels.

5th. *Time of sowing.*—As early in spring as the ground will admit of; the earlier they are sown, in general the better the crop.

6th. *Culture whilst growing.*—Pulling out thistles, and other large weeds.

7th. *Harvest.*—Generally a week or ten days after barley; treated in the field in all respects like barley, and stacked at home.

8th. *Produce.*—Most various; being every gradation from thirty to one hundred bushels per acre. The latter, upon rich ground lately limed, not uncommon, or after a crop of potatoes, on land newly broken up; from sixty to seventy bushels the average upon good land, with the usual preparation one ploughing.

9th. *Threshing.*—The price of threshing 1s. 1d. per boile of ten Winchester bushels.

10th. *Manufacture into Bread.*—Baked into thin cakes on the griddle, with water and salt; I never have met with it baked with barm; sometimes carraway-seeds are mixed with it, and sometimes it is mixed with butter; however, it is mostly used, and, I believe, preferred simply, as already mentioned. There is a variety of it, called a bonaught, which is a thick round cake, baked on the clear turf coal, and often used on

the

the first making of meal after harvest; formerly oats, designed for meal, were dried on kilns, with wooden ribs, covered with straw to prevent the grain from falling through them; at present, there are kilns at most of the mills, covered with tiles or thin iron plates, which do the business more speedily: but the meal of oats, previously dried on the old wooden kilns, is reckoned sweeter; being more gradually dried probably has that effect.

FLAX.

1st. *Preparation.*—Some years ago the prevalent idea respecting flax was, the impossibility of obtaining a good crop, without sowing it after potatoes; in consequence of which, a portion of ground, according to the extent of the farm, or the demands of the family, was always set apart on the potatoe ground, as it is termed, *for sowing their lint upon*; amongst many, especially small farmers, this is still the practice; but others, who saw farther, found it was absurd to dedicate their best prepared ground to a crop, that would be nearly as good upon land not so well conditioned for the production of grain; in consequence of which, much flax is now raised upon stubbles, that have suffered much by repeated crops of grain; for an additional ploughing or two will, on such land, secure at least a tolerable produce; and when it is intended to refresh it by a fallow crop,

crop, or by grass, for which flax is a good preparative, the idea, though not according to an approved rotation, is not so reprehensible as many others. Fallowing, I understand, is a superior preparation for flax, and I have seen very fine crops on rich and mellow lay. A soil approaching to clay is reckoned the best for it, as it gives a firmness of texture, which enables it to bear the many operations it is obliged to undergo.

2d sort —There are two kinds of flax-seed imported, Dutch seed and American; the Dutch is best adapted to heavy, the New England to light soils. The price of the former is generally higher than the latter, but the increased produce, on a soil fit for it, amply compensates for the difference.

3d. *Seed, quantity sown, &c.*—I shall here take the liberty of inserting, in Mr. Christy's own words, his account of the manner, in which he cultivates this fundamental article of our staple manufacture.—“Flax. This I sow mostly after wheat, giving the land one furrow before winter, with a crop and common ploughing in spring, when it is ready to be sown. The land is finely harrowed before the seed is sown, and then harrowed with a close harrow with fifty-six teeth, which does not sink the seed too deep; the furrows are neatly shovelled up, the stones gathered off and thrown into them, and the whole is rolled. I generally sow three and one-half bushels on an Irish acre, and find it sufficiently thick. Last summer, 1800, proving favour-

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able for saving the seed, I stacked up the flax, and, from the produce of what I have already beat out, I am disposed to think I shall have from twelve to fourteen hogsheds of good feed, and probably 240 stones of flax (16lb. to the stone), worth in the whole 180*l.* from eighteen bushels, sown on little more than five acres, which certainly is a very good return. I have, indeed, often heard it asserted, that flax is an exhausting crop in the extreme; to prove what truth there is in that assertion, I caused flax and barley to be sown on alternate ridges, in a field last year, which I design to sow with oats this season, expecting the crop will shew the difference if there is any, and satisfy me as to the propriety of persisting in the culture of flax." The result of this experiment was, that not the smallest difference could be perceived between the oats produced on the alternate ridges of barley and flax.

Mr. Gracey, of Lecale, informs me, that seven pecks, equal to three and one-half bushels, is the usual quantity sown in his neighbourhood. A curious circumstance, respecting flax-feed, occurred to Mr. Cowan in this parish of Annahilt: he observed, when the first breaking was giving to some flax of his, after it had been steeped and grassed, that the seed, which came from the boles, seemed quite fresh; in consequence of which he had it gathered and carefully laid by. This occurred in the harvest of 1800; in 1801 he sowed this seed, and had a crop equal to that produced by seed imported.

imported. This is a strong fact, which proves two things, the hardness of flax-seed, and that our own seed is equal to that imported. Some persons sow much thicker, with the idea of making the flax finer.

4th. *Time of sowing*.—As early as the season will admit. It is an old saying, that March tow is as good as April flax; I need scarcely observe, that tow is the second quality for spinning, after the hackle.

5th. *Culture whilst growing*.—Very careful weeding, not only of the larger but of the smaller weeds; this is generally performed, when the flax is about three inches high, and after rain, as the weeds draw easier at that time, than when the ground is hard.

6th. *Harvest*.—Flax is generally pulled, when the crop is only intended for spinning, as soon as the boles are grown to their full size, rather before they begin to assume a brownish hue; but sometimes it is necessary to pull it before that period, when it begins, as it is expressed, to fire, that is, when there are oblong blackish spots upon the skin, which cause the flax to break off in the dressing at the place where they appear; this is most frequent in wet seasons, and seems to be the consequence of the leaves of the plant falling upon the stem, to which they adhere, and which is rotted by this means. This accident is by most farmers attributed to lightning.

When the seed is intended to be saved, it is necessary to allow the flax to stand, until the boles are com-

pletely filled, and the seed assumes within a brown colour, which encreases until it has the same hue as the foreign; after this it stands in stooks, until it is sufficiently dry to allow of its being stacked, which must be on hovels, to prevent the depredations of vermin, that are very fond of the seed. In this situation it remains, until it is necessary or convenient to free the seed from its covering; which is performed, first, by rippling or drawing the flax through a row of spikes, fixed in a plank close enough to draw off the boles, which are then bruised, by which operation the seed is freed, and afterwards cleaned by winnowing. The flax produced from that, which stands until it is ripe, is reckoned more harsh and more coarse than that, which is pulled green; but this, I should fancy, was more owing to ignorance in handling it, than from any real defect; at least, such was the opinion of a very skilful hackler, with whom I conversed upon the subject. It is much to be wished, that we could save our own seed, and preserve the quality of our flax.

The next step towards fitting the flax for spinning, after it is pulled, is watering. This is performed by sinking it either in running or stagnant water, and keeping it in its position, either by the weight of fods or stones, until the inner part of the plant is so rotted, that, in the future operations of breaking and scotching, the rind or outside covering, which affords the material for spinning, may easily be separated from it; in
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the water it is kept, until by the feel it is judged to be fit for grassing, that is, to be spread as thin and as regularly as possible upon a meadow or pasture field, until the process begun in the water is completed by the sun and rain; the advantage of a dry day is then taken, when it is lifted tied in bundles or beets, and so kept until it is sent to the mill. Some persons have the first operations (after it is housed) of breaking and making it into handfals performed at home, others have them performed at the mills; the first is reckoned the safest, the last the most expeditious. In all operations the flax must be dry, or it will work unkindly (the provincialism), and be attended with loss; at the mill it is finally freed, by beetling and scotching, from the pith or inner part, which, being totally useless for any purpose of manufacture, or, I believe, of manure, is thrown away. Grassing flax is a tedious process, which often consumes many weeks, and at a time when, the former year's crop being nearly exhausted, the price is usually high. The following speedy and effectual method of preparing it for the mill was lately communicated to me by a gentleman of veracity, and skill in rural matters. Let the flax be watered the usual time; then take it out, and spread it so as to dry it completely; then tie it into sheaves as at first, and immerse it in water a second time for twenty-four hours, after which, when dried, it will be completely fit for the mill. This method, I understand, is much practised

practised in different places, and is not more hazardous than the old way, though so much quicker.

Watering the flax is a critical process; a day too much rots the rind as well as the pith; a day too little makes it harsh, but, as that may be corrected by the grassing, it is the safer side to err on. When flax is early ripe, in the latter end of July, or beginning of August, or when the weather is warm, it requires a shorter time in the water, from six to nine days; a certain sign of its taking with the water is, a frothy scum arising to the surface. More time is required in stagnant than in running water, which also makes it of a fairer colour, but that is a matter of no consequence; the water of turf-bogs is very favourable, when it has been long exposed to the air.

Produce—Is mostly computed according to the quantity of seed sown, not according to the ground; in the common mode of sowing, a bushel is usually given to a rood of ground; from twelve to fifteen stones of sixteen pounds each is reckoned a good crop, but eighteen and even twenty have been known; this, however, is uncommon; we may therefore take fifty stones to the acre as a fair average; Mr. Christy's is forty-eight; this, at 11s. 4½d. per stone, is a noble return. By the same gentleman's statement, from two and one-half hogsheads to three of seed may be expected; this, added to the flax, makes it superior to any other crop, but then it is attended with a trouble and expense,

expense, which deduct very much from the profit, which, notwithstanding, where the crop is tolerable, is considerable. The expences are rent, feed, sowing, weeding, stoning, pulling, watering, taking out and grassing, lifting, drying, scotching at the mills; these amount to from 8*l.* to 10*l.* per acre; fifty stones at 11*s.* 4½*d.* or say 10*s.* come to 25*l.* which leaves a profit of 15*l.*, and when to this is added the seed when sowed, amounting to two and one-half hogsheads, few crops will be found to equal it; one objection, however, lies against it; it affords no return of manure. As to its exhausting the ground more than grain, that, I believe, has no foundation, at least I never could find it so, and Mr. Christy's experiment seems conclusive. I hope I shall be excused for having said so much upon the subject of flax, but I thought it was due to the plant, from which we draw the support of our staple manufacture, and that it might form a matter of curiosity to strangers, if into any such hands this Report should fall.

PEAS.

Peas are not so much sown as formerly; even in Lecale, where this culture was a part of the general management; they are esteemed, and justly, a great refreshment, preparing the ground for a crop of grain, if the soil is light, in a superior manner.

1st. *Preparation*.—One ploughing upon land, that has been hurt by repeated crops of grain, in consequence of marling or liming; to which it proves a great restorative.

2d. *Sort*.—Both; white and grey.

3d. *Quantity*.—I found it very difficult to answer to this; I believe between two and three bushels.

4th. *Time of sowing*.—When first introduced, every endeavour was used to get them into the ground in February, but now March is reckoned as good, if not better.

5th. *Culture whilst growing*.—As they are sown broadcast, no other culture can be given than pulling out the larger weeds; the smaller, if the crop is good, being smothered.

6th. *Harvest*.—About the same time as for other crops.

7th. *Threshing*.—By the flail.

8th. *Produce*.—Various; from thirty to forty bushels.

POTATOES.*

The different methods of cultivating this most valuable root are too well known, to require a particular description;

* In a publication of the Agricultural board in England, it is inquired whether potatoes exhaust the ground? in answer to this; I saw a piece of ground, in the rere of the town of Killough,

description; at the same time it is of too much consequence to mankind at large to be slightly passed over: I shall, therefore, make a few observations on the different modes employed here, and give a detailed account of the most approved practice.

1st. preparation.—For the old or lazy-bed way, the preparation is very simple; dung spread on grass ground, or ground that has been under wood, or any kind of unprofitable production; as whins, heath, rushes, &c. &c. This, though not the classical mode of raising potatoes, has its use, in bringing land immediately into profit, that under any other culture would require a year or two; and, besides, much land can be cultivated this way, which from its nature would not admit of tillage with the plough: that which is too wet, that which is encumbered with stones, or that which being lately covered with wood is full of roots, or that which is too steep for cattle to plough; in these and in similar circumstances the lazy-bed way is not only excusable but advantageous; to which may be added, that potatoes, produced from fresh soil thus managed, are superior in quality to those of a more perfect cultivation. The lessened produce, and increased expense, are weighty arguments however against the practice.

Killough, that had produced good crops of this root near forty years; the year I saw them, 1801, they were better than ever they had been.

Another mode of culture, which I may call the *mixed mode*, is an improvement upon the former; the ground is prepared as for drilled potatoes, by previous ploughings and harrowings; but the dung is spread, and the potatoes covered, as in the lazy-bed way, with spade and shovel; the produce is little if at all inferior to the drill culture; a neighbour of mine at my request kept a regular account of the produce of one and a half acre of ground, cultivated in this and the drill-way; very little difference was found, but that difference was favourable to the beds or ridges.

I shall now give in Mr. Christy's own words the most approved method of cultivating potatoes in the horse-hoeing way: "The land designed for this crop is ploughed before winter, and remains in that state until the spring corn and flax are sown; it is then harrowed well, cross ploughed and harrowed again; and the root weeds, if any there are, carefully gathered off with a close weeding harrow each time. When the land is thus made fine, it is laid out in shallow drills at three feet distance, by the double mold-board plough, which effects it at one furrow. I call the drills shallow, because I make them much more so than any other person I know of, from a persuasion that the potatoe thrives better by being planted on the good foil, where it lies dry, and receives the benefit of the sun and atmosphere, than it does in a lower and consequently colder situation. When the drilling plough
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has made ready about half or three quarters of an acre, I set from four to six horses, according to the distance I have, to draw out the manure; appointing as many men, generally four, to the dunghill, as will be sufficient to keep the horses employed. I next appoint two men to throw the manure off the carts into six drills, each taking three, and six men to spread it carefully after them, with the same number of women or girls to drop the sets in the drills, at five or six inches distance; and as the drilling plough gets much faster on than the planting, it turns behind them at proper intervals of time, and, with the wings or moldboards extended, runs a furrow exactly in the middle between two drills and covers them, and, when it comes up with the planters, leaves them, and prepares more drills; having no other alteration to make, but changing the double trees; as it requires one of six feet for covering, to allow the horses to walk on the space between the drills, that they may not tread on the sets, as would be the case with a common tree. By this mode one pair of horses is able to drill and cover between two and three acres in a day; to employ twelve men, six horses and drivers, and six women; the dung is not exposed to the sun and air, to exhaust its salts, and the land is left in a drilled state again, which prevents it from being injured by rain. If the weather is dry, and the soil loose, at the time of planting, I pass a roller up every two drills, which presses

the sets into the dung, closes the earth over them, and breaks any lumps, that have been thrown up by the plough. In attending to the culture of potatoes, I have generally observed, that in a showery season a great many seed weeds make their appearance amongst them, before they are up, and make a considerable progress, before they can be destroyed by the action of the stripping plough, which cannot be used until the potatoes are distinctly seen; to remedy this, I invented a small hinge harrow, with handles like a plough, which is drawn by one horse between the drills, and completely cleans both sides at once; exterminating the weeds, and ameliorating the soil without injuring the plants, except a few perhaps either just up or near the surface. The next operation is, that of the stripping plough, which is constructed with a narrow sole and mold-board, that in taking the soil from the potatoes it may go very near them, and leave the earth in a ridge exactly in the middle. If the season is moist, I allow it to remain in that state for a week, or perhaps more, but if very dry, they are covered up again in a few days; but previous to this I harrow this ridge of earth with a harrow of the description above-mentioned, but narrower, which breaks the clod, and levels it for throwing up equally by the double mold-board plough. When the potatoes are pretty far advanced, and it is time to give them the last covering, I cause the stripping plough to pass through them again, taking a furrow from

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from the drills at a distance not likely to hurt their roots ; deepening the furrow, and raising fine mold, which being harrowed is again thrown up as high as possible ; and when such weeds as spring up amongst the stalks are pulled up, I send men with shovels to mend any spots, where the earth has not been laid up close enough by the plough, and so the work is finished."—For the sake of connexion I shall quote the remainder of this ingenious gentleman's observations. " In taking out the potatoes at the end of the season, I have tried various methods, but have never been able to do it so much to my satisfaction, as by using a plough of my own construction, with two mold-boards, which I shift alternately from one side to the other, throwing the potatoes always one way, both going down one row and returning up another. With this plough, and a small harrow, which accompanies it, I find I can take them out sufficiently clean, and more expeditiously than by any other mode I have seen. I cannot say with certainty, what quantity of potatoes I use for the seed of an acre, having never paid much attention to it. The quantity must always depend on the size of the potatoes used, as large ones will not go so far as a smaller kind. A considerable part of the seed I used last year consisted of the eyes, scooped out instead of cutting, and having found them to answer, I design to plant no other sets hereafter ; for seven months past I have directed, that all the large potatoes,

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that were used in the family, should have the eyes taken out, and by that means I expect to have a large quantity of seed in spring of the best kind, as I esteem those taken from large roots preferable to small ones." This account of the culture of potatoes differs from the general practice, in the superior care bestowed on them whilst growing, in taking the earth twice from them, and harrowing the intervals, which certainly must very much conduce to their growth and the cleanliness of the ground.

Quantity of seed.—In the lazy-bed way, on old grass ground, the quantity of seed is much more than either in the mixed mode, or in the drill method.

Sort.—There are an infinite variety of potatoes, and every day new varieties are produced from seed; I dare say I could reckon twenty or even thirty different kinds, all esteemed good: the earliest I have met with are the Early dwarfs, called so not from the size of the potatoe, but from the shortness of the stalk, which only bears the rudiments of blossoms, and never any feed; besides this kind the Long white is much approved of, being both early and good to eat. The Black potatoe still keeps its ground, as it is prolific, and requires less manure than other kinds; and the Apple potatoe, by being the best for late use, though not very productive, is likely to keep its place. I must not here pass by an observation of Dr. Darwin, in his *Phytologia*; who says, in section 17. 2, that potatoes
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are amongst those plants, which do not produce blossoms the first year from the seed. In answer to this I beg leave to say, that they not only bear blossoms, but seed, the first year, as perfect as at any period, and that I have now in my possession several potatoe-apples gathered from stalks, produced from seed, which I sowed and transplanted myself in the spring of 1801; the seed was sown in boxes, and kept in the house until the plants were sufficiently large to remove; nor are those potatoes, which grow on the stalks, and which the Doctor calls *aerial*, peculiar to any kind, but are frequently met with in favourable seasons, when the stalks are luxuriant, and in rich soil, like Major Trowel's.

Time of planting.—For early planting, February, March; for a full crop, the latter end of April, or the beginning of May; in boggy ground, any time in the month of May, or even the beginning of June. Planting potatoes, that have budded in the house, and have been hardened gradually by the admission of air, is the most expeditious way of raising early potatoes, provided proper steps are taken to secure the buds from frost.

The culture whilst growing has been fully detailed in Mr. Christy's account.

Time of taking up.—Different, according to the time of planting, and the species of potatoes. They never should be put together in large quantities, unless they are completely ripe, and tolerably dry; for they lose
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their taste and firmness, from sweating too much in large heaps, when prematurely raised; many persons attribute the disorder called curl to this cause.

The method of keeping them.—In heaps in the fields, solidly covered with earth, sufficient to keep out rain and frost; from these heaps they are taken into the house in spring, and, by turning, and picking the buds as they appear, may be kept (except the early kinds) good and fit for use, until new potatoes are ready; the apple potatoe, with proper care, I believe, might be kept more than a year.

Potatoes are most advantageously applied to the following purposes; first, to making of flour and starch, the process in both cases the same; reducing them raw to a paste, which, being diluted in water, affords a quantity of either the one or the other, equal at least to a seventh part of the gross weight of potatoes. Excellent barm or yeast is made by boiling, peeling, and bruising them; and then adding a sufficient quantity of barm to set them in a state of fermentation, after which nothing more is required than to add more potatoes as they are wanted; this, mixed with flour, makes as light bread as that produced from malt.

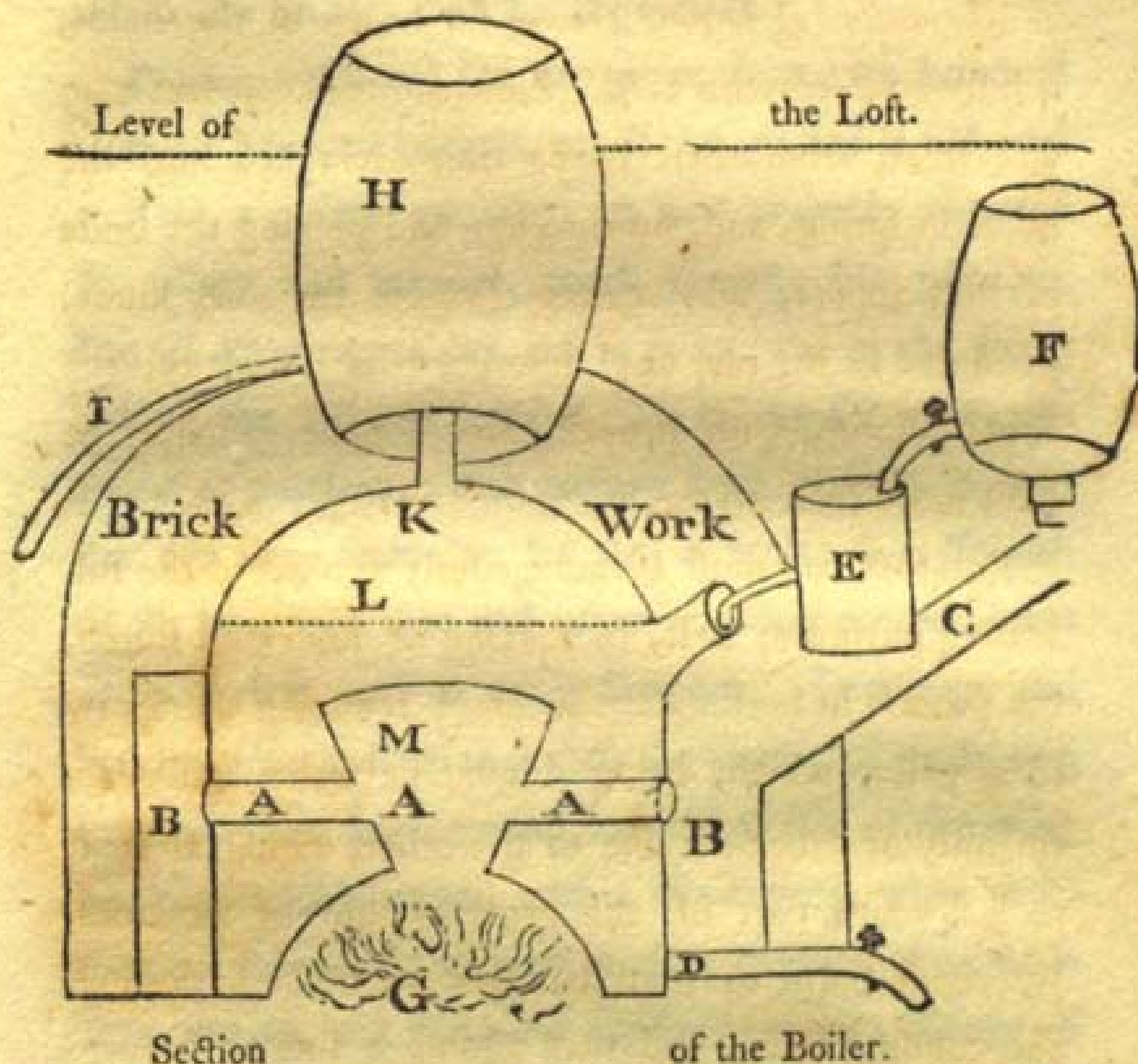
On propagating Potatoes from Cuttings of the Stalks.—In the year 1801 some stalks of potatoes of a particular kind were cut off by a worm: these I set down; they produced potatoes at every joint, but more resembling aerial potatoes than those, which grow under ground:

PLAN OF A BOILER

USED BY THE RIGHT HON. ROBERT WARD, AT BANGOR,

FOR STEAMING POTATOES,

By which a very small quantity of fire prepares a pipe full of potatoes, put into it in baskets, and taken out in the same manner, by means of a small windlass fixed in the loft.



REFERENCES.

A. Openings into the flues, of which there are four.—B. Brick flue, that surrounds the boiler, and conveys the smoke into the chimney.—C. The flue that leads into the chimney.—D. Pipe for drawing off the water.—E. Tin vessel, which being placed on the flue heats the water, before it goes into the boiler.—F. Cistern to supply water for the boiler.—G. The fire under the boiler, which is inclosed in the hollow space and strikes against M. and passes off through the four metal flues A. into the brick flues B.—H. Vessel for holding the potatoes.—I. Small pipe for letting off the condensed water.—K. Aperture for the steam to pass from the boiler into the vessel.—L. The height the water should be kept at.

NOTE.—It takes two and a half hours to heat the boiler to the proper degree of heat for steam; and forty minutes for the potatoes, which are put into the boiler in baskets, and when sufficiently done, are lifted out without breaking. The openings of the metal flues should be placed as far distant from the flue, which leads to the chimney, as possible, that the heat may be detained in the flue, which incircles the work.

an accident happened to them, which prevented my cutting them this year, but I hope to have it in my power to repeat the experiment, with the result of which the Society shall be acquainted.*

Produce.—On old lea, not great, from two hundred to three hundred bushels, or, if the ground is rich and mellow, a greater quantity; on land properly prepared by tillage and manure, much greater; but potatoes, like all other vegetables, are in proportion to the goodness of the soil and culture. As to the soil most congenial to potatoes, a rich mellow loam, neither too wet nor too dry, seems to be that in which they flourish most; but, with care and attention, they are profitable on every soil, and in every situation. Turf-bogs and moory grounds seem to possess the quality of preserving potatoes from degenerating, as well as that of throwing out considerable crops; and in this county, when those soils are frequently applied to their culture, the curl is little known, and frequent applications of a change of seed are made from other parts where this advantage is not enjoyed. Of the cause of curled potatoes I have never yet heard a satisfactory account, but I think I can say, that frequent changes from boggy and moory soils, to those of a different quality, are found the best preventative; as such it is considered in England. In

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Staffordshire

* See *Experiments on planting cuttings of stalks of potatoes*, by the Rev. Mr. Moore, Transactions of the Dublin Society, Vol. II. part 2. p. 217.

Staffordshire there is a constant intercourse between the lowlands and the moors for change of feed, which they reckon to have the wished for effect, in preventing the curl.

Manner of keeping Potatoes.—Generally in heaps in the fields, where they are covered sufficiently deep to prevent frost from penetrating to them; straw is often put next the potatoes, to assist in keeping the moisture from hurting them, but the best thing is a thin sod, such as houses are covered with before the thatch is laid on. Turf-bog resists both rain and frost better than any other covering.

SECT. 5. *Crops not commonly cultivated.*

ALTHOUGH the culture of green crops is not much practised, the necessity of cultivating them seems to be generally understood amongst the gentlemen of this county, who, by offering premiums for their encouragement to little farmers, and by shewing the example themselves, bid fair for introducing this important branch of husbandry, which, if it once becomes general, will tend, more than any other measure, to alter our general system for the better. One great obstacle to this improvement arises from the populousness of the country, which renders it difficult to protect turnips, &c.

&c. from the depredations of those who, without principle or industry, are continually on the alert to take advantage of their more diligent neighbours; but, if any thing like a general attention to this branch of husbandry could be brought about, it would do more than divide the loss; it would interest more persons in their preservation, and in the end put a total stop to the plunder.

Turnips have been partially cultivated for many years, but nothing like a general cultivation has yet taken place. It would be useless, then, to expatiate on the utility of a vegetable, the valuable qualities of which are so universally known; it is sufficient to say, that they have answered the expectation of every person, who has tried them. The mode, in which they seem to succeed best, as we have not expert hoers in this country, is in drills of two feet asunder, the dung just covered, the seed sown by a drill barrow, and immediately rolled; the culture, whilst growing, a complete horse hoeing, the weeds between the plants being pulled by hand, the ground, of course, made as fine before the sowing as possible. In this method crops of turnips are every year raised in the park at Hillsborough, equal to any, I shall venture to say, in England. If the ground is not completely hoed by hand, or in the drills, the work is but half done. The tankard or Norfolk turnip is a very great producer, but

growing so much above the ground, it is more liable to injury from frost, &c. than the red or large green, which grow more into the soil; the Swedish is the most hardy of all, and as it succeeds better than any other by transplantation, it is very valuable on this account likewise, as, by having a nursery of these, the drills, if any part of them miss, may be made good; they should be sown in March, as they are of slower growth than the others.

Cabbages, as food for cattle, are even less in use than turnips, though superior to them in produce and in quality, when properly given. The management of this vegetable is perfectly understood, being cultivated in every garden; all that is wanting is to extend it to the fields. Raising cabbage plants is in some parts of this county a very beneficial article of husbandry; many acres of the seed of the different kinds, both for summer and winter use, for the supply of this and the neighbouring counties, being sown every year. There are two seasons for sowing these seeds; for those, which are to stand the winter, the time of sowing is from the middle of July to the first week in August (sometimes later, but the success not so certain). The most approved mode of sowing is on a fallow, the manure soil and lime, or dung, dung the better; the land is ploughed in ridges before seed-time, then harrowed, the seed sown; another slight harrowing is then given, and the furrows

furrows nicely shovelled; the quantity of seed near twenty pounds to the Irish acre. Cabbage-feed is sometimes sown on ground, from which a crop of early potatoes has been taken; this is a very beneficial way, as three crops may be had from the same ground in two years, the plants being drawn in time to make room for spring corn. The other season for sowing these feeds is in spring, to answer for the summer planting. Farmers, who sow any quantity of land in this way, often sell their whole crop to persons, whose occupation it is to carry the plants to the different markets, many of them at the distance of thirty or forty miles. The different kinds of plants are tied up in bundles of 120 each, which are sold at various prices, from four-pence to one shilling per hundred, according to the demand; kail plants are much cheaper, the feed being generally saved here; the cabbage-feed imported from England, the price from 6*s.* 6*d.* to 7*s.* 7*d.* per lb. The kind most in demand are the early York or pompet, and the sugar-loaf for summer; the Savoy, large Dutch cabbage, and kail of different kinds for winter. The price, at which an acre of cabbage-plants sells, is often very great; so much as thirty guineas have been given; when there is a prospect of scarcity the price is much enhanced, as the early cabbage is the first vegetable for use in spring.

Kail, as food for cattle, is amongst the most beneficial vegetables; by planting it at different seasons, a
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constant supply may be kept up, from the time cattle are housed, until grass is ready for them in spring; that, which is planted in spring, will be ready for use in November or December; that, which is planted later, for the succeeding months, at which time the first cut will be ready to produce a crop of sprouts: the hardiest kinds seem to be the borecole, and the green and red curled; for milch cows they are a most superior food, giving the butter a taste and colour equal to the finest grass. Rape is also of great consequence, from the quantity of nutritious food it affords to cattle and sheep, and from its thriving in soils where other plants of the brassica tribe are not productive; besides, it will answer when set out at a much later period of the year than any other, and might always succeed the early dug potatoes, and be cleared from the ground in time to sow barley. However advantageous the cultivation of these vegetables may be to the real farmer, they would, if properly attended to, be still more beneficial to the holder of a few acres; for, with a supply of green food for his one or two cows in winter, and a patch of clover to mow in summer, he might have a constant resource in milk and butter for his family or the market, and an increasing fund of manure afforded by his cattle kept in the stall with a sufficiency of food, instead of turning them out to trample upon his land in the most improper season, and to scatter at random about

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the fields the source of his future harvests. The Agricultural Society of this county having taken up this matter so warmly, makes it unnecessary for me to dwell any longer upon this subject; I shall therefore mention some other vegetables, which, in their proper soils, must prove advantageous to the farmer. Carrots, in sandy or light loamy soils; at Eglantine Mr. Moore has fed his horses on carrots this winter, 1801; they prefer them to any food, look well, and are in good spirits. Parsnips the same gentleman finds excellent; and I am informed by the Rev. William Moore, his brother, that some bullocks of his, which had been fed with potatoes, upon having parsnips given to them, immediately left the potatoes until the parsnips were finished.

Beans; although patches of beans are to be seen in open fields, in several places, they are not cultivated to any effect, except by Mr. Christy, who has sown them after wheat, and horse-hoed them; but a considerable part of them having been stolen, he could not ascertain the produce. Vetches, also, have been tried by Mr. Moore, both for green food and for winter feeding. This year he intends extending his crop, from the success of last year's produce.

Hemp I understood had been cultivated in the neighbourhood of Hollywood, but after the most diligent inquiry made by a very intelligent gentleman, no satisfactory account could be obtained, relative to the quantity

city of seed sown. It was never steeped when pulled, but kept to be peeled in winter by hand, and the stalk burned for fuel; consequently it was coarse, and sold lower than foreign hemp. It is now given up, and those who cultivated it declare, that they find potatoes more profitable.

Having now taken notice of all the different objects of cultivation in this county, as far as I have been able to obtain information, I shall here insert a few observations, that are connected with the foregoing subjects, which, probably, might have been with more propriety otherwise placed, but which did not occur before.

With some exceptions, tillage is performed by horses, two in a plough; the quantity done in a day is various; the depth according to the soil; where the understratum is clay, there may be an advantage in turning it up; where till, or a sharp gravel occur, to do so is reckoned hurtful; as it is in Norfolk to disturb the pan, which, once touched, requires seven years to subdue. In old lea, or in hills that are steep, it will take five days to plough an Irish acre; in stubble from two to three days; so much depends upon the ground, so much upon the horses, and so much upon the skill of the holder, it is not easy to determine the exact quantity, but I think it may be set down at the fifth of an acre of lea, and the third of an acre of stubble. Where farms are so small as not to admit the keeping of more than

than one horse, ploughing is done by two neighbours joining; each lends his horse, and in whosesoever land the plough is, the owner of the land holds the plough. Each harrows his own ground, draws out his own manure, &c. Where no horse is kept, ploughing is hired at 5 s. 5 d. per day, with meat for man and horse, or for five days work of a man, at any time you choose to call him. Except in demesnes bullocks are not used, horses are thought more expeditious, and to be better calculated for drawing lime, taking grain to market, &c. I was once witness to a most decided superiority in horses, in Lord Downshire's park; they were ploughing, without a driver, alternate ridges, with four bullocks and a driver; for a considerable time that I staid, the horses went three bouts for every two bouts of the bullocks. In this county, ploughing without a driver was introduced by Mathew Gasoigne, when in the Bishop of Dromore's service: he is now farmer in the park of Hillsborough.

Harvesting.—The economy, with which grain is cut and handled in this county, deserves praise and imitation; it is reaped quite close to the ground, and not a head left; we have no such persons as gleaners, the farmer attends the reapers, ties and sets up the sheaves, carefully gathering the ears; if the grain is thick, it requires an attendant (provincially bandster) to five reapers; if it is thin, he may attend one or two more.

It is accounted disgraceful to see heads of grain scattered about after cutting; and long stubble left on the ground to be ploughed in, is thought to be of no service; cutting all the straw with the grain, and carrying it home, makes more manure; besides it is very difficult, in turning a furrow, to cover a long and coarse stubble, so as to bury it completely.

On the proper depth, at which grain should be sown.— There are many opinions on this subject; but it appears to me that, howsoever depth of covering may contribute to the protection of the seed, in a more advanced state it has little to do with the goodness of the crop. In an early period the following advantages attend it: 1st. It prevents the seed from becoming a prey to birds, because the farina is exhausted before it gets above the surface, and, consequently, it ceases to be an object to them, which they very soon find out. 2dly. It prevents wheat from being thrown out of the ground by frost. 3dly. All grain grows more regularly from equal covering, which implies equal moisture. But as to depth of covering contributing in any other way to the goodness of a crop, I cannot think there is any foundation. My reasons for this opinion are founded on the nature of roots, and are as follow: every species of grain has a double root; the first, or seminal root, pushed out immediately on the germination or budding of the grain; this bud is nourished by
the

the farina, until the first root is capable of giving it support, which it does until the second or coronal root is required ; this, then, is at the period the plant begins to obtain the first joint or approach to culmination ; as soon as this root has established itself, the first root, being no longer necessary, dies ; which may be perceived on pulling up a plant after that stage in its growth ; and which plainly shews it can be of no further use. From this period, therefore, all the functions of supporting the plant devolve upon the coronal root ; which establishes itself, and seeks its food, nearly on the surface. It is for this reason that top-dressings operate to such advantage upon all culmiferous plants, which draw their nourishment from the very place the manure is laid. Dr. Hunter, of York, who was well acquainted with this distinction in roots, does not mention the exact time of putting out the coronal or surface roots, which is exactly at the time the plant begins to spindle ; in very early sown wheat, in mild seasons, this sometimes happens before winter, but generally in spring ; in spring corn it occurs at the time mentioned. There is a disadvantage, however, attendant on deep covered seed, that never has been adverted to in writing by any person, so far as I have met with, except Dr. Darwin, in that most ingenious book, his *Phytologia* ; it is this : the thread, or fine stem, which comes from the seminal root to the surface, the longer it is the greater chance it has of being cut, before the formation of the coronal,

which is certain destruction to the plant; this cutting being the operation of a worm, for I have seen it at work, the chance of being cut is in proportion to the length of the thread, or stem, which is exactly from the place the grain falls to the surface.

CHAPTER VIII.

GRASS.

SECTION I.

Natural Meadows and Grasses.

FROM the great inequality of surface in this county, considerable tracts of flat meadow grounds lying together cannot be expected, yet on the sides of the rivers, particularly of the Ban, the Lagan, &c. there are many excellent and extensive meadows, which are annually enriched by the natural overflowing of the waters, and the vallies, which lie amongst the hills, are generally very rich, and are capable, if not naturally good, of being made so by levelling and draining, for they contain the finest particles of mold washed from the surrounding hills for ages ; and from the peculiar conformation of the grounds, few farms of any extent are without the benefit of some mowing ground. Nevertheless, little comparative advantage is taken of these favourable circumstances ; the meadows, generally speaking,

speaking, are left to nature, and those, which lie on the sides of rivers and smaller streams, which are very numerous, often receive more injury than good from their situation; for they are fed so late in spring, that to obtain a quantity of grass for hay, they are cut just at the period the waters begin to rise, from which error the crop is often lost by floods, or so much hurt by the earthy particles conveyed by them, as to be rendered useless for any other purpose than that of making dung.

Quantity in general seems so much to be preferred to quality, that in those grounds, which from their nature and situation are liable to produce the coarser grasses, the time of cutting is generally so late, that all the juices are fled before that operation is performed, and a dry harsh food is provided for cattle, instead of that fine and balmy hay obtained by early cutting and favourable weather. Many of the finest and most productive meadows we have are those, which lie on the skirts of turf-bogs, just where the junction is formed between the peaty earth and the loam; the fertility of this compound soil is very great indeed, the vegetation most rapid, and the natural grasses of the very best kind; which plainly shews, that a judicious mixture of these soils is productive of very great benefit. Could we be prevailed on to try the Wiltshire mode of managing meadow grounds, as given by Mr. Davies, our own mismanagement would soon be exploded. In

Wiltshire,

Wiltshire, one of the most considerable dairy counties in England, the meadows are hained up and cut early, whether the crop is heavy or light; the consequence of which practice is, that the hay is of so superior a quality, as to keep the finest cow to her milk, or the largest ox to his flesh; and they reckon, where the crop of hay is small from cutting it early, that they obtain a quantity of after-grass at least equal to the deficiency in point of hay; besides the advantage of long days and good weather in making it.

Improvements.

The principal improvements, which are required, seem to be the following: 1st. Draining of wet meadow grounds, rather by open than covered drains; the latter, if not more liable to be out of order than the former, are more difficult to repair; besides, where the soil is tenacious, covered drains will not have the effect, as the water cannot penetrate to them. 2dly. By destroying the coarse herbage, which may be done by digging it up and burning it, or breaking up the surface by a crop of potatoes, and afterwards laying it down with a judicious selection of grass seeds, which with care may be obtained, and forming the surface so as to prevent water from lodging on it. 3dly. By watering, if possible. 4thly. By manuring. 5thly. By a proper degree of attention to the mode of stocking,
by

by which poaching, that destruction to rich meadow ground, is avoided; and lastly, by cutting in proper time. This is one principal object of attention, because, as I have already observed, the hay is of superior quality, the after-grass can be fed without injury to the ground, whilst it is dry, as it generally is at the beginning of autumn, and the seeds of the coarser grasses, which ripen late, are hereby destroyed.

SECT. 2. *Artificial Grasses.*

THE grasses generally made use of, for laying down land for mowing or pasture, are the red clover (*trifolium pratense*), white clover (*trifolium repens*), trefoil (*medicago lupulina*), rye grass (*lolium perenne*), white grass (*holcus mollis*), likewise hay-seeds of different kinds, promiscuously gathered from the towns, in the choice of which not much care is bestowed. In the north part of the barony of Ards, and in the adjoining parts of the barony of Castlereagh, where the soil is clay, and where red clover has not yet succeeded, rye grass and white grass are sown, and attended to with great care, both for meadow, pasture, and for soiling in the house; in the latter case, a mixture of the two is supposed to make the feed more plentiful, as well as more grateful to the cattle. Many persons have an idea, that sowing grass seeds, although more productive

productive than the mere spring of natural herbage for the first year, hurts the future produce and exhausts the ground; but this effect I could never observe, and in the districts above-mentioned, the sowing of grass seed is reckoned to prepare the ground most excellently for future crops of grain. In the same part of the country the farmers are particularly careful in saving their rye grass, &c.

Hay; after mowing it is gathered, bound into sheaves, and stooked like grain; in that situation it remains until it is thoroughly dry, and free from all danger of heating, as hay-seeds of every kind are easily hurt by being warmed in the stack. Hay-feed sown in autumn succeeds remarkably well; one of the best crops of hay I ever saw was produced this year, 1801, from seed sown in the month of September 1800, the ground effectually broken by large harrows before it was sown, and afterwards lightly covered with smaller ones.

Clover.

Clover being of such consequence, not only as food for cattle, and, consequently, as a means of raising manure, but likewise as a cleaner of the ground, and a preparative for raising superior crops of grain, I shall here throw together several detached pieces of information I have collected.

The little farmers have a peculiar mode of sowing clover in their gardens, which deserves to be generally known, and to be practised by those, who farm upon an extensive scale, especially when by any accident clover of the former year has failed ; the seed is sown in spring, as soon as the season will admit, with a small quantity of oats or barley (two or three bushels to the acre), the green blade of which may be cut as soon as its length will afford ; afterwards it will sprout and give another crop ; by this time the clover will have gained so great a degree of strength, that in a favourable season it will likewise be sufficiently long to mow ; as I have often seen it. The advantages attending this management are, 1st. the gaining a quantity of green food the year it is sown ; and 2dly, that the clover, by the cutting of the grain at two periods, is freed from the danger of being smothered, and is kept completely free from weeds. It is usual with those, who follow this mode, to manure with ashes after the first or second cutting ; the effect is great. Ashes are certainly the best manure for clover, as they spread when dry more even than any other manure ; dung, when laid on clover, cannot be made so fine as to prevent some lumps from being unbroke, and a very small piece is sufficient to rot the plant it covers. Clover, sown in September, succeeds remarkably well, and if on stubble, ploughed for the purpose, some of the grain that sheds in reaping should grow up with it, it will not only afford

afford protection to the young plant in winter, but it will increase the quantity of green food in spring. Should chickweed appear at that season, a few cows turned upon it in dry weather will soon devour that weed, and free the clover from the incumbrance.

In some soils harrowing in clover over wheat in spring, is found to answer better than any other culture. The Rev. Mr. Fletcher, who has a sandy soil near the race-course of the Maze, pursues this method upon wheat after potatoes, and finds the wheat much improved by the operation; in his soil it is absolutely necessary, he thinks, to commit the clover to the mold of a potatoe fallow, which of course must be very fine, if the drilled method is followed; and he mentions a curious circumstance in support of his opinion. In a field of six acres, four of which were in drilled potatoes, and two in the lazy-bed way, but previously ploughed as if for drilling, he sowed wheat: in spring, clover was sown over the whole, and the ground lightly harrowed; the seed of the same quality; the clover was excellent after the drilled potatoes, but in the two acres set in the ridge way it failed completely. The only way he could account for it was, that the subsoil (a clay) thrown up by trenching in the potatoes rendered the ground an unfit nidus for the seed. Although this gentleman's farm is in the county of Antrim, I hope I shall be excused for stepping over the river, in consideration of this piece of practical information.

mation. Mr. Christy of Kircuslock, in Lower Iveagh, near Waringstown, finds that clover does not succeed well after flax, the ground binds too much; his soil a good loam on clay. Mr. Waring of Moira says, that clover sown with barley or oats, after potatoes that have been dunged well, is often smothered by the luxuriance of the grain; but when he sets potatoes twice on the same ground, only manuring for the first crop, his clover is very fine, the ground not being so rank, and the weeds totally subdued; his soil a fine loam upon a limestone bottom, and reckoned the finest land in the county.

Trefoil.

Trefoil succeeds better than red clover, according to Mr. Gracey of Lecale, on ground inclined to clay, and I once saw a crop of it at Larkfield equal to any red clover. As there is a considerable difference in the price of the two seeds, amounting in some years to twenty shillings per acre, it is extraordinary that more of it is not sown; it is as cheap as hay-seed, and much superior for grazing or cutting green.

White Clover,

Is not much sown, except by gentlemen for laying down lawns, or any favourite piece of ground, that is
immediately

immediately required to be brought to a sward, for which this grass is peculiarly calculated, as it throws out roots from every joint, forming in one year a complete cover to the soil. It seems better calculated for grazing than for cutting, as it does not grow very long.

SECT. 3. *Hay Harvest.*

THE time for making hay extends from the beginning of July until the beginning of October; that is, from the time the meadows about the towns and gentlemen's places are cut, until those in the mountainous and remote parts are made up. Saving (provincially, *wenning*) hay is thus performed. After the mowers the grass is shaken out, and the day following, if the weather permits, it is turned in rows with rakes or forks, after which it is made into small cocks, called *lap-cocks*. This operation is conducted in the following manner: one person goes before with a rake, and takes in as much ground as can be reached; a small armful of the grass, gathered from this space into a ridge, is taken by another person, who closely follows, shakes it, and with the hands and knees neatly folds it into a small round heap, with a hole passing through it like a muff, and lightly lays it on the ground; as many pairs may be employed in this way as are necessary to

lap

lap the whole of the field. In this situation the grass is suffered to remain, until being sufficiently withered, in the course of one day, by shaking and turning, it is in a proper state to be put into tramp-cocks, which are made of different sizes, according to the condition of the hay, and so it is suffered to remain until it is taken in. This mode of making hay seems adapted both to dry and moist climates, but particularly to the latter, as the lightness, with which it is put together, gives a free passage to the air, and the roundness of the external surface throws off the rain. Hay lapped judiciously, though not *perfectly* dry, will often come out, after many days rain, free from injury, as the upper surface forms a defence, the quantity put together is so small, as to prevent its being injured by pressure and want of air. In very wet seasons it is not unusual, during a fair moment, to shake and lap the hay over again, which tends very much to preserve its colour, and if the weather changes for the better, it is much sooner ready to be tramped. Even lifting the lap-cocks from one place to another gives them air, and allows the ground to dry, which is a great point. In a dry climate this mode of making hay is well calculated to wither the grass, without exposing too much of its surface to the air; but in a dry climate, or even in this climate, in favourable weather, it would be adviseable, in many cases, to lap the grass immediately after the first shaking out, in which case it would preserve its fragrance

fragrance and colour, instead of having both destroyed by too much exposure; for the great defect in our mode is, the exposing our grafs until the juices are totally gone, and looking upon the heating of our hay, even in a slight degree, as its destruction. A medium between the rapid manner, in which the hay is carried in England, and our tardy method, would probably be the fortunate one: the great degree of moisture, which generally prevails in this country, must, I should think, prevent us from implicitly following them; at the same time it must be allowed, that the dread of putting up our hay too soon often produces a greater evil, than would be the consequence even of a considerable degree of heating, whereas a slight degree is found beneficial. Another error, towards which there is a general propensity, is the length of time the hay in this county is suffered to remain in the meadows after it is made up; the effects of this are seen in the quantity wasted, both in the bottoms from the moisture of the ground, and on the tops and outsides from the sun and rain. This is so very unnecessary a piece of bad husbandry, so little can be said in defence of it, it is surprising it has not ceased, with many other practices equally slovenly and wasteful.

After-grass.

After-grass.

The management of after-grass requires judgment; cattle should not be turned into it until they can enjoy a full bite, nor should they be kept out of it so long, as to let it be destroyed by their trampling. It has been a question, whether after-grass left upon the ground acts as a manure. I have seen it tried, but I could not perceive, that the ground was much benefited by it; provided the meadows were shut up in proper time, and the loss of food is so very great, it should not be given up for any thing less than certainty. A good stock of after-grass is one of the best supplies to keep up cattle, that have been taken in good condition from the pastures. The after-grass this year, 1801, was so luxuriant, as to afford in many places a good crop, very much owing to the early cutting of the meadows. A method of saving it I saw, which answered perfectly, was to mix it in the stack with layers of oat-straw; this kept the soft hay from clapping together, and, by communicating some of its juices to the straw, it improved its quality, which was very perceivable from the eagerness of all kinds of cattle to eat it.

The following catalogue of grasses, with their characters, was furnished to me by Mr. Templeton, of Orange-grove, near Belfast, with all the liberality of a
man

man of science. This gentleman's garden, although in the county of Antrim, is too remarkable to pass unmentioned; it contains almost every plant, that will live in this country in the open air, provided as nearly as possible with their appropriate soils; rocks, limestone, moor and bog, sand, clay, &c. all have been brought, in their several provinces, to assist in the support of one of the most curious botanical collections in this kingdom.

Alopecurus pratensis.—This is one of our earliest shooting grasses, shooting in the beginning of May, and possessing the good quality of bearing leaves in plenty, high on the stem, and those leaves not too rigid.

Cynosurus cristatus.—A good leafy grass.—Of this I have given a drawing, as from the seed which adheres, I look upon it as a most nutritive grass. J. D.

Briza media.—Leafy, and liked by all sorts of cattle.

Dactylis glomerata.—Cock's-foot grass. Mr. Sole, in the Bath Transactions, says, this grass is refused by cattle; I know that horses seem to like it, and as it grows well in the shade, I think, where other grasses will not grow, it might be worth cultivation. Mr. Templeton.—My observations on this grass are, that both horses and cows eat it greedily; that it forms one of the principal grasses around Lisburn, famous for its meadows; and that, after being cut, it springs as quickly as clover, being the first visible after raking the meadows. The seeds of this grass are not difficult to gather. A drawing accompanies this. J. D.

Festuca ovina.—A good grass on sheep pastures, but not an object of cultivation.

Festuca duriuscula.—Mr. Sole, in the Bath Transactions, mentions this as a most excellent grass, and well worth cultivation.

Festuca pratensis.—Meadow fescue grass; one of our best grasses both for pasture and hay.

Festuca elatior.—A strong grass, and might be well worth cultivating in moist clay soils.

Festuca loliacea.—Nearly allied to *festuca pratensis*, a good grass, requiring a moist soil.

Festuca fluitans, float fescue.—An excellent grass; but, to cultivate it, marshy ground would alone bring it to perfection. A field of mine liable to be flooded by every heavy rain, and from which, by repeated cuttings, the bushes which formerly covered it are nearly extirpated, is now covered with this grass, which affords the finest pasture. Mr. Templeton.—This grass grows with wonderful vigour in bogs, that are cut over, and in the drains, that flow from them. The seeds of this grass are very nutritive, as may be known by their fattening ducks, that are within reach of those places where they grow; they must likewise be very palatable to them, as, when they once find them out, there is the greatest difficulty in getting them to remain at home. Horses and cows are so fond of this grass, they often risk their lives in quest of it. J. D.

Holcus lanatus.—White grass. This is the white hay so much prized in this country, but Mr. Sole agrees with me, Bath Transactions, p. 147, that it is neither good for meadows nor pasture. Mr. Templeton.—I must beg leave to dissent both from Mr. Templeton and Mr. Sole; upon soils rich and well prepared this grass throws up a great quantity both of leaves and stems, and seems peculiarly grateful to all kinds of cattle. On turf-bogs, that have been manured with ashes or dung, this is one of the first grasses, both as to quantity and quality. When cut merely for hay, it ought to be taken before the ears close, just when it has attained its greatest height; but when the seed is to be saved, they must be allowed to close, otherwise, the process of fructification not being completed, the seed will not grow. J. D.

Lolium perenne.—Rye-grass; the most excellent early pasture grass we have on dry grounds; I have observed it to be particularly fine on the stony loams of the county of Down; it appears to me better for pasture than hay.

Phleum pratense.—This is the far famed Timothy-grass, but I think it does not deserve the great name it has got, it is of too rigid a consistence; as farmers say it does not bulk well, and as it is one of the latest grasses, others much better growing with it will be spoiled, before it is fit for cutting. Mr. Templeton.—Notwithstanding this respectable opinion, I have seen very fine crops, all of this grass, or nearly so, in the neighbourhood of Castle-Dobbs, in the county of Antrim; and although

it may have a stem too rigid, there must be a considerable quantity of nutriment in its long and full ear. With respect to grasses, there is one distinction, which I do not recollect to have met with; those, which are cultivated for grazing, that is, merely for their leaves, ought to be of the most leafy kind; those for hay ought, I think, to be of those kinds, which produce tall stems and full ears; these partake more of the nature of grain, and are consequently the most nutritious: this observation extends only to one or two years after the ground is laid to grass; after that period, the grass natural to the soil will extirpate all others. J. D.

Phleum nodosum.—A variety of the former, grows in moist grounds, and is not so rigid, and more leafy.

Poa aquatica.—Could it bear to be cultivated out of water, it might be a valuable grass.

Poa pratensis.—This certainly possesses every quality requisite for meadow and pasture; it grows on a great variety of soils, moist, dry, clay, loam, and sand, and in all is one of the best grasses.

Poa trivialis.—Perhaps only excelled by the former.

Agrostis stolonifera.—Joint grass of our farmers, is the principal covering of our moist fields; in some situations we may reckon it one of our most valuable grasses, but when it gets into our arable grounds, its long creeping shoots do considerable damage.—Of this grass I have given a drawing; it is one of the most beautiful as well as the best of our grasses, but when

allowed

allowed to stand long, from the weakness of its stem, and the numerous roots it throws out at its joints, it gets too close, and loses its colour. J. D.

The following grasses I observed growing in different situations; Mr. Templeton was so good to name them for me.

Anthoxanthum odoratum.—Vernal grass. This is a sweet, fine, and early grass; it is to be met with on most soils; I have observed, however, that it is more luxuriant in reclaimed turf-bog than in any other soil: indeed ground of this nature is particularly favourable to most kinds of grasses. This is the grass so much recommended by the Dublin Society, as giving the sweet scent to hay; it is not very productive, but it is very early.

Avena elatior.—Tall oat grass. This grass is a troublesome weed in arable land; as a grass for hay it is amongst the most productive, an instance of which I was witness to in a field, that was intended for tillage; but on the promising appearance the land shewed at the season of ploughing, instead of being broken up, it was moderately dunged, in consequence of which it produced a most luxuriant crop. The ground had been in tillage for some years, and every species of grain, that was sown, was spoiled by the knotty roots of the grass. As a weed it is very troublesome, but it may be extirpated by repeated pickings; letting the ground rest also destroys it.

Bromus,

Bromus, of all kinds.—The *bromus mollis* is an early and productive grass, especially for the first year; the ear abounds with mealy substance, which makes it very excellent food for horses. The officers of the different English regiments of dragoons preferred the hay made of this grass to any other, by ten shillings per ton.

Phalaris arundinacea; reed.—In the meadows along the sides of the rivers it is very productive, both in stem and in leaves; when cut early it seems to be palatable to cattle. The beautiful striped grass is of this species.

Alopecurus geniculatus—I have observed in moist places, but never saw a sufficient quantity together to form an idea how it would answer for cultivation; as a plant it is beautiful.

Poa annua.—Sweet and fine; more productive as grass than as hay; it feeds several times in one year.

Agrostis alba.—White bent grass; abounds in all our meadows. It seems a most valuable plant; fine in the stem, with numerous leaves, and a considerable quantity of seed, which, though small, must be very nutritious.

Aira flexuosa—I found on Slieve Croob mountain, rearing its slender stalk and elegant head above the heath.

Aira cespitosa.

Festuca Bromoides, or *Myurus*.—On thin and gravelly soils it has a fine leaf and stem; in the pasture where I gathered it, it was cropped so close I never could get a complete

complete ear, until the cattle were turned into the after-grass. If the seed could be gathered, it might answer well on such soils.

Melica caerulea.—On turf-bogs; this seems a harsh grass, both in leaf and stem.

Triticum repens.—Dog's couch, or squitch grass; in some meadows and pastures, but more common in hedges and gardens. This is a most troublesome weed, overpowering every thing within its reach, and only to be overcome by constant care.

Lolium temulentum.—Grows much in this county amongst wheat and barley; it is very difficult to separate it from wheat in particular, the seed being very heavy, according to its size; the best way to get quit of it is, to pick it out of the sheaf before threshing.

In our boggy meadows we have also the *Carex caespitosa* and *recurva*, with the *Juncus articulatus*; by cutting these grasses early they are tolerable food; and their seeds not being ripe prevents them from being propagated.

Besides these, we have the *Trifolium pratense*, which I have heard is the celebrated cow-grass. Whether it is so or not, it is an excellent plant either for grass or hay.

The *Lotus corniculatus*, bird's-foot trefoil, grows in most soils and situations, and appears worthy of cultivation. I fear, however, it would be difficult to obtain a sufficient quantity of the seed.

Rhinanthus.

Rhinanthus. — Yellow rattle; from the noise the seeds make when ripe. This plant, though sweet and liked by cattle, seems to be a symptom of ground in bad condition.

Medicago,—although a cultivated plant, and the seed brought from England, has some species of it (if I can judge from the places in which I have found it) natural to this country.

I must not omit the daisy (*bellis*) as a most valuable herb for pasture. Its constant succession of flowers, and the avidity, with which they are devoured by stock of every kind, shews the value of this unassuming plant. When we cover our fields with lime, we sow it at the same instant with daisies.

Vetches (*vicia*) of different kinds abound in our dry meadows; they form at least a good article in the composition of hay, and are mostly to be found in grounds, that have been long in grass. Some kinds of them delight particularly in the clayey bank of ditches, where they grow to a considerable length.

Plantago.—Narrow-leaved plantain, is another natural production, excellent as pasture, and, when not hurt by rain, good in hay. It is regularly sold in the seed shops in England; here it is in every field.

In our low natural meadows are also many others, which serve to increase the quantity, though not the quality of the hay; such as the meadow sweet (*spiraea*), ladies smocks (*cardamines*), crow foot (*ranunculus*); which,



Holcus Lanatus
White Grass.



Dactylis Glomeratus.



Agrostis Stolonifera.

Creeping bent or Joint Grass. Couch Grass.



Bromus Mollis.

which, for want of proper management, take up the room of better plants.

Mr. Templeton concludes his observations by saying, that perhaps the natural fertility of Ireland has been the cause, that the cultivation of grasses has hitherto been more neglected, than in many other countries more backward in agricultural knowledge; and that the introduction of the red clover (*trifolium pratense*) to cultivation has in a great measure superseded all other plants as green fodder. In this observation I perfectly agree with Mr. Templeton; for the propensity of the soil in this country to grass is so great, that any field left to itself in heart, from manure and judicious tillage, immediately produces grasses of the best kind. I have heard it observed by a person of considerable experience in farming, that, although by sowing hay-seeds the first year's produce will be greater, the subsequent year or two will suffer from it: this must be understood, certainly, of ground in high heart. But, while we are celebrating the fertility of our isle, let us not ungratefully pass by the white clover (*trifolium repens*), the never failing attendant on good farming, and which, in despite of the very worst management, often clothes, in winter, our fields with green, or in summer enamels them with its fragrant flowers.

SECT. 4. *Feeding.*

THE county of Down is not by any means a grazing country; nevertheless there are every year many beasts fatted in it. Although the soil is, generally speaking, better adapted for tillage, there are some parts of it not only capable of bringing on cattle of a large size, but remarkable for doing so: on the western part of the county, where the soil is a deep loam or clay, cattle grow to a weight uncommon in the shallower soils. Some low grounds, that lie along the Lagan, and some on the banks of the Bann particularly, are reckoned peculiarly wholesome in the early part of the year, both for horses and cattle. The stock bought in for grazing mostly consists of cows and heifers, laid in at the different fairs in the months of May and June; the cows strippers kept in the country, or brought by drovers from the breeding counties, when the prices are high, and a brisk demand for them; they often also bring heifers with them, of a superior kind, both for fattening and for milking. Bullocks are not so much required, their weight being too much for the general soil of the county. Cows are esteemed more profitable, as they are better adapted in point of size, and yield, it is thought, more tallow. Though there is no regular system of keeping fat cattle, through the winter, upon green

green food, many more persons, especially gentlemen who farm, are getting into the method of stall-feeding than formerly; and this year, from the plenty of food, there are more in that way than ever were known. The advantage of this management once understood, will ensure the continuation of it, and likewise a supply of meat in the markets in spring, which has hitherto been rather scanty.

The best hay with oats in sheaf, potatoes either boiled or raw, but previously sliced, form the general food for keeping cattle to their flesh, or for increasing it. A variety of food, or at least so administered as in the course of the day to make a variety, seems one of the best incentives to their eating the greatest quantity of food in a given time; which is supposed very much to abridge the period of their fattening, and, consequently, the expense. Dr. Anderson says, a horse, of the same weight as a bullock, will eat in the same space of time one-third more food; but he will be as fat in one month as the bullock will be in three: on this datum, a horse will be fattened exactly with one-half of the food it will take to fatten a bullock. He mentions a Mr. Hope, who by procuring the most palatable food for his cattle, and by this means inducing them to eat the greatest quantity in a given time, makes more money than any of his neighbours, who are not in the secret, and more niggardly in their outlayings than he is.

Whilst the distilleries were at work at Moira, numbers of cattle were fattened at them; and by giving a proper quantity of dry food at intervals, their beef, though not so firm as on less watery food, was sweet, and tolerably well coloured. In that neighbourhood there are several gentlemen, who upon turnips, potatoes, &c. feed many beasts in winter. The farmer in the park at Hillsborough has a regular plan every year of feeding: his food, turnips, oats, and hay. This year's turnips (1801) are allowed to be the largest and cleanest ever seen in this county. He always sows them in drills. At Mount Stewart two bullocks were sold, in the spring of 1801, for 96*l.*; one of them was bred there, the other had been bought in; they were worked until eight or nine years old; the two weighed eighteen hundred weight, and were fattened on turnips; the tops given to milch cows. Lord Londonderry is entering very largely into the cultivation of green winter food. This year, potatoes are very much given to cattle: Mr. Moore, at Clogh, has fourteen bullocks, which each consume a bushel, or four stone, per day, besides hay; they are doing remarkably well. The same gentleman tried these bullocks with parsnips: whilst they lasted, every other food was scorned by them. Lord Annesley every year stall-feeds some bullocks in one of the best houses for the purpose, that can be constructed. Colonel Ward has erected, at Bangor, a boiler on Count Rumford's plan, in which
he

he steams potatoes for every animal about his house, except his horses and sheep, which get them raw: the plan of the boiler is most excellent; he favoured me with a drawing of it, which is at the service of the Society. His cows, pigs, poultry, all are fed with steamed potatoes.

The sheep system in this county, except amongst a very few gentlemen who have flocks, would make a person, used to a grazing country, smile, or rather wonder, how the towns in this part of the world are supplied with mutton: the sheep, which produce it, being mostly bought singly, or in pairs, by the butchers from the little farmers, who purchase them in the same way, when lambs, and keep them one or two years, as they find it profitable or convenient: of course the mutton cannot be aged, being in most cases not more than one or two years old. The lambs are brought from the breeding countries, and are to be met with in all the summer fairs. Sheep thrive remarkably well on this dry soil: by the small farmers they are fattened in the house on boiled potatoes, oats, and hay; the mutton remarkably sweet. In the possession of gentlemen they are fed as in other countries. They will do very well confined to the house, provided they have some soft food, and are put up in good order: whether they will fatten this way from the beginning, I do not know; I suppose the confinement would be too long.

Hogs

Hogs are fattened in considerable numbers ; potatoes are the usual food ; those, who are esteemed the best feeders, add oatmeal, or meal feeds, both of which improve the quality of the pork, and hasten the fattening process : the potatoes are given boiled and pounded, the meal being mixed with them ; but to make the bacon excellent hard meat, such as oats or peas should be added some time before the creature is killed. This gives the meat a firmness, and makes it stand salting better. When provisions are dear, fattening pigs is rather a losing business ; for I understand a bushel of potatoes will not make a pound of pork : now potatoes are generally above eight pence per bushel, and pork not above half that price per pound ; ergo, the inference easily follows. This year is not a rule ; pork is above, potatoes are below the average. Were pigs either bred by the fattener, or bought in young, and supported whilst in a growing state upon clover, then, upon the whole, it would certainly be an advantageous business ; but where they are bought lean, and immediately put up, in general, I should think, little is made by it.

On the subject of feeding cattle, I must not pass by the great advantages of soiling in the house in summer ; there are three points, in which to view it ; the first point respects the economy in the consumption of the produce ; the second, the condition and comfort of the cattle ; the third, the quantity of manure. In the first place,

place, experience clearly shews, that many plants are greedily eaten by cattle in the house, which would not be touched by them whilst growing; thus fewer plants will be rejected by them. Besides, many of the best kinds of grasses, which when young are relished by beasts, when got into ear are rejected by them; but, if these are cut down in proper time, not one of them will be rejected; and add to this, when cattle go at large, much of the grass is trod down, buried in the earth, or bruised with their feet. In the second place, if the condition of the animal, and its consequent advantage, especially in milch cows, is considered, in this instance it will be found infinitely superior. In the month of July, the best grazing grounds begin to lose much of their succulence; the effect of this, though not so easily observed in cattle for beef, is very plainly perceived in cows falling from their milk; but, when they are fed regularly with clover, or mowed grass of good quality, they will neither lose their milk, nor their flesh, at that period; and when the time of putting them to after-grass arrives, ten days or a fortnight will not be consumed in *restoring* them to their milk, from the previous good keeping they have got. If the comfort of the cattle is considered, they are much happier by being provided with a shelter from the great heats, and the persecutions of insects, in the summer months, and supplied in that situation with plenty of fresh and palatable food. In the third place, their manure is collected

lected together, ready to be applied to any purpose the farmer may wish, not scattered promiscuously about the land, where it does more harm in spoiling the grass, than service in enriching the ground; for, as Dr. Anderson observes, if land was enriched by the dung of cattle going upon it, it would every year be able to maintain a greater number than each preceding one; which is not the case. At the same time that I perfectly coincide with Dr. Anderson, from whom I have taken several of the above remarks, in the benefits of feeding cattle in the house, I should not wish entirely to confine them to it; but to give them probably half, or one-third of the ground to go on, that without feeding in the house would be required, and make out what would be wanting by mowed grass; thus uniting air and exercise with a constant supply of fresh food; and a proper shelter when required, either from the heat and insects, or the heavy rains and chilling blasts that often occur.

CHAPTER IX.

GARDENS AND ORCHARDS.

GARDENING is not much attended to by the farmers of the county of Down; the only part of it, where a garden seems to be the necessary appendage to a farm or cottage, is from Moira towards Waringstown, Lurgan, Moyallan, and that beautiful part of the country; yet even there potatoes seem to be gaining ground on the other roots and vegetables; and when it is considered how cheap and palatable a food they afford, how easily they are dressed and prepared, the progress they have made must be attributed to their intrinsic value. But, notwithstanding, a few early cabbages, curled kail, peas, and beans, are pretty general in most farms; but not being cultivated with that care they require, the produce is small, and not calculated to supplant their more fortunate rival, the potatoe. In the vicinity of Belfast, and other towns, there are

many gardens cultivated well, to supply the markets, where vegetables are both good and reasonable in price.

By the gentlemen, however, gardening is much attended to, and carried to as great perfection as in any other country; every vegetable, that our climate will admit of, has found its way to their gardens; their stoves and green-houses contain numerous exotics, remarkable for their rarity or beauty; and all the different kinds of fruits, which require heat and covering, are to be met with at their tables.

ORCHARDS are rather losing than gaining ground; many old trees have been stubbed up, few new ones planted, and of those few the success has not been great. Uncertainty in the produce of orchard grounds, the natural decay of the trees, and the great increase in the value of land, have contributed to their destruction, whilst want of skill, and probably want of care, have given rise to the idea, that loss of labour and loss of land would be the only consequence of new plantations. The very great population of this country must, from the difficulty of preserving the fruit, form, I fear, another bar to the cultivation of apples and other orchard fruits; for unless they are watched, from the first formation of the fruit, until their being finally gathered, the proprietor has no prospect of enjoying the produce. It is difficult to say, whether the art of
planting

planting orchards with success was better understood at the beginning of the last century, than it is at present; yet the orchards, which were planted at that time, were much more productive, according to the generally received opinion, than those which have been cultivated within the last forty or fifty years; probably this may be owing to the natural decay of the species of fruit, and the want of new kinds to replace them; this I shall not take upon me to determine; but certainly, except in the lands of gentlemen, the culture of fruit-trees is not in this county a growing culture. An observation, which is often made, may have very much contributed to their decline, that a crop of apples is now obtained with much less certainty than it was forty or fifty years ago; about that period many orchards were planted, in compliance with clauses in leases, but they have been neglected, and are now gone to decay. This year, 1801, forms an exception, for the quantity of apples produced has been as great as at any period, in consequence of which a considerable exportation to Scotland has taken place: likewise in the year 1799 there was a considerable crop, but, owing to the wetness of the summer, the fruit was small: in the year 1800 there was scarcely an apple to be seen. The alternate fertility and unproductiveness of the apple-tree is a circumstance extraordinary in its history, and, I believe, hitherto unaccounted for: every year almost,

the shew of blossoms is equal, and although a certain number of blossoms is absolutely necessary to a crop, there seems to be very little connexion between their number, and the quantity of fruit brought to perfection.

CHAPTER X.

TIMBER, PLANTATIONS, AND WOODLANDS.

THAT the county of Down is not a well wooded country, must be confessed by every person, who has traversed it; and that some of the best cultivated districts most deserve the reproach of nakedness, cannot be denied, but it is a reproach common to the rest of the kingdom, with few exceptions. At a particular period in the history of this country, one of the great objects of the government was to get the land cleared of timber, as a necessary step towards the civilization of the inhabitants, and the improvement of the ground; this, like many other expedients, has been attended with a lasting disadvantage, and has left a foil, by nature particularly adapted to the growth of trees, bare almost to a proverb. After a country, once overrun with wood, has by great exertions been cleared, it is not an easy matter to persuade the inhabitants of the necessity of that production, to get free from which so
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much pains have been employed. The return from planting being slower than from any other species of cultivation, and the person who sets being seldom the same, that derives any considerable profit from it, it is not surprising, that it should be the least rapid of any improvement in its advances, and should only be undertaken, when works of more pressing necessity are accomplished. By the man, who plants, trees are generally considered as an embellishment, and embellishments are seldom thought of, until there is a comparative degree of ease; when that is once obtained by industrious and successful cultivation, we may expect to see ornament attended to, and wood, the principal feature in rural ornament, flourish. Accordingly those farmers, whose circumstances are the best, in every part of the country are beginning to put down a few trees, and, where the farms are small, a few trees on each would very soon give a total change to the face of the land. Of planting a great deal has been done by the gentlemen of this county since the middle of the last century, but much more towards the latter end of it, and this rational and truly useful pursuit is daily gaining ground; how strong an incitement to this pursuit should the reflection be, that, whilst a proprietor is thus employed, he is improving his health, and adding to his fortune, instead of injuring the one, or wasting the other, by indolence or by extravagance, and that for every shilling laid out he is encreasing twenty fold
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the public stock, and, in the same ratio, improving his private property.

Notwithstanding the spirit of planting has gone forth amongst the gentlemen of this land, unless it also pervades, in a certain degree, the immediate occupiers, the country never can have that aspect of cultivation, that richness of tint, which trees alone can give. To contribute to this, landlords should hold out encouragement to their tenants, by supplying them with trees, and rewarding them for their preservation. The expense of this would not be very great, and would ultimately centre in the increased value of the estate. At the same time that I mention this measure, I am well aware of the difficulty of carrying it into execution, and know that it can only be practised under limitations, and with those, who shew a spirit of improvement: as for those tenants, whose sole object is an existence, it cannot be supposed, that any minor consideration would operate upon them, nor that they could be induced to make and keep up fences for the preservation of trees, which they scarcely can be prevailed on to do for the protection of their own crops. Every encouragement, therefore, must be suggested by that sagacity, and directed by that prudence, without which neither public nor private measures can succeed.

The natural wood of this country consists of oak, ash, alder, hazel, mountain-ash, birch, holly, white-thorn, and a species of willow called the grey; the fos-

fil-wood from the bogs shews, that in former times we had two species, that are not now found growing naturally, at least in any part of this county, namely, the fir and yew. Of the first, considerable quantities are every year dug up; in some places only the roots are to be met with, in others both roots and stem; the yew is not so frequent, but sufficiently so to prove, that it was once naturalized as well as the fir. The other fossil trees are the same as mentioned above; the fir, the oak, and the yew, the only kinds that are in sufficient preservation for use.

It would be of no service to dwell upon all the different kinds of trees, that have been introduced from other countries, merely for ornament; but I think it necessary to be particular in those, which are most likely to produce the best return, and the most likely to answer the purposes of the planter, whether for profit or for embellishment; mentioning the soils, in which they seem best to thrive.

Oak; *quercus*.—Large in proportion to the depth of the soil: about Moira, where the under-stratum is clay, and at Waringstown, it grows to a great size.

Ash; *fraxinus*.—More universally cultivated than any other tree in this country, being used for all farming implements; like the oak, it is large in proportion to the depth of soil, but the quality is much in favour of that on gravelly or rocky ground.

Alder;

Alder; *betula*.—In moist grounds; a very valuable tree for such situations; nearly as useful as ash, and more lasting. Birch, in the same soil, a beautiful growing tree, but little used.

Mountain-ash; *forbus*.—Timber light and strong, though not much used.

Hazel; *corylus*.—Seldom planted; it delights in a strong soil; it is useful for many purposes, hoops, &c.

Holly; *ilex*.—In moist soils where woods have been, or still exist; it is much planted in shrubberies, &c. for which it is well calculated, as it preserves its verdure the whole year. There are many varieties of this tree beautifully variegated; some of them in the gardens at Hillsborough above thirty feet high. This wood, being white, is much used for inlaying.

White-thorn; *crataegus*.—In every soil and situation; it grows, however, largest in the deepest ground. The growth of hedges, formed of this plant, is a good criterion to judge of the quality of the soil. The wood of this tree is very hard and close, and, when old, is much used for cogs in mill-work.

Beech; *fagus*.—Delights in a dry or gravelly ground, in which it grows very fast, with a smooth and clear bark, and yet some of the largest beech in this county are at Waringstown, which is not a dry soil. This timber is of great use to turners, &c. but when of a certain size, is doubly valuable for beams to beetle white linen, or before it is made up for market, and also for making the beetles.

Hornbeam; *carpinus*.—Is much used for hedges, for which it is very good; when suffered to grow to any size it is used for the same purposes as beech. I have heard from a person, on whose information I have the strongest dependance, that this tree grows much larger in this county than in any part of England; it will grow on almost any soil and exposure.

Sycamore; *acer*.—One of the hardiest trees we have; yet a very curious fact concerning it is, that it does not thrive at Waringstown, where most trees grow better than in most parts of the county.

Chestnut; *fagus*.—This is a most valuable tree, the wood of uncommon duration, reckoned in England superior to oak for posts and rails, the most trying use any timber can be put to; when of a proper size it is excellent for furniture, taking a very good polish. It is a hardy tree, growing on most soils; the largest I have seen are those at Orange-Grove in the county of Antrim, the soil a deep sandy loam.

Horse-chestnut; *æsculus*.—Grows in most soils and situations, best in a sandy loam. This tree does not require much culture, and being quick of growth, is proper to plant where cover is speedily required. I have not heard of this tree being tried as timber.

Poplar; *populus*.—Of this tree there are many varieties, all quick growers; though they agree with wet and boggy soils, they will do well almost in any situation. The abele, or large-leaved white poplar, is a most

most beautiful tree, of wonderful quick growth; I measured shoots of it last year, and not in wet soil, of more than six feet; the white poplar, with smaller leaves, is little inferior to it. There is a variety of the abele, with dark-coloured leaves, but not equal to it in beauty. The black poplar is very frequent, and also the aspen-tree, both valuable for their growing in soils where other trees do not thrive. Besides, there are numbers of the tacamahacca, or balsam poplar, propagated for the beauty of their leaves, and the quickness with which they rise. All these trees grow freely from cuttings, the last in particular; but there seem to be two kinds of the last, one of which is a slow grower, and only to be distinguished from the other by that circumstance. Doctor Anderson mentions the tacamahacca, as making a most impenetrable hedge in a very short time, by twisting the branches together at the top, the second year after planting. The wood of all the former kinds, particularly the abele, is useful for many purposes, especially for flooring, being whiter than any other timber; it is also useful for turners; in England it is used by bellows-makers in preference to any other, and also for heels for shoes.

Platanus orientalis—I have not seen any where in this county, except at Moira; it is a tree of curious foliage, each leaf being regularly palmated; it is a well-sized tree, much branched.

Platanus occidentalis.—Called so because it came from America, as the former came from Asia. This is a quick growing and very beautiful tree, easily propagated by cuttings, but what size it would grow to I do not know, never having seen any old trees of this kind; it likes a moist soil: one in such a situation, near the bridge at Tullamore park, is a well sized tree.

Elm tree; *ulmus*.—Of this tree there are many varieties; all are good timber, but from their roots running so much upon the surface, they are liable to be blown down; which defect has been in some degree remedied, by engrafting the different kinds of English elms, most subject to this misfortune, upon Scotch stocks; one circumstance, however, must be mentioned, that the graft is very subject to die after transplantation. But, notwithstanding the above-mentioned disadvantage, upon a deep soil there is no tree more worthy of cultivation, both for beauty and use, than the English elm; for flooring it is very fine; for the purposes of conveying water under ground it is unrivalled in duration, and, by the straightness of its stem, excellently adapted for that purpose.

Lime tree; *tilia*.—This is one of our most ornamental trees; it grows rapidly in soils congenial to it, deep and moist loams. It is not very useful for timber, being mostly applied to light and nice work; such as carving, making models for buildings, bowls, dishes, &c. being too soft for any strong work.

Fir tree; *pinus*.—Of this tree there are many kinds cultivated in this county; the Scotch fir is the most general; being so hardy, and affording at an early age so much shelter, has given it a preference to every other kind, as a nurse to more tender trees; being merely planted for that purpose, great care should be taken, lest it should smother what it is meant to preserve; which it often does, by being planted too thick, and allowed to stand too long. How valuable a tree it is in itself, when planted in good soil, and allowed to stand until of a proper age, may be seen in many parts of this county, but no where to greater advantage than along the river side at Redemon. Both the silver and spruce firs have grown, in proper soils, to a very considerable size; whilst young they are most ornamental, but as they advance they lose much of their beauty, by losing their under-branches, especially when planted thick. In strong soils, they grow to a considerable size, and are excellent timber. The Balm of Gilead fir, though beautiful when young, seldom survives above twenty years; and the Weymouth, though a quick grower, has not generally succeeded; the largest I have seen are at Hillsborough, but they are surpassed in the same soil both by the spruce and silver firs. The first Weymouth pine was planted in England, at Long-leat in Wiltshire, by the first Lord Weymouth, in 1696, the old stump still remains. The Pinaster has succeeded remarkably well at Tullamore park, where
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it forms a pleasing variety, and promises to be a great acquisition to the planter; there are a few of them in other places; they have somewhat of the appearance of the Scotch fir, but the leaves are much larger, and their branches more spreading. In the plantations at Montalto are two of the black spruce of America; they are about twenty years old, rich in colour, and thickly clothed to the bottom.

Amongst the many kinds of trees, which have been introduced here within the last sixty, or probably seventy years, the larch seems to be the greatest acquisition; whether it is considered, as an ornamental tree, as a nurse to others, or as a valuable improvement in point of timber: viewed in the first light, it is one of the most picturesque trees, either single or as a skirting to a lawn, for which the elegance of its pendent branches seem peculiarly adapted: in the second instance, its extreme hardness qualifies it to assist more tender plants, until they are once completely established; and in the last, it is superior almost to any tree, in duration and strength. In Switzerland, where these trees abound, they are converted to every use; the houses are built, furnished, and covered with them; the rosin, which flows from them, stops every joint, and makes them impervious to the weather. As this tree has scarcely been long enough naturalized here, to judge of its durability, we must and may be satisfied with the various testimonies from the countries, in which

which it is better known; as to its strength, that I have seen tried in many instances, from extreme youth to forty or fifty years of age: in the first case, it is as tight as an oak sapling; in the second, it is fit for ladders, cars, &c. having all the toughness of ash, without its heaviness. Dr. Anderson, who is indefatigable in his researches, where the good of mankind is concerned, has collected a number of facts respecting the advantages attendant on the cultivation of this tree, which I should recommend to the perusal of every person, who is a planter, or likely to become one, either on a great or a small scale. He there shews the different uses the wood of it may be applied to, from the shaft of a broom to the building of a ship, and how completely qualified it is, in every gradation, to fulfil the expectations of the planter; and also with what certainty it grows on every soil, from the most fertile loam to the most stony mountain. For this latter information, we need not go out of our own county, where it is cultivated, though not in the degree it deserves, from the deep clay about Moira, to the rocky mountains of Mourne. The late Lord Clanbrassil planted a vast number of them, at Tullamore park, as nurseries for his oaks, pruning them to prevent their hurting, by the quickness of their growth, what they were intended to protect. The necessary thinnings of these trees, I understand, has produced a considerable profit to the owner, and advantage to the country; and

and from the quality of the timber at every age will, it is to be hoped, be a means of extending its culture. By planting this tree thick, and by regular weedings, a constant supply of wood may be had, for a number of the purposes of agriculture, where gross timber is not required, as for hafts for different kinds of tools, for rustic gates and paling, but particularly for posts, as it bears the trying vicissitudes from wet to dry, better than any wood we know.

Sallow ; *salix*.—All the varieties of this tree are useful in their way ; some of them are of a slow growth, and do not arrive at any great size ; some of them, on the contrary, grow quickly, arrive at a considerable height and thickness, and afford for many purposes excellent timber. The kinds, which are most frequently planted in this country, are 1st. the common basket-maker's willow ; this has the two perfections, of tough branches at an early age, and, when allowed to stand, that of growing to a large tree, and of affording good timber : the second is, the sweet, or bay-leaved willow, from the broadness and polish of its leaves ; this grows not so quickly as the first, but is much superior in beauty : the third sort is distinguished in this county by the name of *gaugamel* (a name given to it by a drunken gardener) ; this is beyond all the other kinds, for the rapid progress it makes in every soil ; its branches, when young, are tender, and not fit for baskets or hoops ; but, when grown to a tree, its timber is

light

light and firm, fit for many purposes, both to the cabinet-maker and the farmer : one of the handiest ploughs I ever saw, was made of this tree, and, at the same time, the strongest. There is another, a very low growing tree, of this species, with long and slender shoots of a reddish colour, with almond-shaped leaves, which I understand is of French origin ; the young branches are remarkably tough, and are used by the gardeners about London, for tying up parcels : this, if cultivated, would be a great acquisition to basket-makers, as, besides its toughness, the shoots are of an equal thickness, which is a great object. Although this tree does not grow large, it throws out numerous shoots, such as are described. Upon the whole, the fallow is well worth attention, from its quick growth, its easy cultivation, and its many useful properties, and, in many situations, for its ornamental ones, particularly the weeping and the golden willows.

Walnut ; *juglans*.—The general use of mahogany has much discouraged the propagation of this tree, which was more cultivated for its timber than for its fruit, in this country, where it ripens but seldom : the high price of the former should again introduce it, as it is a beautiful wood, and very durable. This tree delights in a firm rich soil, in which it grows to great dimensions. The trees of this kind, which grew in the village of Lambeg, on the verge of this county, sufficiently

prove this assertion; as likewise that noble tree in the yard adjoining Waringstown house.

The Cherry tree; *prunus*,—grows to a great size—not so much used for cabinet work as formerly; it is liable to worm-eat, unless constantly rubbed with linseed-oil.

Evergreen oak; *quercus*.—The oldest in this county is at Bangor; it is mentioned in the History of the county of Down, written fifty years ago. There are some good trees of this kind also at Hillsborough, but the most beautiful is at Larchfield; it puts out something like blossoms, but never bears acorns.

Laburnum; *cytisus*.—One of the first woods, this or any other country produces, for cabinet work: it bears fineering remarkably well. A circumstance respecting this tree deserves notice: hares, I understand, will not attack the bark of any young timber, amongst which laburnum is planted; they prefer it to all others.

The following are mentioned more as curious and ornamental, than as useful plants.

Tulip tree; *liriodendron*.—In many improvements; it is remarkable for the shape of its leaves; I have not heard of its flowering.

Laurel; *prunus*,—grows in some soils, especially about Moira. Portugal laurel likewise grows to a considerable height and thickness. I have heard from undoubted authority, that in England they do not grow
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with the same vigour, owing, probably, to severer winters.

Evergreens of all kinds succeed remarkably well, but especially along the sea shore, where myrtles grow to a considerable size, without covering of any kind during the winter months. Upon the whole, this country is very favourable to planting; the deep lands produce, of course, larger timber than shallow soils, but the wood of the latter, though longer coming to its growth, is of superior hardness and durability; though not so large at a given period of its growth, it is much sooner fit for use.

I shall here insert, as a matter both of utility and of curiosity, the dimensions of a number of different kinds of trees, growing nearly upon the same soil within the compass of a few acres; the soil, such as a great part of this county affords, a kindly loam, with rock or gravel at no great depth from the surface in any part.

CIRCUMFERENCE OF THE FOLLOWING TREES,

Between fifty and sixty years of age, upon the soil above-mentioned, taken six feet from the ground.

		r.	i.	
Ash,	- - - -	3	6	The ash remarkably tall and clean, with the bark white.
Beech,	- - - -	5	9	to six feet, on a gravelly swell.
Firs	{ Silver,	-	5	0
	{ Spruce,	-	5	10
	{ Scotch,	-	4	3
	{ Larch,	-	4	9
				The Riga fir is said to be of this species.
				From its superior height, and preserving its thickness, supposed to contain equal to the silver fir.
Oak,	- - - -	3	6	Nearly as tall as the larch, and very clean.
Black poplar,	- -	4	3	
Elms	{ English narrow leaved,	-	4	3
	{ Scotch,	-	4	6
Alder,	- - - -	3	3	Remarkably straight and clean.
Birch,	- - - -	3	0	Clean and good; the ground not sufficiently moist.
Evergreen oak,	-	8	0	Bark as white as snow, wood very hard.
Horse chestnut,	-	4	0	It branches out at five feet high.
Sycamore,	- - -	4	3	to six feet; very valuable for beams, and beetles for bleach mills, and for turner's use.
Lime,	- - - -	6	0	In deeper ground than any of the rest.

Walnut,

	r.	1.	
Walnut, - - -	4	0	
Gaugamel fallow,	3	6	Not growing in favourable soil ; a cutting of one of these fallows, planted in a favourable situation eighteen years ago, is now four feet in circumference, and near thirty in height.
Sweet chestnut, -	4	5	

From this statement it appears, that upon soils such as I have described this to be, and that the prices of all kinds of timber were the same, supposing the timber to be proportioned to the measurement given, that the most profitable would be the beech, lime, and sycamore, next the firs, and that the oak ranks among the lowest ; but we must consider, that at fifty years old the oak is only beginning to grow, whilst some of the others are verging to decay. The elms rank high ; and the larch, being free from knots, is timber to the top. The evergreen oak is a single tree, therefore nothing can be said positively respecting it, and it is not above five feet until the stem divides.

The growth of timber here given is not mentioned as particularly large for the time of planting, but as a general view of the progress of different trees, upon a soil such as I have described, and which, with some variation, is the general soil of the county. Many places might be fixed on, where the growth is much greater ;

greater; but the quality of the wood makes up, in a great degree, for its want of size; which yet is not, upon the whole, very low. In the western parts of the county, where the soil is deeper, the growth of trees is much more rapid; but I understand the wood is not near so hard nor so durable. In making plantations, the nature of the soil ought always to be attended to, in the trees that are to be permanent; these might be planted at such distances as they are intended to remain, the intervals filled with such others, as are likely to afford them shelter, which from time to time may be taken away, (as necessity requires) to give room to the favoured kinds.

Planting in clumps has been much in fashion, not only in this county, but in other parts: this does not seem very well adapted to an unequal surface. In a hilly country, skirtings or belts round the hills have a much better effect, by tending to take off from the too great inequality of the general outline; an extensive hill all under planting, is, without doubt, a noble object, and gives some scope to the imagination, but a clump on the top of a hill has not, in general, so pleasing an effect; besides, trees are much slower in making a progress in that situation; and I believe it is very well known, in exposed countries, that the only way to make trees thrive on the top of a high ground is by beginning to plant at the bottom. The natural shelter afforded them, when so placed, and the general superiority

superiority of earth, give a freedom to their growth, which gradually supplies those above them with protection, until the whole is covered.

Notwithstanding what has been said of the general nakedness of this county, there are some parts of it, which do not by any means deserve the imputation; all the western parts of it, from Belfast, along the banks of the Lagan, to Hillsborough, and from thence to the west of the great road to Dublin, through the whole extent of that county, afford in that direction an exception; and around the gentlemen's seats, there are many wooded scenes, which shew what the hills, and vales, and rivers of the county of Down, when ornamented by the hand of taste, are capable of becoming.

Price of timber.—The quantity of timber sold in this county is so small, most heavy works being carried on with foreign timber, that there is no regular price fixed for it, except when it is cut up for particular purposes; all that can be mentioned with any degree of certainty, are the component parts of a car, which sell according to their supposed qualities, or the scarcity of the materials.

Car shafts sell from 6*s.* 6*d.* to 8*s.* 8*d.* per pair.

Wheel timber, about 8*s.* 8*d.* the pair.

An axletree, about 2*s.* 8½*d.* or 3*s.*

Outward flats, when of ash, 1*s.* 7½*d.*

The bottom of the car is generally done with deal.

The

		<i>s.</i>	<i>d.</i>
The price of making a car is	- - -	8	8
Of a plough, such as we use,	- - -	2	8½
Of harrows, from 1 <i>s.</i> 7½ <i>d.</i> to	- -	2	8½
Of a crib, or cart, for drawing turf,	-	3	3

Where whole trees are sold, they are valued according to the quantity of the above-mentioned scantlings they will afford. Ash is the kind mostly used for farming purposes; alder is at least as good, though it seldom sells so high.

CHAPTER XI.

WASTES.

THE only part of the county, which can in any degree be referred to the above title, is contained in the mountains of Mourne, and of Upper Iveagh; and even these afford, in most places, support to a hardy race of cattle and sheep, bred by the farmers in their neighbourhood, and likewise to a number of others, brought from the lowlands for the summer's run; on these mountains they thrive well, and often are taken away fat at the latter end of September; but a later stay is reckoned hurtful.

These mountains are computed to contain about 30,000 acres, and are in many parts interspersed with vallies, that afford grafs to cattle, and also with turf-bog, which, from the scarcity of that article in Lecale, is likely to turn out very advantageous to the owners of those parts, which lie within the reach of that barony. A road lately run into one of those bogs has

made ground, that a year or two past would not have produced one shilling per acre, now worth four guineas; but the greater portion of these mountains is composed of rocky steeps and precipices, so as to preclude any possibility of improving them, but by planting, which has been performed on one part to the extent, I have heard, of three hundred acres by the late Lord Clanbrassil, who for many years planted from thirty to sixty thousand trees annually, with which he completely covered one of the lower mountains, close to which his most uncommon improvement is situated, in which every variety of wood, water, mountain, combine with frequent views of the sea, to form a succession of the most romantic scenery. In another part, Mr. Needham inclosed and planted a considerable tract on the Mourne side, where he resided several summers; of late I have heard nothing has been added to this improvement, which, from the growth of the trees, and the beauty of the streams which flow through it, promised to be little inferior to Tullamore park.

Where planting has been attempted on these mountains, every tree almost has given way to the larch, which seems here to flourish as in its native soil.

Bogs.

The bogs of this county can be no objects of agricultural improvement, as bogs; in many places there is not a sufficient quantity for the supply of the inhabitants, who, from their attachment to turf as fuel, bring it from the distance of eight or ten miles. In other places, where it is in greater plenty, it will be attacked with increasing rapidity, as the little detached pieces in their neighbourhood are worn out; and the prices, at which bog sets in many situations, are such, as no other land, let its fertility or state of cultivation be what it may, could produce.

Where bogs are cut to the sand or clay, the usual method of improving them is by setting potatoes, to which this kind of ground seems particularly propitious, especially if some of the boggy parts remain to mix with the under-stratum, which thus becomes a fine loam, sandy or clayey according to the nature of the bottom. These grounds, from their low situation, are particularly favourable for the production of grass, and, from the same circumstance, often admit of irrigation, to which this compound soil seems remarkably well adapted; besides, there is generally some rill near at hand, which, with care, may be conducted over
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the surface, to which ashes may likewise be applied, obtained with little expense on the spot, as the clay and bog intermixed burn with great facility, and produce a considerable quantity of excellent manure.

CHAPTER XII.

IMPROVEMENTS.

SECTION I.

Draining.

NOTWITHSTANDING the general appearance of the soil, and the shape of the grounds in this county, which might seem to preclude the necessity of draining, a great deal has been done in that way, and much is still required. The hills abound with springs; some shew themselves on the tops, some on the declivities, but most towards the bottoms, and in the strongest and best part of the soil. Under-ground draining is very well understood, and, where rocks do not interfere, it is not difficult to execute, from the abundance of stone in most places to be found on the surface. The drains are sunk until the spring is come at, then they are filled with stones, as near the surface as can be done without fearing interruption from the plough or spade; some persons throw the stones promiscuously in, but
the

the most approved mode is to lay them neatly at the bottom, and then to throw the remainder as level as can be done, covering them with whins or straw, to prevent the earth from falling between the stones. When stones are not to be had, sod-drains are in use, a spade and shovel of a particular kind being the implements to take out the undermost spit, so as to leave a shoulder for an inverted sod to rest on. These drains are most liable to get out of order, from the sod rotting and giving way, but where stones are not to be obtained, there is no alternative. The nearer the surface the drains are filled, they are the more effectual, as, in that case, they also intercept, on steep hills more especially, some of the surface water. I have not yet learned whether draining, in Dr. Anderson's method by tapping, has here been practised, but I should imagine in this country it might answer; I shall mention an instance in which, without intention, it perfectly succeeded. In the middle, or rather towards the latter end of the dry weather in the year 1800, it was found necessary to clean a well in this neighbourhood, about half way towards the summit of a hill, such as this country abounds with; after the well was cleared, very little water made its way; it was then resolved upon to sink the well, formerly about two feet, to four feet; this was done, and still very little water came, upon which a large iron crow was forced into the ground; this, after a few strokes, sunk into a loose gravel about

two feet; on pulling out the instrument, the water instantly followed, and has continued to run until this day; the consequence of which, besides a regular stream of excellent water, was, that the back-yard belonging to the house where this operation was performed, and which, having been cut out of the hill, was ten feet lower than the well, and, previous to the well being sunk, never could be kept dry, has from that day lost every appearance of damp, except when it falls from the sky. A very neat method of making open drains I have seen in different places, by sloping the edges of the drains, and sowing grass-seed; but when this is done, the good earth ought always to be kept to cover the under stratum, laid bare in forming the declivity.

SECT. 2. *Paring and Burning.*

THE regular system of paring and burning land is only practised in the mountainous parts, and in some few places where moory soil abounds; it is generally performed by putting a fin or feather upon the sock, that the grassy part may alone be cut; when this is done, by ploughing lengthways the furrows are cut across, and put into heaps, which, when sufficiently dry, are burned, spread, and ploughed into the ground. Excellent crops of grain are procured by this management,

ment, and of late potatoes have been tried, and have succeeded beyond expectation; for them the ground should be burned just before the time of setting, and the ashes spread hot; if a little coarse litter is added, it is reckoned an advantage, as it keeps the potatoes from being in immediate contact with the ashes. In the spring of 1801 I tried a fair experiment on a boggy piece of ground, between dung and ashes on alternate ridges, and could not perceive any difference, the produce being equal. Ashes made on the skirts of bogs are much used, both for crops of grain and of grass; in both ways they are excellent; the quantity used depends on the state of the ground; the effect visible for two or three years: when clay is mixed with the stuff to be burned, it increases the quantity, as well as extends the duration. In many parts of this county it is customary to burn the low and deep parts of the hills, which, from being partly bog and partly clay, burn well, and afford much ashes. Clay alone, when burned, which may be done by constructing a kiln for the purpose, with flues like a brick-kiln, forms a strong and lasting manure; the same quantity used as of dung: when the clay is once properly set on fire, it will burn any substance thrown on it, how wet soever it may be. The difficulty is to get the kiln completely fired at first; for this purpose the clay must be dry for the first day, and a proper quantity of fuel allowed; on the first day's management much of the success depends.

SECT. 3. *Manuring.*

DUNG is principally applied towards raising potatoes, in some instances for grain of all the different sorts; but to raise potatoes, every effort is used by the best farmers to increase its quantity, and even the little farmers are very industrious in this particular, increasing its quantity by many additional substances, earth, bog, clay, &c. according to their soils, and the opportunities they may have of obtaining them. For bog or moor a mixture of clay is excellent, although it should contain some stones, which assist in compressing and dividing the boggy soils. For clay or gravel a mixture of bog is very well adapted, to correct the closeness of the one, or the sharpness of the other; but the great error in the management of dunghills seems to be their improvident situation, by which the rich water that flows from them is lost. The mode adopted by a farmer in this county deserves to be noticed and followed; his dunghill being placed on a rising ground, he made a cut from it, with two or three stops, to save the water in its descent; above these stops he always threw in a quantity of earth, which being saturated with the moisture from the dung, he removed it, and again filled the trench. This man's attention to every branch of husbandry was directed by equal sagacity, and, from being

a labourer, he took a farm, not twenty acres, and died lately worth 500*l.*; his situation, within two miles of Lisburn, was advantageous for disposing of his produce, particularly potatoes, which he cultivated in a first-rate manner. In forming a dunghill, particular attention should be paid to its situation; too much moisture, as well as too little, equally prevent its rotting as it ought to do. Dung, except for a garden, should not be kept longer than the straws, of which it is partly composed, can be seen in cutting it; when these are no longer to be perceived, it has lost much of its improving qualities, as the putrefactive process is completed.

Lime, from its being more portable than any other manure, is the most general, dung excepted. I might here, according to the example of Ellis (who thus often introduces any improvement he recommends), mention nine good ways of using this general fertilizer, which seldom fails of answering the expectation of the farmer. The quantity used depends a good deal upon the nature of the soil, and the situation of the land: upon strong soils, an hundred barrels, of three Winchester bushels each, are not found too much, whilst, upon those of a lighter nature, half the quantity is often thought sufficient. The method most in use is, to spread it on lea in the latter end of summer, with the intention of suffering it to remain on the land for one or more years, according to the convenience of the owner; the older the lea, the more lime is usually applied;

plied; on heavy ground, in this state, one hundred barrels are about the quantity, but on lighter, from sixty to eighty. When lime is laid on stubble ground, it is reckoned to take effect sooner, and a lesser quantity is used in proportion to each foil. This is not a bad mode, provided the ground is left to grass, but if for immediate tillage, it seldom answers a good purpose, in the usual mode of culture this country affords; but when a piece of ground lies in such a situation, that it is desirable to have it in grass and in good heart (as all ground ought to be), it may be expected, that lime spread on the stubble, and ploughed lightly in before winter, then nicely stirred again in spring, and sown with oats and grass-feed, will have success in both points. As for those, who plough but once for spring crops, they will be generally disappointed by liming on stubble. Another way of laying on lime is under dung, for potatoes; this many persons will suppose to be a work of supererogation, and so it is in some degree, as it is twice manuring the same ground for one object; but of all the methods I have seen put in execution to enable the ground (after the unscientific practice of this country) to bear a long course of exhausting crops, this is the surest; for I have known nine crops of grain in succession taken from ground thus brought in, namely, two of barley, two of wheat, and five of oats, all good, and except for the last, when grass-feed was sown, not more than one ploughing was given for a

crop. Before this trial the field was not thought remarkably good, and the owner was encouraged to go on year after year, by the excellence of the preceding crop. I must observe, the field had been long in grass, and wheat was harrowed in after digging out the potatoes. Had this field been put into a regular course of tillage, by taking an ameliorating crop, such as clover, peas or beans, between the wheat or barley, I think it might have been in a state of progressive improvement for any number of years. Lime is also applied after potatoes; in this method it lasts a considerable time, if it is laid on immediately after they are dug. Sometimes lea ground, having been ploughed in winter, is dressed with this manure, by spreading on the ridges before harrowing, which operation is performed when the grain, generally oats, is sowed; the furrows are then dug and shovelled, by which both seed and manure are completely covered. In the first crop the effect is not great, for lime does not act so rapidly as many other manures of less duration. Lime is often mixed with earth, and laid both on grass grounds and on grounds already ploughed; the success of this mode greatly depends on the proportion of lime with earth. Many persons are now of opinion that, when lime and earth are to be applied to the improvement of land, they come much more quickly to their purpose of enriching it, by first spreading the lime on the grass, and then covering it with earth: there are strong arguments in
favour

favour of doing it thus; the earth has but once to be carried, and the expense of turning the compost heaps is entirely saved; the lime, also, when well covered, penetrates immediately into the ground; when laid on by itself it requires a year at least. As lime is the principal manure of this county, I have been very particular in describing the different modes of application, and their success. Great exertions are made to procure this valuable article, but the idea of making it merely subservient to the production of successive crops of grain, without any rest, has prevented it from being as highly beneficial as it might have been under a better system; under the present one land is often left in a worse state than it came from the hands of nature, for there is no way so effectual to destroy the valuable properties of the soil, as high liming and imperfect culture; and, although in some instances, one of which I have mentioned, the mischief has not been done, the miserable appearance of the fields, after six or seven successive crops, plainly proves the truth of my assertion. We must allow, that to have five or six crops of grain, without any other labour than an annual ploughing and harrowing, is a great temptation; but a farmer of all professions ought to look forward and consider, that, let his land produce or not, he must pay his rent; that, if he ruins it in the beginning, in the end it will ruin him, or at least leave him in a situation much worse than with more judicious management he might have been.

been. The expense of lime depends on the distance it is drawn; in many places it is conveyed fourteen miles by land-carriage from the kilns; in others limestone is drawn and burned upon the farm; in this way, when fuel is near, much is saved, as the expense of drawing is the most material, the stone being purchased at the quarries at not more than sixteen pence per ton; when it is brought by water, either by means of the canal, or from Carlingford to the east coast, the price is from 3*s.* 6*d.* to 5*s.* per ton. In the neighbourhood of Ballynahinch, the most central part of the county, limestone of three kinds are often seen at a small distance from each other, the blue from Carlingford, the red from Castle Espie, not far distant from Comber, and the white from Moira, fourteen miles; of these the white is reckoned to produce the greatest quantity of lime from a given weight of stone. The price of lime at the quarries, where it is burned, is from 1*s.* 1*d.* to 1*s.* 2*d.* per barrel. I have been lately informed by several persons of experience, that nothing conduces so much to restore land that has been over-cropped in consequence of being limed, and to fit it for another liming, as covering the ground with fresh soil, and suffering it to continue for some years in grass; but whilst I propose this method as a remedy for an existing evil, I must caution the farmer once more against the pernicious practice of repeated crops of grain, without the intervention of grass or fallow. The use of lime as a

manure

manure, is said to have been first introduced by Mr. Watson, of Brookhill, in the county of Antrim, about seventy years ago.

Limestone gravel; or a mixture of detached pieces of limestone with the calcareous earth, which surrounds it, in greater or smaller proportions as it rises, is used in the neighbourhoods of Moira and Magheralin; it is a most potent and lasting manure; but, from the great quantity required, it will not bear carriage to any considerable distance.

Marling was introduced into the barony of Lecale, about eighty years ago, by the Hon. Michael Ward, one of the justices of the king's-bench; the pit, from whence it was first raised, is to be seen on the side of the road between Castle-ward and Downpatrick. The immediate advance in the value of lands, on its introduction, was above four-fold, and a corn trade was opened from Strangford in consequence; but from the imprudent use of this manure, the land became exhausted in some years, and fell off in its produce very much; of late years, however, from more judicious management, it has resumed its former fertility. Marle has the same effect as lime, only in a higher degree, of enriching land, and, like it, the effect of calling out its productive qualities to its destruction; and every thing, that has been said of the ill consequences of strong liming and improper cropping, is equally applicable to it: the quantity used, about a car-load to a square perch.

perch. A considerable time must intervene, before ground will admit of a second marling with advantage, the period longer in proportion to the quantity laid on at first: Mr. Gracey, from whom I received much valuable information, mentioned that forrel appearing is a sign, that marling may be repeated with advantage. The marle found in this county is generally of a white or grey coloured kind, from the bottom of bogs, and small lakes, and some of it immediately under the surface. Shelly sand, and gravel, are also used with advantage, along the different shores; they are laid very thick upon stiff clay soils, and the best crops obtained from them; as fallowing is now seldom practised, these manures are laid on grass, which they wonderfully improve. Wreck is also much used along the coast; often in blowing winds all hands are at work in drawing it up and securing it; it is used both for potatoes, and, in some cases, for grain; its duration is but short.

Of moss or turf-bog as a manure.—This substance is useful in the above-mentioned quality, both in itself, and when compounded with other materials; upon thin and sharp soils, mixed with lime or dung, it is excellent, not only as a manure, but as adding to the depth of the land; for this purpose, however, it should not be taken at random, but at some distance from the surface, and, if so deep that some mixture of clay should appear along with it, the effect upon

upon the above-mentioned soil will be the greater ; upon clay, a quantity of a lighter and more friable nature will be found to answer, in opening and rendering it more tractable in the operations of husbandry. There are two favourite modes of applying this substance ; the first, by drawing it on grass land in summer, and when nearly dry setting it on fire, and spreading it half burned and hot upon the ground, where it remains until the season for ploughing arrives. Oats are sown on ground thus prepared, the crops clean and luxuriant ; an hundred or an hundred and fifty car-loads are laid on an acre, according to the quality of the soil : heavy land requires the greater quantity. The second method is, to lay it on grass ground before or in winter, to spread it as soon as convenient, and in spring to add a small portion of dung, on which potatoes are set in the lazy-bed way ; and if a modern farmer can excuse the lazy-bed way, he may pardon it in this instance, both on account of the greatness of the crop and quality of the root, as well as the mellow state, in which it leaves the ground, and its consequent fitness for production. Therefore, whether we consider turf-bog as an improver in itself, as mixed with other enriching substances to extend their effects, or when reduced to ashes, we shall find it an article of considerable magnitude in the scale of manures. Nor need we fear the use of it, as likely to encroach on the fuel of the country ; for that species, which is good for manure,

is useless as fuel, no operation being enabled to give it the necessary adhesion.

In the neighbourhood of towns many manures are used, that do not come within the reach of farmers in general, but which are very advantageous. Coal-ashes are very good for heavy land; for coarse meadows they are superior correctives of the harsh herbage they naturally produce. Soot is a very powerful manure also, and, as a top-dressing for wheat, very successful; but it is not easy to collect any considerable quantity. In the neighbourhood of bleach-greens, the ashes, after being boiled, improve meadows and pastures very much; soaper's waste, being of the same nature, is also used for the same purpose, where it can be procured. There are many other substances, which farmers in the vicinity of large towns might with a little care and industry procure, that are not very much attended to, and are yet very valuable.

Before I quit the subject of manures, I must take notice of an observation I lately met with in a book of agriculture, the name of which I do not recollect; ground, naturally fertile, has a great advantage over ground made rich by manures; in the former, the straw is of a much firmer texture, and able to support a much greater weight of grain, than that of the latter, whose straw wanting strength is apt to fall before the grain is properly ripe, which prevents its filling, as in that situation it is deprived both of air and sun.

SECT.

SECT. 4. *Weeding.*

POTATOES are carefully weeded, whether in the drill or lazy-bed method, by the hand; the best time seems to be when the tops are beginning to shew symptoms of blossoming; very often a second weeding is required and given, which the crop gratefully repays. Flax is also carefully weeded, as mentioned under that article, and large weeds are generally pulled from all crops of grain; but scarcely any person thinks of weeding pasture, although keeping it clean is the best preventative for weeds in the succeeding crops of grain. It is shameful to see the quantity of large root weeds, that over-run the fields of clover, in grazing in Lecale and other parts of the county where it is applied in that way; it gives a slovenly appearance to well cultivated farms.

SECT. 5. *Irrigation. Watering.*

ALTHOUGH the art of watering meadows is still in its infancy in the county of Down, yet the advantages of it are known, and in several parts of it it is practised, but on a small scale. The benefit of water to

grafs land is, in many instances, so great and so evident, that to persons of observation, who are conversant in rural affairs, the means of procuring and conducting it over ground must be a desirable object ; but the idea, that water enriched by deposition alone, for a considerable time prevented the true practice from being followed, that of conveying it over lands from their natural situation not liable to be flooded ; consequently, no other grounds were allowed to enjoy the fertilizing powers of water, until of late years, except such as from their low situation admitted the water without difficulty, and where it was suffered to stagnate upon them ; now, however, that the superior effects of running water are discovered and confessed, many meadows have the streams from above, which are constantly kept in motion ; and in other situations they are conducted, at no great expense indeed, along the sides of the hills, which in this county, from their kindly soil and substratum, seem particularly adapted to this operation. Observation alone could have taught the superior advantage of running water, in the production of grafs ; that water impregnated, or supposed to be impregnated with fertilizing substances, such as are carried down by floods, might act as a manure, in depositing those substances when stagnated, would be a very obvious conjecture, and such as might occur to a reasoner of no extraordinary powers ; but a course of observation must have been necessary, to ascertain the benefit

benefit of clear running water, and the almost incredible effect it has upon proper soils. So much has already been written upon this subject, that to enter minutely into the advantage of this branch of agriculture, would merely be a repetition of what has been said by writers much more conversant in the business than I have had an opportunity of being; I shall therefore merely confine myself to those observations, which I have had an opportunity of making.

Of the Soils adapted for Irrigation.

So far as I have been able to judge, water acts as a fertilizer upon every soil, when under proper management, from gravelly loam to clay; turf-bog, when brought into culture, is benefited by it in a most extraordinary manner, as I have had an opportunity of knowing from my own experience, by conducting the stream, which comes from the higher parts of a bog, over a piece, which has been cut over, not half its depth, and afterwards brought into cultivation; by throwing the water over it this year (1801) a greater quantity of grass, and to all appearance of a better quality, was gained than in any two years since it was first improved, although it had been manured every second year, either with dung or ashes. My reason for mentioning this so particularly is, first, to shew how congenial the water arising from a bog is to the
same

same soil ; and secondly, as cut-out turf-bogs from their situation have more capability of having the water turned upon them, than almost any other soil, it is necessary to be known how much they are, when laid down to grass, benefited by water. Gravelly soils are affected by irrigation, with a quickness only to be credited by those who have seen it, and clay also, though slower in shewing the advantage of it, acknowledges its fertilizing qualities. In fact there are hardly any waters, except those impregnated with some mineral destructive to vegetation, that may not be profitably employed, upon almost every variety of ground, unless from gross mismanagement ; an instance of which lately occurred in this county, where a person being employed at a considerable expense to water a piece of ground, to facilitate the levelling, and to banish the rushes, gave the ground a complete burning, which I suppose so reduced the quantity of vegetable mold, as to render it unfit for the purposes of agriculture : the soil was a sandy loam upon a clay. My reason for supposing, that the operation of burning spoiled it, is this ; I saw the ground before it was broken up, but after the water was partially thrown over it ; at that time there was a most luxuriant growth upon every place where the water reached, even amongst the rushes, which certainly shewed that the ground agreed with irrigation, and must have been disqualified by the burning, previous to the second watering. The only
likely

likely means of restoring this land to its former state, will be by covering it with earth, and thus returning what it has lost.

On every soil the beneficial effects of irrigation are in proportion to the supply of water, for where you have a constant supply, you can use it in the most critical times, in dry and in warm weather; but still where this point cannot be obtained, where water can only be had for a few months or weeks, it is not to be neglected, as even in this imperfect state it is equal to the best manures in the production of grass. To water meadows with effect, they should be levelled, drained, and cleared from aquatic weeds; levelled, to spread the water with equality; drained, because on dry ground it has more power, and the ground can be laid dry when required; and cleared of weeds, because they occupy the place of a more valuable production; but even, without any of these improvements, water, merely turned over the soil, in most cases will be of service, and, where nothing more has been done, I have seen grass as long as the rushes, where formerly nothing but rushes grew. Every stream, therefore, that can be commanded, ought to be converted to this use, and there are few streams, that may not be in some degree commanded. Even back-flooding, by means of dams, ought not to be neglected, although the most critical and least beneficial branch of this art; in this way, particular attention must be paid to the time allowed
the

the water to cover the ground, and, if it can be done, to prevent its being covered to too great a depth. The land should, at particular times, be laid dry, to give the grafs air, and to prevent its roots from being destroyed by the water, which must in some degree stagnate upon it. The only objection I ever heard to this mode of improving land, arose from the idea of its making the produce of inferior quality; but this is a point not decided, and depends greatly on the time you cut the hay of watered meadows; for the crop being so much greater than on any other ground, it will, if suffered to remain long unmown, spoil at the bottom, from its weight and closeness, whereas, if taken earlier, being more full of sap, it will of course make more nutritious food. But the benefits are numerous; for when the land is once put into a course for irrigation, it is the cheapest, as well as the most certain mode of improving it; it is the mode, in which grafs will be produced at a period in spring when it is particularly valuable, at which time it may be fed without injuring the crop of hay; it has this peculiar advantage, that its manure is acquired, and brought to it at those times the land is totally unfit for conveying manure of any other kind; and to sum up all, so far from robbing any other land for its support, it is a continual and increasing fund of richness, from the supply it affords to cattle of all kinds, that convert it into manure, with which other lands may be improved; thus not only rejecting every

every

every assistance itself, but affording it to other lands, which require it. And I do not think it would be too much to state, that for every acre of watered meadow half an acre of other ground might be kept in heart; which, if this practice was as general as it should be, would in the whole amount to an advantage not easily calculated.

CHAPTER XIII.

LIVE STOCK.

SECTION I.

Horned Cattle.

IN a country, where cattle are kept as merely subservient to the purposes of the dairy, it cannot be expected, that any general attention should be paid to the breed ; and accordingly we find them more valued for their qualifications as good milkers, than as deriving their pedigree from any particular stock, and the usual tokens of excelling in that way are better recommendations to the purchaser, than either length or shortness of horn. The truth is, the cattle of this county are a mixture of every kind ; the bull, that is nearest the place where his interference is necessary, being, in ninety-nine instances out of an hundred, that which is preferred ; and even those farmers, whose stock requires one of their own, and who in buying cows are attentive in choosing the best, in the purchase of a bull often prefer

prefer the cheapest to the best shaped. Notwithstanding this indifference to breed, the long-horned are the most frequent, a very distinct variety, however, from the English breed of that denomination; their horns grow downwards, and are *thin*, ours grow upwards, and are *thick*; the English cattle have small bellies, and broad thighs and rumps; our cattle have large bellies and thin hips, and, upon the whole, form a complete contrast with that celebrated breed; but they are good milkers when well fed, and, from their size, which is between three and four hundred weight, probably better adapted for the pasture of this country than a heavier or nicer kind, which would demand a greater quantity of food, and more care than their owners are disposed to bestow on them. As I have already mentioned, the object of cattle in the county of Down is milk; in this the farmers are tolerably successful, the usual quantity of milk for two months after calving being from twelve to twenty quarts per day; the latter quantity is only to be obtained from the best cows, fed in the best manner, and even that has been surpassed, but not in many instances. What I have said is meant to apply to the general stock of the country; in the hands of gentlemen some cattle are to be met with of a superior kind. In the neighbourhood of Waringstown was formerly a very fine breed, brought there by the late Mr. Waring, from the late Lord Masserene's, at Antrim, who more than fifty years ago obtained

them from England; they were of the long-horned kind, remarkable for their beauty and their milk, but they are nearly lost from the want of proper attention in keeping good bulls; a few of this breed are still in existence at Orange-field, in the hands of Mr. Beatson, who for some time paid considerable attention to his stock, and had many cows of great beauty. At Montalto there was an uncommon fine breed of cattle; the heifers came from Dean Harman's stock in Longford, and the original bull from Headfort, of the Craven breed: many of the farmers crossed their stock with these, and the improvement was observed to a considerable extent around. The best cattle I have seen in other parts of the county are as follow. Lord Annesley has a very fine dairy of long-horned cows of the old breed, and a remarkable and beautifully formed bull of Sir John Parnell's breed, and likewise a heifer he brought from the Queen's county a few years ago. Mr. Ward's cattle at Bangor, for figure and size taken together, are, I believe, the first in the county; they are of the late Lord De Montalt's breed, and were obtained at a very high price. Mr. Reilly, of Scarva, has also been very attentive in procuring cattle from the west of Ireland. At Mr. Waring's, of Moira, are likewise a few very nice cows; all these are of the long-horned breed, as are Mr. Douglass's, who has a number of fine cows of the same kind, and a bull of Lord Annesley's breed, a very fine one. Mr. Ford, of Seaford,

Seaford, bought lately at Mr. Jacob's sale, in the county of Tipperary, a cow and heifer of the very best breed, as appears by their pedigree; they are both beautiful; judges are divided in their opinions concerning the superiority; the size not too great for this country, about four cwt.; their bones very small; their heads and necks as fine as thorough bred horses; the price above one hundred pounds. The only stock of any other breed, at least that I have seen, which are deserving of notice, are Mr. Hamilton's of Killileagh, who imported a bull and cow of the short-horned kind from Lincolnshire; two of their progeny are now at Killileagh, a bull and cow, are very fine, the bull especially, who is sixteen hands high, nine feet from head to tail, and proportionably made; he is of a fine cream colour, with a few black spots; the cow entirely white, and very handsome also. The Marquis of Downshire five or six years ago imported from Galloway twelve heifers and a bull, of the true polled breed; they were very small when imported, but have grown wonderfully, and their descendants promise to be well sized; one of them, which was fatted last winter, a spayed heifer, weighed upward of four cwt.; they are remarkably well over the back, and over the tail tolerable; their necks long and fine, their heads small, but their thighs are not well let down; their colour black or brindled, with white backs in some instances; the farmer reckons them very hardy, not nice in their food, and in yoke remarkably

markably quick steppers; some of the bullocks will, he thinks, come to five or six hundred weight; the cows he does not reckon remarkable good milkers, although some of them have turned out very well: upon the whole he thinks them profitable stock upon ground not of the first quality, but when it is so, he prefers the cattle from the west of Ireland.—In choosing a breed of cattle, consideration should certainly be paid to the quality of the ground, on which they are to be fed, and it certainly would be an absurdity to bring the Lincolnshire ox to starve upon a barren or unsheltered hill; at the same time it seems both rational, and indeed becoming the spirit of an enterprizing improver, to obtain a superior kind, and by every means to provide for them, and to keep them as near the original stock as he can; at least this advantage will attend it, though the size may decrease, the shape will still be preserved, and probably the other valuable qualities, and handsome cattle are an inducement to the owner to pay more regard to them, and, consequently, to those, who have the immediate care of them. But when the point is so far given up, that land is only capable of maintaining cattle of an inferior class, the proprietor grows comparatively careless of them, and whatever kind he pitches upon are likely to degenerate. I will not go so far as to say, that the finest or largest cattle are the most easy to keep in condition, but so far I can venture

to

to assert, that the nicest shaped beast in a farm, with few exceptions, is the fattest.

Rearing Cattle.

Rearing cattle is here mostly confined to the keeping up the stock upon the land, yet there are some persons, whose farms are larger than the general size, that rear all their calves; the heifers are either taken into the dairy, to replace such cows as they choose to part with or fatten, or they are sold in calf; the bullocks disposed of as may suit their conveniency. Calves are with very few exceptions reared by the pail; generally new-milk for a month or six weeks, afterwards skim-milk for the same period, and then they are left to shift for themselves; the quantity varies according to the attention paid by the owner to the goodness of his calves, from two to four quarts at a meal. As the cows generally come into milk in the summer months, the calves have not sufficient time, in this way, to gain proper strength before winter, and many of them die of consequence. Were the cows to calve in winter, the calves would have double the strength; as they would be ready to turn to grass in spring, and would have the whole summer to acquire that vigour of constitution, which would enable them to get through the first winter, which is the most trying to them. I know it is objected to this idea, that there is a considerable loss by
having

having cows to calve in winter ; this I might allow, if the dairy was the only object ; but where the two objects of dairying and rearing are united, I am convinced the most beneficial mode is, to have the calves dropped in winter, or early in the spring : in the first place, as I mentioned already, your calves are infinitely superior ; and secondly, instead of having the best part of the month of May spent before the calving time, as is usual, the cows being already in milk are in a situation to take advantage of the first spring of grass, at which time, although they will not give quite so much milk, there will be as much butter as if they were newly calved ; and if it is taken into consideration, that the calves are now reared, the quantity of disposeable milk will be full as much ; besides, winter calves begin to feed much sooner than summer calves ; and if a little attention is paid to put some cabbage in the bottom of their pail, or a small quantity of turnips cut neatly, they will in a short time learn to eat either the one or the other, and at the age of six or seven weeks they will not require much milk : when turnips or cabbages are not to be got, potatoes, boiled or raw, will answer the purpose full as well. This mode of rearing is practised with the greatest success in Norfolk, where it is entirely confined to winter ; and in Leicestershire the time extends from the beginning of December until March. I find from experience, that calves treated in this manner, and dropped at this season, are fully equal at the beginning

beginning of winter to those, which being calved in the preceding month of May are six months older : to make use of the breeder's expression, it makes them long in bone ; if this is not accomplished at an early age, it can never be done by subsequent care. Another advantage of cows calving in winter, especially in a gentleman's family, is plenty of milk, and the pleasing consequence, a supply of fresh butter and cream, no small consideration in any season, but especially at that time, when neither the one nor the other of good quality are to be procured, even for money. Some gentlemen allow their calves to suck, which, being the most natural, is assuredly the best mode ; and when two calves are put to one cow, I should think it a profitable way of employing the milk, which thus without trouble turns to very good account, whether the calves are reared for stock or for the butcher.

Dairying.

Butter is the great object of the dairy ; considerable quantities are made here and sold, some fresh in the towns, but mostly salted and packed for exportation ; the markets Belfast and Newry. It is not easy to ascertain exactly the produce of a cow, so much depends upon adventitious circumstances, upon the goodness of the cow, and the quality of the pasture, and a great deal upon the skill of the dairy-woman : the ge-

neral produce is from sixty to ninety pounds, with tolerable food and care; with superior attention it sometimes rises to two casks, or firkins, of sixty pounds each per cow, but in this case no allowance is made for butter in the family; the first, therefore, is the fairest average. Besides this, some skimmed-milk-cheese is made, some butter-milk sold, and probably a calf to every two cows. Farms might be picked out, on which the greatest produce here mentioned would not be too great, but in a general view of the county it would, stating it in that way, be liable to give wrong ideas upon the subject.

I shall here give the Norfolk method of rearing calves, which I have followed with success these five years; it is taken from Marshal's Rural Economy of that county.

Time of rearing.—From October to March; sometimes, but not often, later.

Manner of rearing.—Nothing but milk, until the calves shew an inclination to eat; as soon as they do, give a few small pieces of turnips in the bottom of the pail, in which the calf is fed; in a short time it will learn to eat the turnips, which must be increased as the appetite increases; when they come to eat heartily of turnips, they may be considered as nearly reared, and the milk gradually diminished until they can support themselves upon turnips alone. A little oats added to the turnips have a great effect, and calves are remarkably

ably fond of them. Marshal says the Norfolk farmers speak in raptures of oats and turnips for calves ; I have found them good, but instead of turnips I give cut kail, or cabbage, which they can manage more easily at the beginning : raw potatoes are also very good.

SECT. 2. *Horses.*

THE number of horses bred in the county of Down, is not by any means sufficient to supply its own consumption ; besides those employed in the necessary operations of husbandry, numbers are required for the purposes of trade, in conveying the different imports, in dispersing them through the country, and in mounting those persons, who are engaged in the principal manufactures. The breeding counties to the west afford what are sufficient ; they are either brought by dealers to the fairs, or those who have occasion go themselves to the markets, in the neighbourhood of which they are foaled ; they are bought of every age, from one to six years old, according to the inclination or the purse of the purchaser. The small farmers, who only keep a horse for a few months during the ploughing season, buy young ones, which they sell generally at some advance of price to those, who can keep them through the summer and ensuing year, when, if of a sufficient age and in good order, they are re-sold to

Dublin dealers, who attend the principal fairs : high-priced horses are seldom exposed at them for sale ; from ten to twenty guineas the usual purchase ; for this latter sum a very excellent kind of horse is often obtained, fit either for road or draft. Every horse in reality, let his duration be what it will, ought to be a good mover ; otherwise all his operations must be attended with difficulty. The colour most frequently to be met with is black, next to them bays, of which there is a greater number than formerly. Little occurs to me at present upon the subject of breeding, except to notice, that some of the best racers in Ireland of their day have been bred in this county, and that many are coming on likely to support their claim to excellence. In whatsoever point racing may be viewed by the sturdy moralist, the blood introduced in consequence of this pursuit, and the knowledge attendant on it, have certainly improved, in a great degree, the powers of this noble animal.

SECT. 3. *Sheep.*

THE only native breed of sheep this county produces is confined to the mountains ; they are a small and hardy race, mostly horned, but some individuals are without them. They are for the most part bred by the farmers, who live about the skirts of the mountains,

tains, on which they are lambed, but where they do not continue for the first winter, as the climate is too severe for them at that early period; accordingly, their owners take grafs for them, or rather running, in the low grounds, where they are sent on the approach of winter, and from whence they return about the fourth week in March. The usual price of their winter run is one shilling each. Whatever is the origin of this breed, there are many of them very well made in all points, and finely woolled; and when brought down to the lower grounds, and sufficiently tamed, they take fat very well, especially during the summer and autumn; but from their native wildness it is difficult to make them feed, except on grafs; yet by care they will become manageable; and the best way to accomplish this is, by having a few tame sheep mixed with them, either of another kind, or some of the same species that have been domesticated. This breed is much prized for the delicacy of its mutton, and is to be had at all the fairs of Castlewellan, Dundrum, Rosstrevor, &c. in the neighbourhood of the mountains. The wethers, three and four years old, weigh from ten to fourteen pounds per quarter; the ewes somewhat less: their fleeces, from two and a half pound to near double that weight. Many of them are even less than the weight I mention, not exceeding seven or eight pounds per quarter. A judge of sheep might pick up amongst these mountaineers both males and females of uncommon

mon symmetry of form, with wool of the finest texture: and it has often occurred to me, that by doing so, and bringing them to a better pasture and milder climate, the foundation of a superior breed might be laid. Except on the mountains, or near them, there are not, I believe, six numerous flocks of sheep in this county. The only breeding flocks I am acquainted with are in the park at Hillsborough, at Scarva, and Seaford; I understand that at Teralia Mr. Hamilton has lately got a ram and some ewes of the Leicester breed. To any gentleman, who wishes to be in the breeding line, the first cost, though high, is soon made up by the advantage of a superior stock. The sheep system in this county (if it may be called a system) is, with few exceptions, the buying-in from one to two lambs, or where the farms are larger than common, sometimes to the number of ten or twelve, and keeping them for a year, or a year and a half, and felling them fat to the butchers: some farmers keep a few breeding ewes, in the same proportion.

SECT. 4. *Hogs.*

A VAST number of hogs are bred in this county annually; the breeders sell them from the sow, at six or eight years old, in all the markets and fairs; the price greatly depends upon the crop of potatoes; when

when they are dear, sucking pigs are cheap, and vice versa. Besides these, numbers are brought every spring from the west of Ireland, to be fattened here: the breed of swine in that part of the kingdom is much superior to ours, having the advantage both in size and shape. Our breed, however, is improving, and the long-legged, curvilinear-backed, flat-sided, tottering animal is now giving place to a more compact and robust creature, that not only takes flesh faster, but is also able to carry its flesh. The short-legged Dutch breed is in high fashion at present, and very deservedly so; for they certainly have a superior *talent* of turning the smallest quantity of food into the greatest quantity of pork in a given time. I must here do justice to the exertions of two gentlemen, who have lately imported from England, at a considerable expense, a boar and sow each of the true Berkshire breed; they are very fine animals, in every thing a complete contrast to the old tottering breed above mentioned, which is the highest encomium, that can be passed on them.

SECT. 5. *Rabbits.*

RABBITS, as stock, are mostly confined to the neighbourhood of Dundrum; the ground there being sandy is well adapted to them; in Murtoagh they are so intermingled with the other stock, it would be difficult

to ascertain their exact value; but Mr. Hamilton of Teralia is so well persuaded of the superiority of the soil, though sandy, for agricultural purposes, that he has broken up a considerable part of his warren, and intends improving the whole, which probably would answer, even though it was to be returned to its former state; for rabbits, like all other animals, are profitable in proportion to the goodness of their food. The rabbits on the Maze-course are very fine, from the access they have to the well cultivated fields within their reach; and the few stragglers, that are to be met with in other places, are so much larger than the warren rabbits, that they seem to be almost a different species.

SECT. 6. *Poultry.*

POULTRY of all kinds are reared; of the common fowl every cottage has a brood or two; for this facility we are indebted, amongst many other obligations, to the potatoe, which, with the addition of a small quantity of other food, forms an excellent support for them. The earliest chickens are generally met with at the cottages, in which the fowl usually roost at night; the warmth imparted to them by this means renders the hens sooner prolific in the spring, than when they roost in colder situations, such as hen-houses usually are. Turkeys are also bred, but being at an early age

so much more tender, and, when they grow large, requiring so much greater range than the former, they are not so common. A considerable number of geese, as well as ducks, are also reared; of the first large flocks are kept about the skirts of the mountains; of the second almost every house has some; they are much valued from the quantity of eggs they lay. The price of poultry of all kinds has very much increased within these few years, and the two years of scarcity, by diminishing the number usually reared, has more than doubled their value.

SECT. 7. *Pigeons,*

ARE very general, but more as pets than as forming an article of profit. Most gentlemen have them about their houses; I understand that in Lecale there are some regular pigeon-houses.

SECT. 8. *Bees,*

ARE reckoned to thrive remarkably well in the county of Down, notwithstanding which there are not by any means so many hives as formerly; the reason of this decrease I have not been able to account for. On this subject there is little information to be gathered,

except from the superior management of two gentlemen, who conduct this branch of rural economy with as much skill as humanity; by the favour of one of those gentlemen, I made drawings of the hives and glasses used by them, and which they find to answer perfectly. By inspecting those drawings with the following references, I should hope the mode would be intelligible.

No. 1. is a hive, made without a top, instead of which it is covered with No. 2., having a grate in it for the bees to pass through. In this hive the bees are placed at swarming, instead of the usual conical hive. The grate is covered with paper until the evening, when the hive is set on the stand, at which time No. 4. is put over the grate. Nos. 3. and 4. form the hive set up with its glass over the grate of No. 2.; No. 5. a common hive to cover No. 4., which, when filled, may be removed; and No. 6. another glass, which may be put in its place; this, being open at top, may be covered with No. 7., in which are holes, that may have over each of them a glass, Nos. 8., and which the bees will fill; these No. 8. glasses may be taken away at pleasure, putting on fresh ones as they are taken away. By this method the necessity of killing the bees (unless from accident) to obtain their honey is totally done away; for the first glass or hive, that is put over the grating, is of such a size as to allow them, after it is filled, sufficient time to fill another for their own support,

port, and it is observed that, by changing the hive, they work with increased vigour. In taking off the first glass or hive, the combs, which are connected with the flat hive in which they were put after swarming, must be cut through with a long knife; any honey that falls is speedily gathered by the bees. Some persons use a slider for this purpose, but it is liable to be out of order. Wooden hives are the best covering for the whole. Upwards of ninety pounds of honey were taken last autumn out of one of these wooden hives, into which the bees had penetrated by some aperture in their usual abode; the honey of the first quality. The gentleman above mentioned keeps his bees in a house for the purpose, the aspect, I think, south-east; he finds mice very troublesome, both eating the combs, and killing the bees. In the glass hives a hole at top is necessary, to admit a stick to support the combs. The above method has been followed for many years, and is as simple, when understood, as possible; its humanity is apparent, for, instead of robbers and murderers, it renders us protectors and sharers.*

* The best cure for the sting of a bee is ink, applied immediately.

CHAPTER XIV.

RURAL ECONOMY.

SECTION I.

Farms,

IN this county are seldom of such extent, as to admit of servants and labourers in all the different departments of husbandry, that are required in those countries, where the system is more extensive, and where it requires more regularity. A farming servant here is scarcely ever so completely occupied by any particular branch, as not to be under the necessity of putting his hand to any business, that may call for his assistance; accordingly we have not the different degrees of wages paid to a carter, under-carter, &c. In the neighbourhood of towns the wages of labourers are much higher than in the country parts, because provisions, house-rent, fuel, &c. are dearer in those situations, where few labourers are kept by the year, their employment mostly depending on incidental calls; where they are

under

under these circumstances hired by the day or the week, their wages are from one to two shillings per day, according to the season and to the work. In the country most of the farmers have servants, who live in their houses, or, if married, in cottages on their farms. In the former case they are usually paid by the half-year, there being a distinction between the summer half-year from May till November, and the winter half-year from November till May; the wages for the first about three guineas, for the latter about three pounds, and their diet, &c. Boys are often hired for the same periods; their wages vary, from a guinea the half-year throughout all the gradations, until they arrive at the wages of a man. The cottagers are paid partly in money and their diet, and partly by their holdings, which are valued according to the size of their gardens, and the quantity of ground allowed for setting potatoes and sowing flax; when a cow is grazed, that is separately agreed for. A holding of this kind is valued from a guinea to two guineas per annum, besides paying for the cow if one is kept, and maintaining her in winter. The labourer is paid about $6\frac{1}{2}d.$ per day and his meat, first working up his rent; farmers likewise engage some of their work by ploughing for the lesser farmers, who have no horses; the usual rate is five days work of a man for one day's ploughing. Women are also engaged to reap, by sowing flax-seed for them, the seed
their

their own; so many days work given for a certain quantity of ready prepared ground.

The usual wages in this county, for occasional labourers in winter, are sixpence-halfpenny per day and diet; in summer eight pence and ditto. Gentlemen pay from eight pence to nine pence per day through the year, besides giving a house at a reasonable rate often into the bargain. There is not much work done by the great; ditches are more frequently contracted for in this way than any other kind of labour; a ditch of five feet by four, from fifteen pence to eighteen pence; of five feet by six, from eighteen pence to two shillings; where the ground is rocky, it is difficult to say what it may cost per perch of seven yards, which is the usual running measure for making a ditch of either of those dimensions; where rock intervenes, the employer must agree by the day.

DAILY WAGES ARE,

	s.	d.		s.	d.
For turf-cutting,	1	1	and diet;	1	7½ without it.
Baking turf; baker,	2	2	attendant	1	7½ without diet.
Boys wheeling,	0	6½	to	0	8
Reaping, from	0	6½	to	0	8 with diet; 1s. 1d. without it.
Mowing, from	1	7½	to	2	8½ about towns.
Ditto, by the acre,	3	6	to	4	0
Threshing oats,	1	1	per bole of 10 bushels	Winches.	
Ditto barley,	1	1	per eight bushels.		

Reaping

Reaping seldom done by the acre, but sometimes by the stook of twelve sheaves, at one penny per stook; in this way the farmer may be certain of small sheaves, and close cutting, to increase the number; a good reaper in this way will earn from fourteen pence to eighteen pence per day.

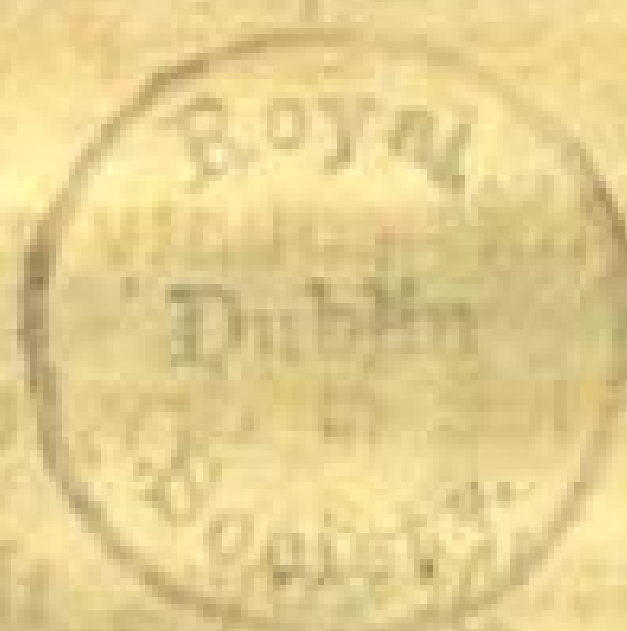
Hours of labour are, in summer, from six to six, an hour allowed at breakfast, the same at dinner; in harvest, from the time the grain is dry in the morning, until it is dark. It is accounted very bad husbandry to reap while the straw is wet, unless it is suffered to remain untied, to allow the moisture to evaporate. In harvest a very short time is taken up at meals, especially if the season is late. In winter the hours of labour are from sun-rise to sun-set; breakfast is the only meal at this season, taken in the course of the day; dinner after it is dark. In harvest most of the weavers of linen turn out to reaping, &c. and most of the young women; this gives a great command of hands at this necessary work, which, when the grain is completely ripe, goes on with very great rapidity; the consequence of the great population of this county, and of the manufacturers being spread over the land, instead of living together in towns.

The price of labour has much increased in and around the towns, but not considerably in the country, within these last twenty years, except in two or three articles, as turf-cutting, mowing, and thatching.

Provisions—Are potatoes, oatmeal boiled and baked, with milk and butter in summer, and some bacon ; in winter hung beef. All the farmers have some of both kinds, and most of the manufacturers, until the last two years, when the scarcity, and high price of meat, deprived many of their usual supply. A very great defect in the household management of this county, both in gentlemen and farmers, is the little care taken to have a supply of milk and butter during the winter season ; all this arises from the mistaken idea, that it is more profitable to have cows to calve in the spring, or rather summer ; yet in the dairy countries of England, their cows come in in winter. To this system, as the more advantageous one, they steadily adhere, both on account of their dairy and their calves ; but this has already been mentioned and recommended in the chapter on live stock.

Fuel.—So much attached are the inhabitants of this county to turf as fuel, that even on the sea coasts, where coals are to be had at a reasonable price, they prefer going ten miles for the former ; as those, who burn turf in many parts of Lecale, are obliged to do. The colly arising from the coal smoke is so disgusting to the females, who have been used to turf, that nothing can reconcile them to it, and the men kindly give way to their feelings ; but the time must come, when to gratify them in this particular will no longer remain in their power ; as the increased population of the country makes

makes an increased demand upon an article already grown scarce in many districts, and in others totally gone. In the sea-port towns coals are much used, but wherever turf is within reach it is used also.



CHAPTER XV.

POLITICAL ECONOMY, AS CONNECTED WITH, AND
AFFECTING AGRICULTURE.

SECTION I.

Roads.

THE roads of this county are in general allowed to be excellent; the soil is dry, the country neither flat, nor shaded with hedge-rows, the materials for making them good, and the gentlemen very careful in keeping them in repair, and anxious to have the money granted for them honestly accounted for. But notwithstanding these advantages, many improvements may yet be admitted of and introduced; the surface of this county is so various, that to avoid every inequality would be impossible, and in every case not to be wished for; but many of the old roads having been laid out, before it was adverted to, that going round a hill was often not describing a greater space than going over it, the traveller is not seldom obliged to climb a steep ascent, and
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to go down a declivity equal to it, when a most inviting valley appears to the right or to the left, which he very naturally thinks would have made as short a line of road, and would have saved him and his panting beast the fatigues of ascending and horrors of descending, without costing the county one shilling more than that, which has produced so much pain and so many alarms. This changing of the line of roads, to avoid steep hills, must nevertheless be gradually accomplished, upon account of the attendant expense; yet one of the baronies, in which it is most necessary, would admit of some increase, as it is lower taxed than any other in the county. In laying out new roads, care is generally taken, as far as circumstances will allow, to avoid the evil complained of, and the mail coach road now carrying on, upon the plan of avoiding the hills rather than taking the straightest line, will assuredly prove a comfort and security to travellers, and a credit to the county. Great service has been done in several parts of the county, from levying and laying out with discretion the penny an acre for the repair of parish roads. The act, which not only allowed, but in some measure enforced the raising of this tax, expired a few years ago, but has been revived the last session, or that before. It is to be lamented, that any suspension should been given to so useful a law, as when people are once out of the habit of paying a tax, they do not so willingly return to it; but of all taxes, those for roads are

least grievous, and the most beneficial; the money arising from them is laid out upon the spot, amongst the poorer class, even before it is levied, and the benefit is felt by every individual; but this is now so universally understood, that to say more on the subject would be superfluous. Upon the proper formation of roads so much of their real intention (the ease of communication) depends, that I hope I shall be pardoned for throwing together a few ideas upon this subject; partly my own, and partly extracted from Marshall's Rural Economy of the Midland Counties. The first step, towards making a road with effect, is to throw it up and level it, some time before the gravel is laid on, that those parts, which are to be raised to a level with the general surface, may have time to subside, and, in case they should sink too low, that they may be filled previous to the covering; when this is laid on, great care should be taken to keep the coarser parts underneath, otherwise they never bind, but continually shifting under the feet of man or horse equally impede the progress of each. When the materials are of a substance difficult to reduce, they ought to be bound together with some softer stuff; for the most perfect state of a road, that in which it is safest and most pleasant to the traveller, and in which it wears the least, is that, in which the intervals or openings of the hard materials are filled up with loose matter, as small gravel, sand, and where the first coat is very hard, even with fine earth

earth or till ; giving a smooth even surface, elastic to the hoof, yet firm enough to resist the wheels, without being cut into ruts, and sufficiently covered to prevent the hard materials from being exposed to their immediate pressure. After the surface of a road is thus arranged, great attention should be paid from time to time, to fill up any ruts that may be made, and by replacing the lower stratum of covering, that may have been displaced by the obstinate adherence of carriages to one tract, where by the grinding of wheels in a furrow filled with water the hardest gravel, or stone, is quickly cut through, as a block of marble is divided by the same kind of process. Keeping the surface dry, by having proper courses for the water, is another necessary consideration ; and in roads, that lie low and are much frequented, shovelling off the liquid mud seems a judicious operation, which allows the road to dry in a much shorter space of time than it would otherwise do. I have no faith in the idea, that this stuff when dried can be of any service in protecting the surface ; for having been thus ground, by the sun and air it is turned into dust, but never restored as gravel. The shape or form of a road is another subject of very material consideration. The most perfect state of a road, as to form, that in which its utility is the greatest, and its wear the least, is beyond all doubt the perfect state of flatness, provided the surface could be kept in a state of perfection under that form ; but it being in practice impossible

impossible to unite permanence of surface with perfect flatness, a more practical form must be sought. All, therefore, that can be done, is to endeavour to hit the happy medium; to raise the surface, until a degree of roundness be gained, so as to render the shape, though not perfect, yet sufficiently convenient to answer fully the general intention. The requisite degree of roundness varies with circumstances, depends on the given situation, the given materials, and the width and publicness of the road; the steeps and levels more particularly ought to be kept as round as perfect conveniency will permit; for the quicker the rain water escapes off the former, the less mischief it occasions, and the quicker it escapes off the latter, the more good. Wherever a road is observed to keep itself free from standing water, and inequalities of surface, in a wet season, and this where the form is not too round for convenience, every part of it being travelled over, the happy medium has been hit and preserved. Roads, bearing this test, are proper subjects of study for road-makers, rather than any theoretic rule that could be offered; except that a degree of roundness is requisite in all seasons, and in all situations. By giving this shape to roads, and by preserving it with due attention, so as to keep them free from water, and, in a continuance of wet weather, from a superfluity of reduced materials, which form the mud; and by closing the ruts, and filling the breaches as soon as they appear, a considerable

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rable proportion of the money now expended on the roads of this kingdom might be saved.

SECT. 2. *Canals.*

ON this subject nothing offers since writing the section on the rivers of the county.

SECT. 3. *Fairs.*

FAIRS are established in every town in this county ; the general object of these fairs is the sale of cattle, horses, and sheep, and some hogs. In several towns linen is sold on fair days, and a considerable quantity of yarn ; the yarn market is the first, at an early hour, afterwards the linen market ; as many of the buyers of yarn are also fellers of linen. The principal fairs for horses are held at Banbridge, to which buyers resort from considerable distances. Dealers from Dublin and from Scotland attend at most of our fairs, as well as at Banbridge ; Dromore, Saintfield, Ballynahinch, are all fairs very much frequented by dealers in cattle as well as horses ; Castlewellan and Rathfryland, besides these, have the mountain sheep, which also may be had at Rostrevor, Dundrum, and Clogh,

SECT. 4. *Weekly Markets.*

WEEKLY markets are held in most of the towns where fairs are established; yarn is sold in all the markets, linen in many of them; add to these, butcher's meat, butter, fowl, eggs, &c. besides oatmeal by wholesale and retail, and potatoes. Pedlars attend upon these days, who dispose of a variety of articles of apparel and hardware, in tents erected for the day: these itinerant merchants convey their wares from one town to another on little carts constructed for the purpose, in which their boxes are stowed; some of these carts are kept in partnership, others belong to an individual, according to their circumstances: it is extraordinary how many of these dealers subsist by selling, or rather by persuading people to think they sell cheaper than the keepers of shops. A considerable quantity of woollen-yarn stockings, from the west of Ireland, are exposed to sale on market days; ready made shoes, wool hats, and a number of other articles. Wool is also retailed by persons, who buy it in the sheep countries for that purpose; this wool is spun at home by those, who wish to manufacture, for their own use, either cloths of a coarse kind, all of wool, or for warping, a kind of stuff composed of woollen and linen yarn, and much used for domestic wear.

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SECT. 5. *Commerce.*

THE exports of the county of Down are few in number, but very valuable. They consist of linen in all its branches, from the finest cambrics to the coarse Hillsborough *six hundreds*, which are sent away without any improvement, as they come from the weaver's hand. A considerable number of pieces of muslin were sent, before the check that trade met with, to Dublin; but these, I believe, were mostly for the consumption of the kingdom. Butter also forms one of our principal exports; this is carried in casks to Newry and Belfast, and sold to the exporting merchants. The quantity of this is very great; the quality of late much improved, so as to be able to meet that from other countries with credit. Pork also is another regular article of commerce, sold at and exported from the same places. There is also in plentiful seasons a market for grain likewise for exportation; and a regular coasting trade for wheat, barley, and malt is carried on from Strangford, Downpatrick, and Killough. At Bangor and Killileagh, wheat and barley are bought up for the merchants of Belfast and other ports; raw hides, and dried calves skins, besides a number of other articles of less importance.

The imports consist of all the commodities necessary to an opulent and manufacturing county, and are daily increasing. The constant residence of the numerous landed proprietors, and the demands of a large body of wealthy persons in trade, cause a regular import of the luxuries and elegancies of life; add to these the constant supplies of the more necessary articles required by the manufacturers, and the great body of the people, and we shall not be surprised at the rapid progress made by Newry in one part of the county, and by Belfast on the other, which, though not in the precincts, may be considered, in a commercial view, as forming part of its system. Portaferry likewise has a considerable trade; but the shutting up of all the ports on this part of the coast, except Belfast and Newry, from importing certain articles of commerce, has curtailed the trade of the smaller ports very much.

SECT. 6. *Manufactures.*

THE linen manufacture, from its extent and consequent importance, deserves the first place. What was the exact time of its establishment in this county I shall not take upon me to determine, but that it has considerable claims to antiquity cannot be disputed, as from an act against forestalling, in the 33d of Henry VIII. linen and yarn are particularly enumerated as objects

objects of that law; and in the 11th of Elizabeth another act was passed, against laying flax, hemp, &c. in rivers to steep. In the 13th of the same reign, the exportation of linen is confined to corporate towns, and to free merchants, or in exchange for imports. These acts shew that it must, at the time of making them, have been of such extent as to call for the interference of the legislature; particularly that act, in which the growers of flax, &c. are restrained from watering those productions in rivers, proves that their culture must have been general, to require such restraints. We find no further notice of the linen manufacture in the statute book, until the 18th of Charles II.; the distracted state of Ireland between those two periods, and of England during a great part of the time, will sufficiently account for the silence of the legislature upon this subject. This last act was not, as some persons have supposed, for the introduction of this manufacture into Ireland; it was for the advancement of it.

In the 7th of William III. a duty was laid on Scotch and other linens, to be applied to the encouragement of the linen manufacture; and it was in the same and the following reign that the settlement of the French refugees, by introducing a finer fabric, more improved looms, and the manufacture of reeds of a superior kind, and also spinning-wheels of a better construction, brought the manufacture to a degree of perfection, that rivalled the linens imported from the Continent. In

the reign of William III. a Mr. Crommelin traversed a considerable part of Ireland, to make his report concerning the fitness of different parts of this kingdom for carrying on this branch of business; he imported a thousand looms from Holland, the improved spinning-wheels, &c. Before his day no web finer than a fourteen hundred was manufactured in Ireland; he settled at Lisburn, where he died, after seeing his exertions for this trade crowned with success; and yet, strange to say, linen was not allowed to be exported, free of duty, until the 4th of Queen Anne. From this time government seems to have been sensible of its importance, by the many regulations brought forward in its support. About this time the Lord Lieutenant was empowered to appoint trustees for each province; and in the 8th of George I. 1,500*l.* was granted the trustees to build a linen-hall in Dublin, for the more regular sale of white linen; and, in the 10th of the same reign, 2,000*l.* was likewise granted to them, for the encouragement of the growth of flax and hemp. Since that period the manufacture of linen has most rapidly increased, and is now not only become the staple of all the counties in Ulster, but is rapidly spreading itself to the west; and let the design of England have been what it might in fostering (for she did not introduce it), the event has been fortunate for both countries. It would be foreign to this Report to enter into a detail of every regulation adopted by the Linen Board, and of every encourage-
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ment held out by parliament, before this manufacture arrived at its present state of perfection. But one regulation I cannot pass by, as it is so glaring an instance of the manner, in which a body of uninformed men may be led by designing persons, to take a part totally opposite to their own interests. Previous to the year 1760 all linen sold in the markets was measured by the buyers, before it was paid for; the consequence of this was loss of time, constant disputes between the draper and the weaver, and often loss on the part of the latter, who was not seldom obliged to submit to fraudulent measurement rather than take back his web, as the buyer could better do without the linen than the seller without his money. The iniquity, as well as the inconvenience of this practice, was seen by a gentleman in the business, eminent for his talents, and for understanding the true interests of the trade. In consequence an act was obtained, appointing persons called seal-masters to measure and inspect each web before it was exposed to sale, sealing it, if properly made, with a seal given by the Board, setting on it at the same time the exact length. These seal-masters gave security for the proper discharge of their office, and were answerable to the drapers for any fault in the webs; they were paid by the weavers for their trouble. A certain day was fixed for the operation of this act, previous to which a number of the lower buyers of linen had the art to persuade the weavers, that it was against their
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interest, in consequence of which they assembled in a tumultuous manner in the town of Lisburn on a market day, and would have destroyed the promoter of this act, had he not fortunately made his escape; and the first Marquis of Downshire, then Earl of Hillsborough, who was that day in Lisburn, going out to appease the mob, had nearly lost his life. For the credit of the linen-weavers of the north of Ireland, this was the first and the last riotous meeting they were ever as a body concerned in; they were immediately sensible of their error, and returned peaceably to their looms. A manufacture so extensive as that of linen in this kingdom, and consequently of so much importance, must require continual attention and superintendence to keep up its credit, by guarding against those abuses, which creep into every branch, and which, when got to a certain height, prove destructive to it; but although this superintendence, when well directed, is useful, nothing is more dangerous than frequently tampering with a flourishing and well established trade; nor should any material change ever be introduced or attempted without consultation with those, who have practical knowledge in the business.

Improvements in the art of bleaching have kept pace with the improvements in the arts of weaving and spinning; and it is now found, that with an additional quantity of bleaching stuff, and more handling, linen may be got ready for the white market in one-half

half of the time it formerly was, and, when properly managed, with equal safety. The profits of a bleach-green are very considerable; in justice they ought to be so, for the owner is liable to all losses from thieves, which are often very great, as well as those which arise from accidental damage, which are not unfrequent; that they are not more frequent is surprising, where such potent materials, as bleaching stuffs, are applied to such delicate fabrics as linen and cambric by the most unscientific hands. For how honest soever a foreman bleacher may be, and howsoever considerable his experience, having no other method of judging of the strength of his bleaching materials than by weight and measure, he must often be mistaken, to the great detriment of his employer; and by one unfortunate blunder, having no principle upon which to proceed, he may occasion more loss than his services for seven years could compensate for. Some mode of instruction might probably be struck out, by which the old guess-work way of proceeding might be exploded, and something more certain substituted in its stead. It may be said, certainly, that this is not a proper place for an investigation on the subject of manufactures, nor is it meant as such; but when *fas est et ab hoste doceri*, why not sometimes take a hint from a friend?

The different branches of linen manufacture carried on in this county are first, linen and cambrics; secondly, table linen, consisting of damask, damask diaper,

diaper, and plain diaper ; thirdly, checquer. I wished very much to have had it in my power to give an account, as near the truth as could be obtained, of the number of pieces of the first kind manufactured, or rather sold, in a given period ; but that, after some consideration, I found impracticable, because a considerable part of them are sold in markets not within the county, and are intermixed with those from other parts ; for example, the linens of the western parts of the county are carried to Belfast, Lillburn, and Lurgan, the two first in Antrim, the last in Armagh ; and our towns of Hillsborough, Banbridge, and Newry, lying near those counties, are in part supplied by them ; so that enquiring at the houses where the weavers are paid, the only method of coming at the number of webs, I could ascertain nothing ; and what is sold in the eastern markets is often resold in the western. Could the number of webs made in this county, in the course of a year, have been found with any degree of accuracy, it would have given very nearly the number of linen weavers ; for each kind of cloth being known, and the time requisite to weave it, the number of weavers would follow of course.

The linens being one yard wide are distinguished by the number of threads contained in that breadth ; thus an eight hundred web is one, whose warp contains that number of threads of yarn, &c.

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The following list of markets, with the different kinds of linen sold at them, may be acceptable to some readers.

Newry, from 8 to 14 hundreds, a few up to 16 ditto.

Rathfryland, 8 to 14 ditto.

Kirkeele, - - 8 to 10 ditto.

Down, - - - 8 to 16 ditto.

Castlewellan, - 8 to 9 ditto.

Ballynahinch, 8 to 18 ditto.

Banbridge, - 8 to 15 ditto.

Dromore, - - 10 to 20 ditto.

Hillsborough, 6 to 20 ditto; a number of the coarser kinds are made up in packs, and exported without any further improvement.

Portaferry and }
Kirkubbin, } 10 to 14 ditto.

The earnings of the manufacturers in the different linen fabrics depend first, as in every other trade, on their skill, and secondly, on the fineness of the linen; a weaver of fine linen will earn, if a good hand, from 1*s.* 4*d.* to 1*s.* 6*d.* per day; of coarse, from 1*s.* to 1*s.* 3*d.*; but where a weaver finds his own yarn, his profits are greater; sometimes, when the demand is great, amounting to as much upon the yarn as the price of the weaving; sometimes, however, in a falling market, instead

of making he loses by the yarn. Manufacturers, who keep a number of looms, and acquire a quantity of yarn before hand, are often great sufferers, and as often gainers, by the fluctuation of the markets. Spinners can earn from three pence to four pence per day, according to the price of flax and yarn; when they spin for others they are paid so much per hank, according to the fineness of the thread; in this case their gains are not so much, as when they lay in the flax themselves. Cambric is manufactured from the coarsest to the finest kinds; some of the latter have been sold so high as fifteen guineas the piece of twenty-five yards green. The profit upon these must be very high, as the fabric, from its delicate texture, is liable in a great degree of damage: to the spinner and weaver of these fine cambrics there are also better wages; of the lower priced, the earnings to the weaver are nearly the same as from the weaving of linen.

Near Belfast there is, I understand, a manufactory of checquer, but to what extent I have not heard.

The damask manufactory at Lisburn, being on the verge of this county, must not be passed by unnoticed: it was established by Mr. Coulson, and brought by him to such perfection, that most families of any consequence in the United kingdoms have been furnished with table linen from it. The beauty of the patterns, and excellence of the fabric, are too well known to require any further mention, than its being carried on by
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his son and successor with increasing spirit and attention. At Newry there have been lately set up a few damask looms; whether they are likely to make a progress has not yet been ascertained. In the neighbourhood of Waringstown there is a manufacture, called damask diaper, which is said nearly to equal the real damask in beauty and wear, and is much cheaper. In the same neighbourhood a considerable quantity of diaper is made. Besides these, a number of articles are made for home consumption, such as sheets, sacks, and a long &c. in which every part of that useful vegetable, the flax plant, is in the end worked up.

Muslin is the next manufacture of importance after linen; the rapid progress it has made in this county, during the last twenty years, previous to which it was scarcely known, has something truly instructive to political economists, by pointing out to them, in the introduction of new manufactures, to find such as easily assimilate with those already established. Thus every weaver of linen in this country, upon the expectation of superior profit, was ready to turn his attention towards the weaving of muslin, which, though somewhat different in the execution, militated very little with his ancient habits. Very soon, therefore, on its appearance it detached a number of workmen from the linen trade; and a great many others, who would have applied to the latter, finding it much more easy to acquire a knowledge of weaving muslin, and better wages,

gave themselves up entirely to that trade. Those, however, who were mere muslin weavers, suffered very severely in the late stagnation of that trade; for never having learned to weave linen, when that circumstance occurred they were thrown entirely out of employment, whilst those, who were regularly bred to the linen manufacture, returned to their former occupation, which, even in the worst times, afforded them a maintenance. Besides muslins of every degree of fineness and every requisite breadth, many other branches of the cotton trade are carried on; calicoes and wrapperings, thicksets, corduroys, and velveteens, are made in various parts: the weavers attend at the ware-houses, where the necessary quantity of warp and weft are served out to them, which they carry home, and return manufactured. Some houses carry on this business to a very great extent, and a good deal is done by persons of smaller capitals, who employ only a few looms; and whilst this trade was very flourishing, many single looms were at work upon their own account: most of these last, however, and many of the second class were unable to stand the shock of the last bad years. The earnings of a good weaver of muslin, with constant employment, that is, when not kept waiting for his yarn, either to put in or to carry on his web, is from eighteen shillings to a guinea per week, more than double the wages of a linen weaver: some time ago it was more; and when to this is added the price of winding the yarn, it must be allowed, that the introduction

duction of a muslin loom into a family must be an object of considerable importance: indeed the change of dress and deportment in this class of persons was very obvious to every one, and a smart young cotton weaver became no slight attraction in the eyes of a country belle. Notwithstanding the sums of money, that have been retained in this kingdom by manufacturing our own cottons, many persons think, that ultimately it may be attended with a loss to our linen trade; for, if any complete overthrow was to take place in the former, a number of weavers would be let loose upon the latter, who, from the light work they have been habituated to, would prove injurious, by introducing the same kind of texture in the fabrication of linen; but this, I should think, is a groundless apprehension; the drapers would not buy such goods, and the weavers would be obliged to accommodate themselves to the markets.

The quick return in the muslin trade (when it is prosperous), from the short time it requires in bleaching, makes it peculiarly fit for small capitals; but whether it will be able to keep its ground on the expiration of the protecting duties, is one of those questions which time alone can answer; many persons are of opinion that it will, and that it may admit of considerable diminution in profit, and still remain a good trade.

The woollen manufacture would scarcely deserve mention, being confined to a coarse cloth, made entirely for
home

home consumption, was it not for the blanket-making business, which has been established in the vicinity of the village of Lambeg for upwards of a century; every article in this branch is made with a lightness and warmth equal to the best English goods in the same line. A sufficient number of wool hats are made in different parts of the county for its own consumption, in the neighbourhood of which this business is carried on to a considerable extent; they are carried for sale to the different fairs and markets in this and the neighbouring counties.

The weaving of stockings is another branch of industry pretty generally diffused; none are however exported. This manufacture takes in worsted, thread, and cotton; the quality, though not of the finest, is good.

Leather—both for soles and upper leathers for shoes is tanned in considerable quantities. Shoes have also been made at different times and places for exportation.

At Lambeg there is an extensive manufactory of papers of different kinds. At the same place is an ancient pottery, carried on by a family of English settlers, who have been established there for upwards of a century; this branch does not extend to the finer kinds, only taking in such as are used for milk, the purposes of gardening, &c. At the county of Down side of Belfast bridge there is one of a superior kind, of
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the black glazed ware; at the same place there is also a manufacture of starch, and some attempts were made also to introduce a similar fabric to that of Wedgwood; this has been given up for some time. Very near this is a glass-house, where all kinds of flint-glass are made, and cut, equal to any imported; this is carried on by Messrs. Edwards, who likewise have an extensive foundery, and who are, I understand, about establishing one at Newry. There is another foundery lately set up by a company, at no great distance from this. At these different manufactories machinery of every description is made, upon the most approved plans, with all the subordinate articles of boilers, pots, pans, griddles, &c. A manufacture of bottle-glass was some years ago set up, but, for what reason I know not, has been stopped.

At Newry there is a considerable establishment for making spades, shovels, scythes, and all kinds of pots and covers of hammered iron. Nails are made in all the towns, and in the village of Newtown-Breda, within three miles of Belfast, there are many hands kept in constant employment to supply the demands of that town in this article. At Dromaragh, near Hillsborough, there lives a celebrated maker of hackles; whether there is any other person in the county of that trade I do not know; and at Kilwarlin, in the vicinity of the same town, is a celebrated maker of baskets; every thing in this line, from the strongest clothes-basket to the most elegant services for deserts, is made there;

there; his fruit-baskets, in lightness and fancy, are equal to those imported from France. In the neighbourhood of Comber, in the barony of Castlereagh, there is an ingenious maker of winnowing machines, both for barns, and for mills; these machines he makes on the most approved construction, with either single or double blasts, as it suits the wish or the purse of the buyer. The manufacturing of tobacco is confined to those towns, which either are the residence, or give the name to a collector's district; in those places it is both spun and made into snuff. Of the former kind an astonishing quantity is used in this county, as few persons deprive themselves of the luxury either of chewing or of smoking that fascinating weed; taking of snuff is not by any means so general as the first and second modes of using it; and although we have some tolerable imitations of *Foot*, there are none so nearly approaching it, that to a discriminating nose could not be perceived at the distance of a *yard*. A considerable quantity of kelp is made every summer along the coasts, but particularly on the lough of Strangford; the whole quantity manufactured there, as I am informed by a gentleman, from whom I have received a most accurate account of the manner of preparing it from seaweed, amounts to between four and five hundred tons, whilst that made on the eastern coast does not amount to more than one hundred tons per annum; that on the shores of the lake is much superior in quality to that on
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the open shore, but neither the one nor the other are of so good a quality as formerly, owing to the avarice of the labourers employed in making it, who, to increase the weight, mix more than the proper proportion of gravel with the ashes, after they are reduced to a fluid state; the proper proportion is as one to twenty, but, by putting more than that quantity, the kelp is not so much in demand as it formerly was. If I recollect aright, there is a law against the adulteration of kelp, which directs it to be broken in pieces, and thrown upon the fields, excepting, however, the fields of the person so adulterating it. Besides these manufactures above mentioned, there are others immediately depending upon the linen trade. The first of these is the making of oil of vitriol; the earliest, and, I believe, the most extensive work is that near Lisburn in this county, where oxygenated muriatic acid is also made, and is now under trial as a bleaching material; if it answers it will be a great saving, as it is so much cheaper than vitriol. There is likewise a manufacture of vitriol at Moyallan, and another on this side the bridge of Belfast, but, notwithstanding, vitriol is still imported from Scotland.

The other branches, which are particularly connected with our staple commodity, are shuttles and reeds, of various fineness; to the French refugees we are indebted for our knowledge in this art; to them we are indebted for the introduction of wheels, looms, &c.

upon improved constructions. The name of the first fine reed-maker, who settled in Lisburn, was *Mark Duprè*. Salt is also manufactured in different places, but not by any means equal to the consumption.

I have thus gone through, as far as I could collect, the different manufactures of this county, in some of which, or in the necessary operations of husbandry, every person, whilst health permits, may find employment and maintenance. The peculiar advantage of the linen business is, the opportunities of earning it affords not only to weavers, but to every woman and every child; and although individually that earning may be small, in the aggregate it forms a considerable object, and probably has done more than any mere political regulations could do to keep off the necessity of entering into measures for the permanent support of the poor. Of these the number is not known, nor have I ever heard of any mode, whereby it could be ascertained, without having recourse to the different congregations in each parish; that it is small in comparison with the population I am certain, from the slender provision made for them, and from the few itinerant poor that are to be met with.

SECT. 8. *Population.*

By an account taken of the population of this county in 1751, it appears at that time to have contained 19,270 houses; by the returns made to government in 1791, it appears to have contained 38,351 houses, so near twice the former number, that they may be said to have doubled within the period of forty years; this gives an increase of 4,817 houses for every ten years, so that if there is added to the last return, made in 1791, of 38,351 houses, the increase of the last ten years, it will make the number at present 43,168, which, taking the inhabitants at five and one-fourth, or twenty-one for every four houses, the total population at present will be 226,632, nearly one person for an acre and a half throughout the county. The number of men liable to serve in the militia, from eighteen to forty-five, will also form a foundation, from which the number of inhabitants may be calculated; for, if we obtain the number of men liable to serve in the militia in any parish, and the exact number of the inhabitants thereof, and that we likewise obtain the total liable to serve in the county, the proportion between the militia and inhabitants of the parish given will be the same, as between the total liable to serve in the county, and the total inhabitants of it. Thus, for ex-

ample, the parish of Annahilt produces 318 men liable to serve in the militia, from a population of about 2,100; therefore, by the rule of proportion, if 318 give 2,100, what will 33,382 give, which is the total liable to serve in the county? The answer is 220,447, which is within 6,185 of the number produced by the houses, taking them as above at twenty-one persons to every four houses; if again we add these two numbers, and divide them by two, the total average will be 223,539. This I do not pretend to give as perfectly exact in point of numbers, but I should think, from the coincidence of the two products, it cannot be very far wrong; one thing I am pretty certain of, that five and one-fourth to a house is near the truth, from my own experience, as I counted both the persons and houses in the parish of Annahilt.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT; INCLUDING OBSERVATIONS ON AGRICULTURAL LEGISLATION AND POLICE.

IN the course of this Report the writer has touched upon those subjects, which struck him as obstacles to improvement, as they fell in his way; the principal of these were the smallness of farms, and exhausting the land by repeated crops of grain. There is no occasion to repeat what has already been said; the only additional observation, that offers at present, is the extreme difficulty, if not impossibility, of obtaining any effectual alteration in the first; but the second is certainly to be remedied, and is the more to be attended to, as a corrective for the first, to which the strong objection is, that, from an eager desire to raise crops of grain upon a small portion of ground every year, and from the want of skill in doing so, the produce of the land is diminished. Another obstacle is the want of proper capital; without this all business must languish, and why should agriculture be thought exempt from the inconveniencies that result from this want more than any

any other business? In small farms it is more perceivable than in large ones; small farms are mostly occupied by tradesmen, who depend upon their profit in that line to pay their rents, more than on their land, and therefore are seldom possessed of money sufficient to meet the necessary demands, and as seldom of the proper stock and implements required. From a deficiency in capital arises almost every other deficiency, deficiency in ditching, in draining, in manuring, in cropping, in exertion, and even in industry; for every faculty is dulled in every pursuit by the difficulties arising from that essential want, the want of capital. Want of industry is not general in this country, but what is industry, without the means of employing it to advantage? Is it not a perpetual waste of one of the most useful qualities to society? But how to extricate it from this situation, and to give it its proper direction, that is the difficulty. Another obstacle to improvement, and a very serious one, arises from the great number of thatched houses, which, requiring continual repairs, consume the straw necessary for the support of cattle, and deprives the land of the manure, that otherwise might be made. In this county it is particularly inexcusable, as slate quarries have been opened in many parts, and in all have been found to answer. The numerous ditches, also, by which the small farms are divided, occasion great loss of ground.

Upon

Upon the subject of agricultural legislation I have only one observation to offer, that the system of bounties upon the exportation of grain, when under a certain price; of allowing it to be exported, when at a certain price; and a prohibition of export, with a bounty on import, when above a certain price, seems to have been one of the best directed measures ever brought forward; being equally calculated to secure a regular price to the farmer, and a constant supply to the consumer. The suspension of this act in the year 1796, under the apprehension of starving ourselves, by supplying England in that year of scarcity to them, and of plenty to us, gave a shock to the farmers, that was felt by every individual in the kingdom; it prevented us from taking the money of England, which we wanted, in exchange for our grain, of which we had more than enough, and obliged her to seek in foreign countries for what she could have had at home. Surely the corn laws were in themselves sufficient to prevent any artificial scarcity; for had the ports been open as usual, the competition would in a short time have raised grain above the exporting price, and would have secured us a market for what we could spare. All new laws of regulation are experiments; where they succeed let them remain; let them have the force of axioms in the political code, until they are found from change of circumstances to be wrong; then let them not be suspended but repealed.

Agricultural police is entirely confined to the selling the different articles brought to market by the farmers, at the public cranes appointed in the different towns. In Belfast, where is the general vent for every thing of that kind in the northern parts of the county, there are separate places for the disposal of grain, &c. and for the sale of pork and butter; these last are inspected by persons appointed for the purpose, especially the latter, which is always tried, and marked according to its quality. Complaints are often made by the farmers of injustice, which may sometimes be done them, but upon the whole it has improved the butter.

CHAPTER XVII.

GENERAL OBSERVATIONS ON SEVERAL SUBJECTS, THAT
HAVE NOT BEEN PARTICULARLY ADVERTED
TO IN THE FOREGOING CHAPTERS.

SECTION I.

Agricultural Society.

AN agricultural society has been instituted within this last year, by some public spirited gentlemen; at the head of this society was to have been the much lamented Marquis of Downshire, a man, from his own disposition inclined in every way to promote the public good, and ever ready, both to plan and adopt any plan likely to further that end. This society being still in its infancy, all that can as yet be said of it is, that it promises well, and as its supporters are warm, and its objects judicious, little doubt can be had of its utility and success.

SECT. 2. *Weights and Measures.*

THE weights and measures of this county are tolerably uniform, though not entirely so. Grain of all kinds, when sold by weight, is weighed by the hundred or ton; the hundred weight is eight stones, of fourteen pounds each; the ton, twenty of those hundred weights. Oatmeal is sold by the hundred weight of 120 pounds, or six score: potatoes by the stone of fourteen pounds: undressed flax by the stone of sixteen pounds: hackled flax sold by the same: beef and pork, when sold by the hundred weight, have 120 pounds; when in lesser quantities, by the single pound of sixteen ounces: tallow is sold by the stone of sixteen pounds: hides by the hundred weight of 120 pounds.

Measures.—All measures here are regulated by the Winchester bushel of thirty-two quarts, which of course contains eight gallons. Grain is taxed at the mills by the peck, containing sixteen quarts, or one-half of a Winchester bushel. Oats are now the only grain sold in any part of this county by measure. The different measures are, in the eastern parts, an hoghead, containing twelve Winchester bushels; in the other parts, a bole, containing ten bushels of the same measure. A great change has taken place within these last

twenty-

twenty-five years in the mode of selling grain, which previous to that was sold by measure; now, except in some instances, it is by weight, and the same of potatoes.

SECT. 3. *Fisheries.*

THE fisheries on our coasts would be extremely valuable, were they properly attended to; boats from Rush (and formerly from Liverpool) come to trawl in Dundrum bay, and carry off great quantities of turbot, sole, plaice, cod, and haddock, whilst the inhabitants of the shore, from want of proper apparatus, get comparatively few. At Bangor there is a considerable fishery of sole, plaice, bret, a few turbot, and in winter of cod and excellent oysters. "Herrings have been frequently taken in large quantities in Strangford lake, where it is said they are to be had the whole year, but with respect to fatness or flavour they are much inferior to those taken on the coast of the main sea: from what cause this degeneracy proceeds, whether they go into the lake to spawn, or whether their food there is of a worse kind, I cannot take upon me to determine; but the fact is, we would rather give five shillings an hundred for those taken in the open sea, than three shillings for those caught in the lake." Sometimes herrings come close to our shores, but in general they keep

farther to the east, towards the Isle of Man ; the boats from Newcastle generally pursue them there ; they are brought to this county for sale, and are dispersed through it by fish-carriers, who attend upon the beach, and purchase them from the boats as they arrive. The Isle of Man herrings are generally very large, flat, and well flavoured. Smelts are taken off Portaferry, and mullet below the Quoile bridge near Down : salmon also is caught in the same river : before the canal was made on the Lagan, numbers of salmon frequented that river, but they were stopped by the locks, and have now deserted it. Besides these fish our coasts produce whiting, gurnard, sea trouts, mackarel, skate, lobsters, crabs, shrimps, prawns, and about the Copland islands, and on the northern and eastern coasts, a small red codlin, much better tasted than the cod, but which is said not to take salt so well : nor must we forget the Ringhaddy oysters, nor the more excellent ones of Carlingford, which in some degree may be said to belong to this county ; nor those taken near Bangor, equally remarkable for size and flavour.

SECT. 4. *Landed Proprietors.*

MOST of the proprietors in this county are resident ; and almost all the proprietors are improvers, as must be visible to every person, who traverses the country ;

nor

nor is there, I may venture to say, any county where the gentlemen are more alive to every thing, in which its welfare is concerned; the good effects of this are perceivable, in their attention to improvements of all kinds, within their more immediate sphere; in planting, in attending to the state of agriculture, and in promoting its interests; and in general in their care of the roads and bridges, in the administration of justice, and in providing as far as it is in their power for the good order, comfort, and happiness of the people. The clergy, with some exceptions, are also resident, and by their example, and moderation in their demands, contribute their share to the spiritual as well as temporal advantage of their respective neighbourhoods. The churches are in general neat and well built, though not very large; and almost all the parishes in the dioceses of Dromore have glebes and glebe-houses; those in the dioceses of Down are not so well provided with glebes, the number being comparatively small; those that are built are commodious dwellings. One reason of this difference is, the number of lay impropriators in this latter dioceses.

SECT. 5. *State of Education.*

A VERY particular report was made from this county, on the state of education, some time ago. I must refer the
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the reader to what has been published by the Society, at whose request that report was made.

SECT. 6. *When and by whom this County was surveyed.*

THIS county was surveyed in 1653 by Doctor, afterwards Sir William Petty. The following account of it is given by Gorges Edward Howard, in his *Treatise of the Exchequer and Revenue of Ireland*, Vol. II. Appendix, No. 4.—The Down survey, taken in 1653, by Doctor, afterwards Sir William Petty, being laid down by chain and scale, was so called to distinguish it from the *Civil Estimate Surveys*, being surveys made by the civil power by commission, dated 1642, and made by estimate or repute of the country. The volume of the Down Survey, which contained the barony of Upper Iveagh, was unfortunately burned in 1712, at the time the Council-office and other offices in Essex-street were burned, but some fragments of the maps of it were preserved, and some of the surveys, but the latter may be supplied by the rough book of distributions. Since that time, I believe, no general survey of the county has been made; but a map was published in 1767, by Doctor Kennedy, from surveys of the different estates, furnished that ingenious gentleman by the proprietors: the plates of this map are still in being; the map is very much esteemed, but it would
require

require to be supplied with the new roads, made since its publication.

N. B. A copy of the Down Survey, belonging to Sir W. Petty, was, in its passage to England, taken by a French privateer, and is now in the Library de Richelieu at Paris; it has been copied by General Vallancey by order of government; the copy is in the Surveyor-general's office, and often referred to.

SECT. 7. *Mills.*

WATER-MILLS are most in use, but there are also several wind-mills in this county, for grinding all sorts of grain. In general tenants are bound to make their meal at their landlord's mill; and in some cases the rights of the miller extend over lands, that are not in the possession of the owner of the mill. The usual toll paid is the sixteenth, besides the expence of drying; likewise some little matter to the man, who works the mill, as well as to the person, who dries the grain. Considerable improvements have been made in the mode of drying grain, by substituting tiled or plated iron kilns, instead of those made with wooden ribs, and covered with straw, which take more time and more fuel; many persons, however, are of opinion, that the oatmeal made after the old manner on straw is sweeter, than when the grain is dried on tiles or iron, which certainly de-

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mand constant turning to prevent scorching. Winnowing machines are now frequently introduced into mills, which prevents the troublesome operation of carrying the grain, when shelled, or freed from its outside covering, to be cleaned out of the house. Very extensive flour-mills have been erected in different places in this county, the machinery of the best kind, where every necessary operation is performed, in extracting the several sorts of flour. The regular market these mills afford has very much encouraged the growth of wheat in their respective neighbourhoods. Flax-mills are to be met with in every parish; the first was erected in this county about the year 1757, by Mr. Maxwell; the second by Mr. Johnston of Redemon, a short time after, who got a premium for it from the Dublin Society. These mills perform all the process necessary towards preparing the flax for the hackler, after it is taken from the grass; they are thought to be more severe on the material than the former method of handling it, but they are more expeditious, and cheaper, the price for all sixteen pence per stone of sixteen pounds. In this country I need scarcely specify the bleach-mills; they, of course, follow the linen manufacture. There are also one or two fulling-mills, mostly employed by those, who make coarse woollens and blankets for domestic use.

With respect to the tolls paid at mills, it seems to me that landlord, as well as tenant, might be gainers, by commuting

commuting this tax for money, at the expiration of the leases of their respective mills; the landlord, by laying on as much per acre as the rent of the mill produces, would be a gainer of as much as he could let the mill for in addition, whilst the tenant, being at liberty, would get his grain ground as much cheaper, at least, as would pay the acreable tax, besides the pleasure of going where he liked; the miller, too, being entirely on his good conduct, would be much more attentive to his customers. In one instance this was tried, and answered perfectly to my own knowledge.

SECT. 8. *Taxes or Cesses paid by Tenants.*

THE taxes paid by tenants are, county and parish cesses, window tax, and hearth-money; the parish cess is only for the repairs of the church, clerk, sexton, &c. No poor tax exists.

SECT. 9. *Different Acres by which Land is let.*

THE different acres by which land is let, are the Irish, Scotch or Cunningham acre, and the English.

The nearest proportions between the three different measures are, as near as can be come at in round numbers, as follow:

3 Irish acres make
4 Scotch, or
5 English.



To make the difference as perceivable as possible, I have laid them down according to proportion; the difference arises from the difference of perches or poles in each measure.

SECT. 10. *Effects of Premiums offered by the Dublin Society.*

The premiums offered by the Dublin Society, for the encouragement of planting, have been very little attended to in this county; in general the premiums are

are better calculated for a country, where farms are of a greater size than they are here. We have very few nurseries, and those of no great extent; our thorn-quicks are mostly brought from distant counties; so are forest-trees, and both are exposed for sale in the markets in the spring; this shews that a spirit of improvement exists, or there would be no demand. The act for registering trees planted by the tenant may have operated, where large farms are held by wealthy people, but on the small farms it has had little effect.

SECT. II. *Clauses in Leases.*

I KNOW not of any clauses peculiar to the leases of this county; some landlords have introduced a clause to prevent alienation, but without effect; clauses to prevent farms from being subdivided would be much better: one lately adopted by a gentleman in this county seems likely to answer the end. Suppose the rent agreed upon is a guinea per acre, instead of making out the lease on those terms, it is made out at two guineas per acre, with the proviso, that as long as it is held by one person, the first mentioned sum shall be taken; but as soon as it is divided, the double rent takes place.

SECT. 12. *Language of the Inhabitants.*

THE English language is so general, that every person speaks it; but, notwithstanding, the Irish language is much used in the mountainous parts, which in this, as well as in most other countries, seem to have been the retreat of the ancient inhabitants.

SECT. 13. *Use of Spirits or Beer.*

IT seems to be the received opinion, that the inhabitants are growing daily more sober, and return from the fairs and markets at earlier hours than formerly. The high price of spirits, as well as the increased civilization of the country, have contributed to this happy circumstance, and for two years the dearness of provisions has concurred not a little; it is to be hoped the fall in the price of both will not bring on again so pernicious a habit. Drinking malt liquors is rather gaining ground.

SECT. 14. *Prices of some Articles of landed produce.*

THE price of cattle has been gradually rising for half a century, as I am well informed by persons, who have been conversant in the business for the greatest part of that time; but the most rapid rise in their price has been within the last ten years; sometimes, previous to that period, a cow, that when fat would weigh from three to four hundred pounds weight, was bought in when lean at from three guineas and a half to five guineas, according to her shape and condition; a cow of that size would now cost double that sum. Many causes have combined to produce this effect; the principal seem to be, the great demand for beef to supply the navy and army, and the constant exportation of live cattle to supply the English markets; the consequence of this has been a greater anxiety to rear as many calves as possible, and more attention paid to the breed; another reason may be added also, the increased prices of hides and tallow; the former were sold this year from forty-five shillings to fifty shillings per cwt.; the latter from eight to nine shillings per stone of sixteen pounds. The rise on butter has also contributed to the price of cattle, being doubled within the last fifteen years.

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The price of sheep has also increased in proportion; the small mountain sheep, from ten to fourteen pounds per quarter, which were sold from eight to ten pounds per score lean, are now near double that price. Lean hogs are a more fluctuating stock, their price depending upon the price of provisions, from the nature of their food. This year, 1801, they are remarkably dear, from two causes, first, the scarcity of the animals, the two scarce years having operated against rearing them; and secondly, the cheapness of food having caused an unprecedented demand, as well as the high rate of pork for exportation.

The rise and fall in the price of grain, from the year 1798 until the present year, has been, I believe, for so short a space of time, unprecedented; oats and barley in that year sold from five to six shillings per hundred weight of eight stone; in 1799 and 1800 they sold for four times that sum; and this year they are nearly as low, especially oats, as they were in 1798. Wheat rose in proportion to other grain, but it has not as yet fallen so low. In no article of provision has the fluctuation of price been so great as in potatoes; they are and have been at one seventh part of the price, at which they were sold six months ago. There is one advantage attending a good crop of potatoes, they must be sold within the year, as the art of keeping them longer has not yet been found out; when they are in plenty,
the

the poor may bid defiance to the wealthy farmer, or more wealthy monopolist; for the one must sell, and the other dares not purchase what he could not hoard; and it is to be feared that, if the benevolent intentions of the London Society were fulfilled, in discovering a method of preserving potatoes fit for use for some years, it might be productive of more harm than good, by enabling the persons above mentioned also to get possession of this supply.

SECT. 15. *Harnessing Oxen.*

THIS is done in the usual manner, by buckling a collar on the neck. The use of oxen is not general; nor do I believe any accurate trial of their comparative value in tillage has ever been made in this county; they are certainly much slower than horses, and not so well fitted for long journeys on hard roads; they, however, undoubtedly have this advantage, that, whilst they are worked and fed, they are growing more valuable; horses, on the contrary, are declining. But the length of way our principal manure is drawn, seems an insuperable objection to the general introduction of oxen, the limestone quarries lying at fourteen miles distance from many parts of the county, where it is the only manure, except the dunghill. This journey, which is usually

usually performed by horses within the twenty-four hours, would require double the time in oxen, even if their feet could stand our roads, which, though good, are hard.

CONCLUSION.

CONCLUSION.

IN making this Report I have paid every attention, to collect and give a faithful relation of the agriculture of the county of Down, and of the other subjects pointed out by the Dublin Society as connected with it, and with the general prosperity of the kingdom. I have also pointed out what seemed the principal obstacles to improvement; but, as I have observed before, to point out defects is a much easier task, than to find out remedies for them; and our defects in most instances are so closely interwoven with other circumstances, besides the mere want of a proper system, that I must confess my inability to prescribe the means of effectually removing them. For what can be done in the case of small farmers, manufacturers, who are deficient in capital, who occupy so considerable a portion of the county, and whose attention is divided between their trade and their holdings, often to the detriment of both? Nothing less than a change in the mode of occupation can effect a remedy in this case. To bring about this change, an idea was many years ago thrown

out by a Mr. Mc. Culley, of collecting the manufacturing farmers into towns or villages, and letting their lands to real farmers; but when the length of time required to bring about this change is considered, the number of persons that must co-operate in bringing it about, and the hardships that must be the consequence to many, I see little hope of effecting a reform upon this principle. But, in reality, small farms are no otherwise improper than as they are improperly managed, from not being the sole dependence of the occupier; if then a proper management could be obtained, the evil would cease, and to this object every attention should be paid by the proprietors of the county, and the Agricultural Society, in holding out every inducement towards a more improved culture, particularly in holdings below a certain number of acres; and, when this fails, for the proprietors to keep it steadily in view, that the farms of those, who are negligent and slothful, should, at the expiration of the leases, be added to those of their more skilful and attentive neighbours.

To particularize each gentleman, from whom I have received information, would be to mention every one I have spoken to on the subject of this Report, in the course of which I have taken the liberty to mention many of their names, as authorities for what is here advanced.

To

To General Vallancey I beg leave to return my particular thanks, for his attention in furthering this undertaking by every attention ; had it not been of a public nature, I should have scrupled to trespass upon his time, which is so beneficially devoted to the encouragement of every national object.

APPENDIX.

ANTIQUITIES.

THE study of antiquities being both difficult and delicate, an elaborate discussion of that subject cannot be expected in an undertaking of this kind; but the Dublin Society having expressed their wish, that mention should be made of such ancient monuments as still exist in this kingdom, in compliance with their desire I shall take notice of the most remarkable now in being, which may serve as a guide to those, who having more knowledge in this line than I profess may be desirous of pushing their enquiries to a greater extent. When I consider how many persons of eminence in the literary world have made this pursuit their particular object, I might justly be accused of presumption, in attempting to fathom a subject in a great degree new to me, which has often unsuccessfully consumed the labours of a long life. But to the most superficial observer it must be evident, that this country has been possessed

possessed by inhabitants, at different periods, of very different degrees of civilization. Considering things in this light, the antiquities of this county may be divided into three general heads; first, those composed of stone, of Pagan origin, and which are accounted the most ancient; secondly, those which are to appearance formed of earth, and have at least the semblance of superior civilization; thirdly, those which were effected by the labours of a people acquainted with the art of building, and which may be divided into monastic and military.

SECT. 1. *Those composed of Stone, of Pagan origin, and which are supposed to be the most ancient.*

OF the first, or Pagan antiquities, there are three distinct kinds; the cairn, the circle of rude stone pillars, and the cromlech, or altar stone. Two very remarkable cairns, or heaps of rude stones, exist in this county; one on the summit of Slieve Croob mountain, being near eighty yards in circumference at the bottom, and about fifty in circumference at the top; on this platform a number of smaller cairns are raised, of different heights and dimensions; the stones, of which these are formed, are of various sizes, but mostly portable, and of the gritty kind. This is the largest cairn in the county; but the other, near the little village of Annadom,

Annadom, is more curious, from its having been discovered, nearly thirty years ago, to contain within its circumference, which is about sixty yards, and towards the bottom, a large smooth stone, of a square figure, from seven to eight feet over, and supported by several other stones above three feet and a half high, forming underneath a kind of chamber, in which were found ashes, and a number of bones to appearance human; upon the surface of this large stone, when the smaller stones which were pyramidically arranged were removed, a quantity of black ashes were found. The entrance to this chamber was towards the north, and under several flat stones regularly disposed in front of each other, and extending to the outside of the cairn: these stones were some years ago taken away for building.—Of the pillar stones the most remarkable are those near Sliddery ford, to the south of Dundrum; they consist of ten or twelve standing in a circle, the diameter of which is about eight or ten yards, and are about three or four feet in height: without digging and clearing the earth away nothing accurate could be determined concerning this piece of antiquity, as the soil about it has been often disturbed, and many of the stones seem to have been displaced. Another very remarkable stone stands on the summit of a hill near Saintfield; it is about six feet above the surface, and from its dimensions must have required considerable exertions to place it there,

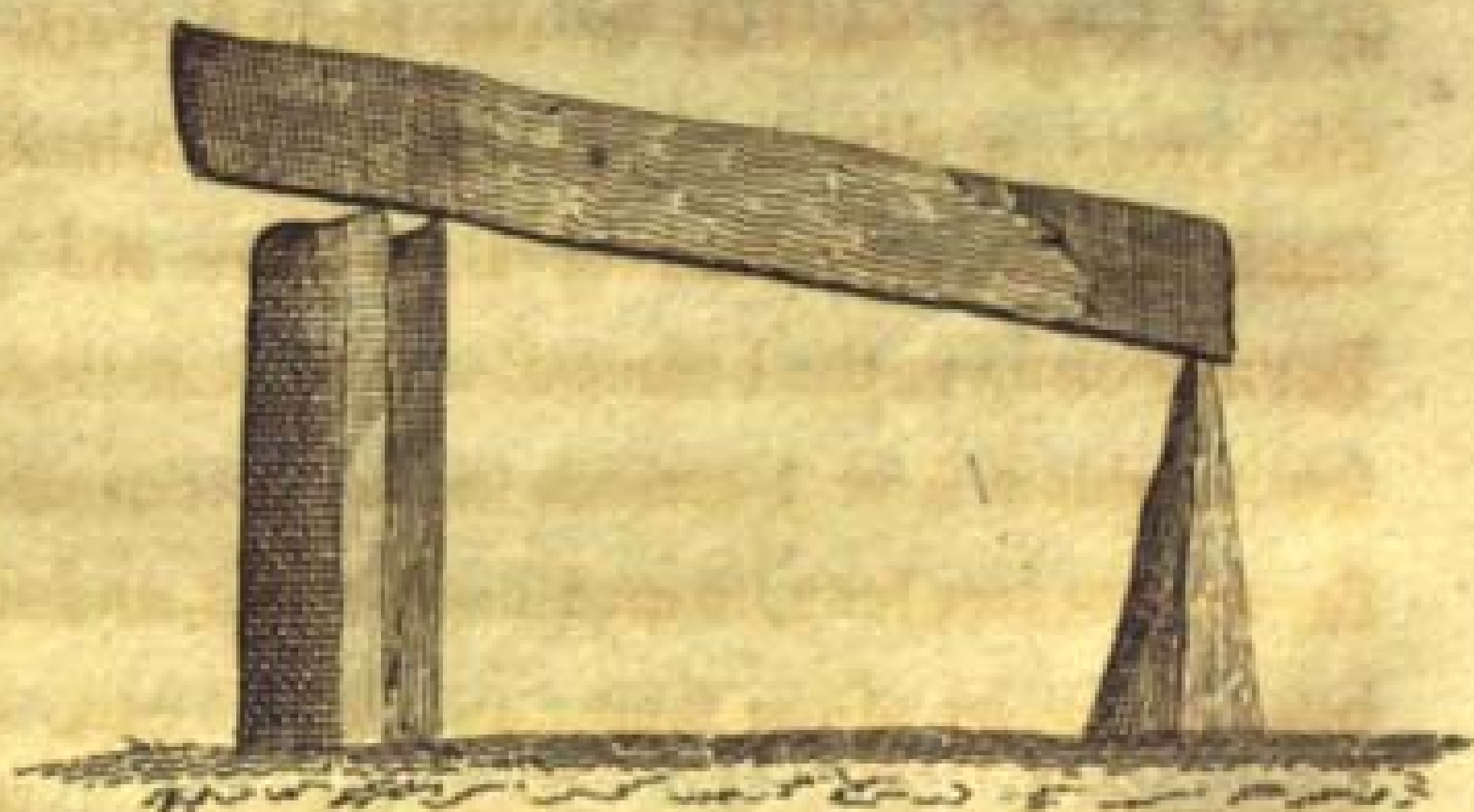
Of the stone altars, or cromlech, there are several; one on the hill called Slieve-na-Grideal, in the barony of Lecale, eleven feet long, eight feet broad, and from a foot to eighteen inches in depth; it stands upon two supporters. Another of these monuments is at Sliddery ford above mentioned, and not many yards distant from the circle of pillar stones; of this I have given a drawing, as being amongst the most curious; it is nearly circular, the diameter from seven to nine feet, the face seven feet in length, and three in thickness, but the stone bellying underneath is much deeper; it is supported by three stones, one of which has a cavity, that just receives the protuberance of the incumbent stone; on the other two it has not above a few inches dependence. This stone is granite, waterworn; the great supporter, of the same; the smaller are shift: the weight of it is immense; the supporters in the rear three feet, the front supporter is three feet six inches in the lowest, six feet in the highest part. I have also given a drawing of another cromlech, which stands in the townland of Laganeney and parish of Drumgoolan, in the bosom of a mountain towards the south; this is a very curious monument, of one granite flag twelve feet long, shaped like a coffin, and supported by three pillars of the same; two at one end, the south-east, seven feet six inches in length by two in thickness, a third to the north-west, four feet six inches high, tapering to a point, on which rests the smaller end of the
covering



*Stone Altar in the Giants Ring.
in the Parish of Drumbo.*



*Cromlich at Sliddery ford.
Dundrum*



*Stone Altar in the Townland of Legarany. Parish of
Drumgoelan. 12 Feet long. 2 Feet thick. 5 Feet in breadth
in the middle, decreasing at both ends. front Support-
ers. 7 Feet 6 Inches high by 2 Feet each side. The single
Supporter in the rear. 4 Feet 6 Inches high.*

covering stone : in the broadest part this stone is five feet, and nearly ends in a joint at both extremities. It is difficult to describe the effect produced by this great mass, that from the manner in which it is supported, and from the shape of the pillars, has an appearance of lightness at once surprising and pleasing. There are other remains of the same description in other places, particularly one near Rathfryland, and another between Castlereagh and Comber ; but it would be unnecessary to dwell upon these, as they afford nothing very materially differing from those already mentioned ; but the cromlech in the Giant's ring, near the church of Drumboe, on the summit of a hill between Lisburn and Belfast, deserves particular notice, from the circumstance of its being placed in the centre of one of the most stupendous works of antiquity this country can boast of. This altar, of which I have also given a drawing, differs very much from the rest, consisting of a rude incumbent stone of seven feet by six feet and a half, and supported by ranges of rude pillars, and close to it some fixed stones still remaining of considerable size ; the supporters are from two to three and a half feet high, the covering stone formerly an inclined plane. The inclosure, in the centre of which stands this altar, is circular, one third of a mile in circumference, the rampart which surrounds it, sloping on each side, instead of ending in a point is sufficiently wide for two to ride a-breast ; the whole is so proportioned, that a

person standing near the altar can only see the inclosure and the sky; in that situation, and alone, he cannot but feel a degree of awe from the idea of total seclusion, which strikes upon his mind, and he must be persuaded, that at whatsoever period, or by whatsoever denomination of men this work was performed, superior judgment has been shewn in the planning of an object, which, situated as it is, affects by its simple greatness; and he must feel a high idea of the influence necessary in times so remote, to unite a body of men sufficient to execute it.

SECT. 2. *Those Antiquities, which are to appearance formed of Earth, and have at least the semblance of superior civilization; as Mounts, &c.*

OF that class of antiquities composed, or to appearance composed of earth, there is every variety to be found in this county, from the smallest rath, not many yards in diameter, to the mount encompassed by its ramparts and ditches, and accompanied by outworks and a covered way; and in a few instances these mounts have the remains of a castle on their summit. The forts or raths are to be found on every range of hills, and are generally within sight of each other; they are flat in the middle and surrounded by a simple ditch; but of the mounts there are three distinct kinds; first, those

those encompassed with one rampart and fosse, 2. those with more than one, and 3. those with outworks. The first class like that near Saintfield, and of which I have given a drawing, is the least frequent; the outside of the rampart is in circumference near two hundred yards, seven in breadth, and the ditch five; the height in a sloping direction near forty feet. The second with more than one inclosure, of which that near Downpatrick is a just representation; this mount takes up a considerable extent, not less than three quarters of an English mile in circumference; three artificial ramparts surround it, the greatest of which is thirty feet broad. The third kind has generally a square fort or redoubt adjoining to the main trench, and sometimes other works, which render them very defensible, such as the mount at Dromore: this mount is situated at the north-east extremity of the town, above the river Lagan, its circumference nearly six hundred feet, the perpendicular height near sixty feet, the diameter at the summit fifty-five feet; the whole surrounded by a rampart and battlement; the trench, which terminates on a precipice, has two branches embracing a square fort of an hundred feet in diameter. From the Lagan to this ancient fortification is a covered way upon the descent of the precipice, two hundred and sixty feet in length, seven feet wide, and nine feet deep. All this will more plainly appear by inspecting the annexed plan, as also the remains of a walk towards the south, in which direction are the ruins of a castle at a small distance.

Added to those mounts already mentioned, are many others of considerable extent; that at Donaghadee is a very fine one, another also at Dundonald, and the Fort near Crownbridge, to the eastward of Newry, the outworks of which very much resemble those at the mount of Dromore. There are likewise three mounts with the remains of castles still existing on them, namely Castlereagh, Castle screen, and the mount at Clogh. Whether these were formed for the purpose of building on, or whether the situation already found invited the building, I shall not take upon me to determine; but upon looking over King's *Munimenta Antiqua* I find, that some of the most ancient castles in England are situated on similar mounts. The fort at Lisnaghead, near Scarva, deserves to be particularly mentioned, on account of a very curious outwork, or rather, as it appeared, covered way, of great breadth and depth, which runs from it through the garden and demesne of Mr. Reilly to a considerable distance, and seems to have been intended as a line of communication between two distant posts, probably of the Danes, who are said to have penetrated as far to the west as the city of Armagh.

The works of this species, which I have mentioned, form but a very small proportion of the number scattered through every part of this county, although they are amongst the most remarkable for beauty and size. In several of them caves have been found, particularly in a rath, or what is commonly called a Danish fort,
near

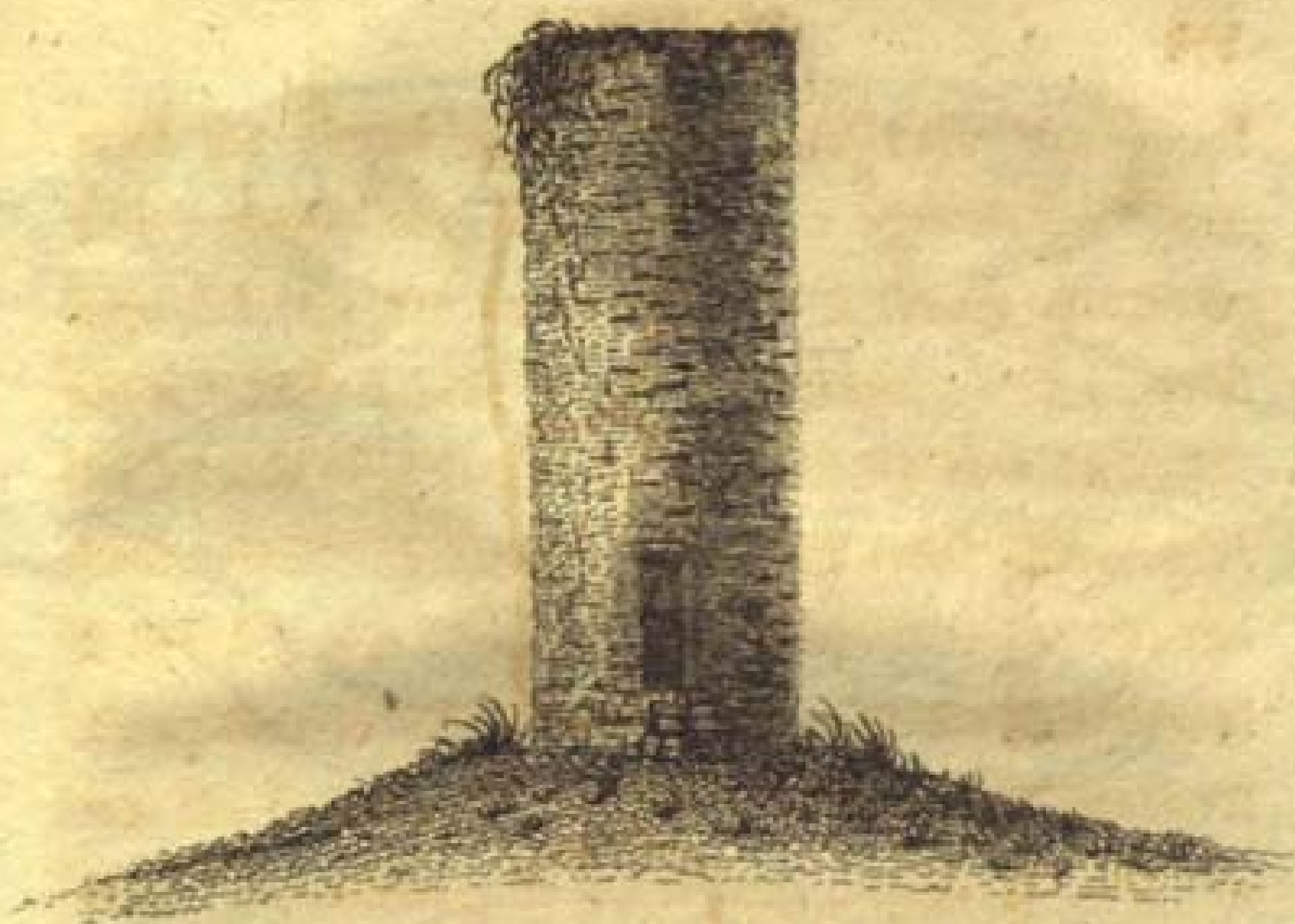
near the church of Seaford. The cave was about thirty yards long, with a circular apartment on one side towards the extremity, and a square apartment on the other a little nearer the entrance, both covered with roofs of stone. The cave having been destroyed before I saw it, I could not get the exact dimensions; I heard it was about three or four feet in width, and about four in height. On a stone at the further end was the following inscription, but in what character I could not discover, as it has been used for a trough to pound furze, and is thereby much defaced. A gentleman, to whom I shewed the inscription, and who had been used to look at the Danish manifests, brought by the masters of ships, thought it was in that character; but on taking a copy he let me know that the interpreter could not read it. The fort, in which it is situated, is within sight of the old Danish castle of Clogh.

Inscription

Here the letters are
destroyed.

Inscription on a Stone, in a Rath near the Church of Seaford.

ORON RATH



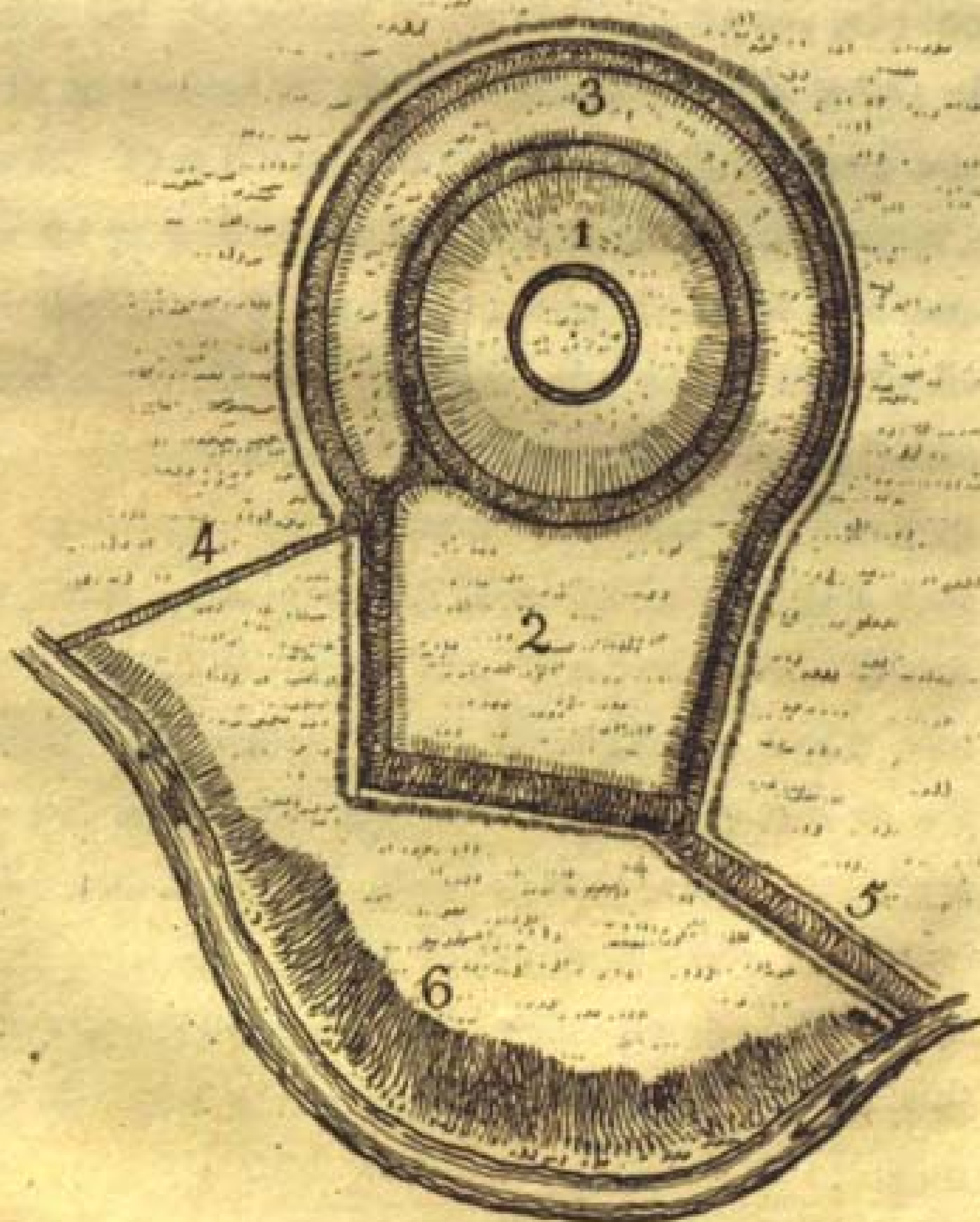
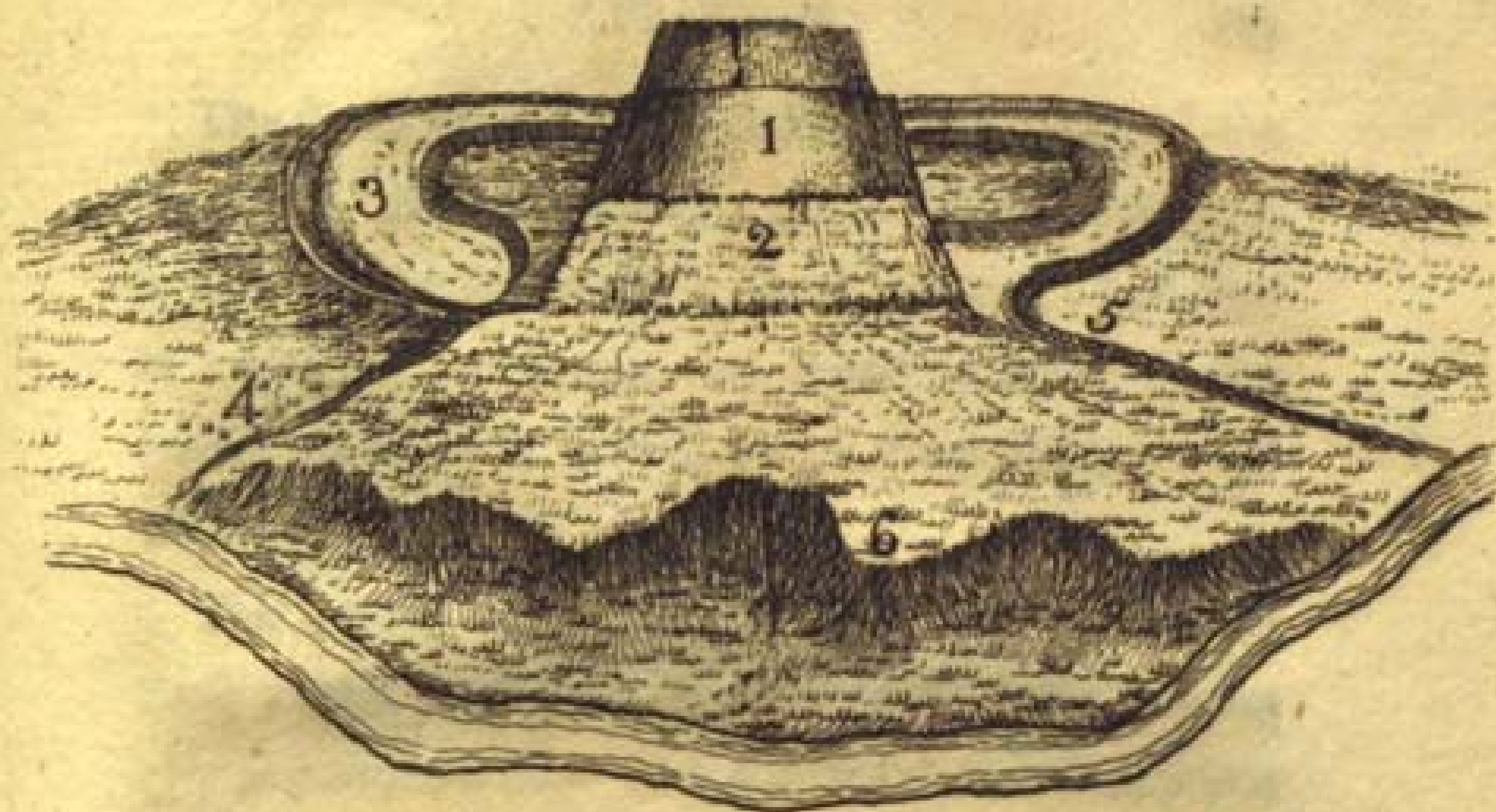
Tower of Drumbo.



Mount of Lisdargan.



Mount near Downpatrick.



The stone, on which this inscription is, being of the flaty kind, part of the surface has peeled off, and with it some of the letters ; it is about two and a half feet in length by nearly one and a half in breadth ; the letters appear as if scraped with a sharp point, not cut with a chisel.

The people, who were employed in throwing up these works, must have been very respectable in point of numbers, and those who directed them not deficient in ingenuity, and in all probability very much exceeded the fabricators of the pillar stones, and the cromlech, in both these particulars ; in three instances we find the castle and the mount in conjunction ; in one only the rude monument of stone encompassed with works of earth. That the general intention of these works was for the purpose of defence, I think cannot be doubted ; the smaller probably for collecting the cattle of a confined district, in case of alarm ; the larger, with the second rampart and outwork, for a more regular system of operations ; but besides this, in some instances they served as *places of burial*, from the caves, which have been opened in them, being found to contain human bones, particularly one at Waringstown, which was opened many years ago, and found to contain an urn filled with bones and ashes ; another was opened about forty years ago, on Mr. Mussenden's estate, about two miles from Lisburn ; a person, who saw the bones taken out of a kind of stone coffin or trough, told me that

part

part of them had all the appearance of human bones, and some of them so small that they must have belonged to an animal not larger than a middle sized dog. The mount, in which these bones were found is very curious, being furrounded by a ditch and rampart, with an advanced work to the east like that at Dromore, and a regular glacis in the front, containing near an acre of ground: to the south there is a small river, with a communication from the rere of the mount, which in this place can only be ascended by a winding path, by no means difficult to defend; the whole work must have been constructed by persons, who were no mean proficient in the science of defence, previous to the invention of cannon.

SECT. 3. *Monastic Antiquities.*

THAT the county of Down possessed considerable monastic establishments, the numerous ruins of religious buildings sufficiently shew. Mr. Archdall, in his *Monasticon Hibernicum*, enumerates thirty-six places where distinct foundations of the different orders existed, besides the abbies, priories, &c. dependant on the greater establishments, of which the most ancient is Downpatrick, it having been founded by the tutelar saint of this kingdom in the fifth century, who was buried there it is supposed in the year 493. Some idea

may

may be formed of the wealth of this foundation, from its possessing in the twelfth century forty-seven townlands, and with them seven churches or parishes. The ferry of Strangford lough, towards Dufferin, the ferry of Carlingford, of the Bann, and all the different ferries of his conquests, were granted to this abbey in the same century by Sir John de Courcey, the ferry between Lecale and the Ards alone excepted; the same Sir John granted also every tenth cow, and every tenth animal on all his farms, except those in the Ards. In the year 1185 the bodies of St. Patrick, St. Columb, and St. Brigid were discovered in this abbey, with the following epitaph written over them:

Hi tres in Duno, tumulo tumulantur in uno
Brigida, Patricius, atque Columba pius.

Thus translated by the author of the History of the County of Down,

One tomb three saints contains, one vault below
Does Patrick, Brigid, and Columba shew.

Many remains of antiquity have been found amongst the ruins of the abbey; an Agnus Dei, painted glass, lead, &c. and several cells, one floored with painted tiles, and lately, in repairing the old cathedral, an image of St. Patrick in basso relievo was dug up, about two feet and a half in length, his mitre on his head, and crozier in his hand; the work rudely but not unskillfully

fully done. St. Patrick likewise founded the abbey of Saul, where he is said to have died in his 120th year; of this monastery considerable ruins are still to be seen. St. Patrick also founded an abbey at Drumboe. Saint Colman was the founder of an abbey at Dromore, in the sixth century, of regular canons; Doctor Burke also mentions a monastery of Franciscans.

The most respectable foundation after Down, in point of wealth, was Bangor, an abbey of canons regular, founded in the year 555, by St. Congall, who was born in Ulster of noble parentage. This abbey nearly if not fully equalled that of Down; for, in an inquisition held in the reign of James I. it was found that the last abbot, William O'Dorman, in the 32d of Henry VIII. possessed thirty-one townlands in the Ards and upper Clanebois, also the Grange of Earbeg in the county of Antrim, the two Copland islands, three rectories in Antrim, and three in Down, and what seems very curious, the tithes of the island of Raghlin or Raghery, likewise a townland in the Isle of Man. The number of monks belonging to this house are said to have been two or three thousand; nine hundred are said to have been destroyed by pirates in one day. Part of the ruins still exist, and the traces of the foundations shew it to have been of great extent; the windows were of the ancient Gothic kind.

Moville, a monastery of Augustin canons, was also remarkable for the antiquity of its foundation, as well



GREY ABBEY

as the richness of its endowments ; it was founded in the year 550, by a St. Finian, son of Ultach, king of Ulster, and at the dissolution of religious houses, in the reign of Henry VIII. it appears to have been possessed of seven townlands, and the spiritualities of sixteen and a half besides ; these were granted by King James I. to Viscount Claneboys, in fee-farm, for 3*l.* 3*s.* 4*d.* Irish money. This abbey lay about a mile from Newtown, on the road to Donaghadee ; part of the ruins still remain, and the vestiges of considerable foundations.

Gray abbey, on the lough of Strangford, in the barony of Ards, was founded by Africa, daughter of the king of Man, in the year 1192 ; she was the wife of John De Courcey ; it was peopled by her with Cistercian monks from Cumberland, and here she took up her last residence. In an inquisition taken in the reign of James I. it was found that the last abbot, in the 32*d* of Henry VIII. was possessed of seven townlands in the vicinity, and three in Lecale. Part of the lands belonging to this abbey were granted to the Earl of Kildare ; the statue of the foundress, much defaced, is still to be seen on one side of the altar ; from what remains, we may suppose this was a large and sumptuous building ; the east window is a fine specimen of Gothic architecture ; on each side of the altar is a handsome window of freestone, neatly carved ; they are now grown over with ivy. All the offices of the monastery are now in ruins ; only so much remains of them as serve to point

out their extent, amidst the trees, shrubs, &c. with which they are overgrown; part of the east end of the great building is fitted up for a church. In the gardens of this abbey is a large well, covered with an arch ornamented with sculpture; this well never fails.

Inch, or Iniscourcey, opposite Downpatrick, was founded by Sir John De Courcey, to make his peace with heaven for having destroyed the abbey of Erynagh in his wars; he gave it to the monks of the Cistercian order, and dedicated to the Virgin Mary, on the third of June 1180, and endowed it with all the possessions of the abbey of Erynagh. Part of the church still remains; at the east end are large windows with Gothic arches, in the north and south walls two windows, each of two arches, not much inferior to those at the east.

At Newry there was a Cistercian abbey, founded in honour of the Virgin Mary and St. Patrick by Maurice Mc. Laughlin, king of all Ireland, about the middle or latter end of the twelfth century. There was a college also, consisting of a warden and vicars choral. Henry VIII. granted them a confirmation of all their possessions in his thirtieth year; the rent four marcs. The episcopal jurisdiction, exercised by the abbot over the lordships of Newry and Mourne, is still enjoyed by Mr. Needham, descended from Sir Nicholas Bagnal, to whom this abbey was granted by King Edward VI.; the seal of his court is a mitred abbot in his albe, sitting in a chair supported by two yew-trees, with this inscription;

tion; *Sigillum exemptæ jurisdictionis de viridi ligno*, alias Newry and Mourne. It was a tradition of the natives, that two large yew-trees formerly grew within the precincts of the abbey, from whence it was called in the Latin of that age, *Monasterium de viridi ligno*, and in Irish *Na jur*, of the yew trees; and in ancient writings the appellation is for the most part plurally, viz. the Newries. It is said that some English soldiers, digging a grave in the year 1688, discovered the stumps of some trees of very fine wood, of a red colour, which took a fine polish, in the south-east part of this abbey.

Black abbey, near Ballyhalbert in the Ards, was founded by Sir John De Courcey, for Benedictine monks; he died A. D. 1210. This abbey possessed three townlands, besides tithes, &c. The priory and its appurtenances were seized by the O'Neils; on their rebellion they were vested in the crown, and by King James I. granted to James Viscount Claneboys, who assigned them to the Lord Ardes, but in 1639 they were awarded to the see of Armagh.

At Castle-buy, or John's-town in the Ards, three miles north of Portaferry, near Strangford lough, was founded by Hugh De Lacy, in the twelfth century, a commandery of St. John the Baptist. Nothing now remains of the building but ruins; the family of Echlin possess several townlands and a manor court, formerly belonging to this commandery.—At Comber there was an abbey of Cistercian monks, founded in the latter end
of

of the twelfth century; but a more ancient one, of regular canons, was the work of St. Patrick.—Newtown also had a monastery of Dominican friars, founded by Walter De Burgh in 1244. The last prior voluntarily surrendered three townlands in his possession to Henry VIII.; these were granted by James I. to James Viscount Claneboys, at the rent of 13*s.* 4*d.* Irish money.

Besides those religious houses above mentioned, there were many others of less note; of some the situation is unknown, but most of them are now replaced by parish churches. I shall give an alphabetical list of them, as set down in the *Monasticon Hibernicum*.

Achadhcaoil, near Dundrum, in the barony of Lecale, founded in the fifth century.

Ardicnise, a Franciscan friary; unknown.

Breatain, in Lecale; founded in the sixth century.

Cluaindaimh, in Iveagh.

Domnachmaghin; founded by St. Patrick, in Mughdorna, or barony of Mourne.

Eanachelte, Annahilt, now a parish church; founded in the territory of Hibbetach (Lower Iveagh), by St. Molibba, in the eighth century. Archdall's returning this as unknown must have proceeded from the spelling of the name.

Erynagh, in Lecale, about a mile and a half south of Downpatrick. This was destroyed by Sir John De Courcey, who built an abbey at Inis, or Inch, in atonement, though it had been fortified against him.

Eynes;

Eynes; supposed to have stood near Abbacy, in the barony of Ards.

Hollywood; on the bay of Carrickfergus, three miles north-east of Belfast; the origin unknown. In the 1st of James I. Connogher O'Hamle, the last prior, surrendered this priory of St. Francis, and five townlands; these were granted to James Viscount Claneboys, for 1*l.* 3*s.* 4*d.* rent.

Kilcholpa, near Down; an abbey founded by St. Patrick, now unknown.

Kilclief, at the entrance of Strangford lough; an abbey of regular canons, and the ancient residence of the bishops of Down. An hospital for lepers was founded here, dedicated to St. Peter.

Kilmbiain; founded by St. Fergus, bishop of Down; now unknown.

Kiltonga; north of Newtown, barony of Ards.

Magheralin. St. Colman founded the monastery of Lin in the east of Ulster. Ruins of considerable extent have been lately traced there.

Neddrum. No island of that name; probably the Copeland isle.

Noendrum; unknown.

Slieve Donard. St. Domangart, a disciple of St. Patrick, founded a noble monastery at the foot of this mountain; his festival is on the fourth of March, yet the patron day is the twenty-fifth of July, when the Roman Catholics climb the mountain to perform their penance;

penance; probably it was changed to that season, which is more favourable for ascending the mountain.

Tamlachta Umhail; near Lough Blisklau (probably Longhbrickland), in Iveagh; now unknown. See the account of a golden relique found near Loughbrickland, p. 302.

Teghdagobha. This abbey, now unknown, is said to have been in the barony of Iveagh, on the Bann.

Toberglory; founded by Sir John De Courcey, in honour of St. Thomas; he gave it to the regular canons of the Virgin Mary at Carlisle; he endowed it with lands adjoining to it, and a burghage within the town of Down, likewise with all the tithes of his house, and house expences and demesnes.

Struel Wells, or St. Patrick's, deserve a place amongst the ecclesiastical antiquities of this county; they are four in number, and lie to the east of Downpatrick; each well is covered with a vault of stone, and the water is conveyed from one to the other by subterraneous aqueducts. The largest and most celebrated of these vaults is sixteen feet by eleven, and is more particularly said to have received St. Patrick's benediction; in this the people bathe; there is a chamber for undressing: the other wells are for washing different parts of the body, the eyes, head, limbs, &c. These vaults seem to be ancient, and near one of them are the ruins of a chapel, dedicated to St. Patrick. Vast numbers resort here on midsummer's eve, and on the Friday

before

before Lammas; some to obtain health, and others to perform their enjoined penances. We must not omit St. Finian's well, near the race-course, nor St. Scordin's, in the vicinity of Killough; this last gushes out of a rock on the sea-shore, and is never observed to diminish in the driest seasons.

As the round towers, which are so frequent in Ireland, are generally found at no great distance from the ruins of ecclesiastical buildings, their place in the antiquities of this county seems to follow the former subject of course. Until of late, two buildings of this kind were in existence, that of Drumboe, and that of Downpatrick; the first is yet standing; the latter was pulled down in the year 1790, to make room for the rebuilding of that part of the old cathedral, next which it stood, and from which it was distant about forty feet; the height was sixty-six feet, the thickness of the walls three feet, and the diameter eight feet. When the tower was thrown down, and cleared away to the foundation, another foundation was discovered under it, and running directly across the site of the tower, which appeared to be a continuation of the church wall, which, at some period prior to the building of the tower, seemed to have extended considerably beyond it. This curious circumstance was observed by several gentlemen at the spring assizes in the above mentioned year. The round tower at Drumboe stands about twenty-four feet north-west of the ruins of the church; it is nearly

thirty-six feet in height, forty-seven in circumference, and nine feet in the clear; the entrance is on the east side, five feet from the ground; the stones around the door are parts of a circle, and were taken from a quarry in the neighbourhood, where I saw stones newly raised exactly of the same form. At some former time very *strong fires have been burned within this building*, and the inside surface, towards the bottom, has the appearance of vitrification.* It is supposed there was formerly a small fortified town at Drumboe, and that the foundation of the wall was still to be traced; of late, in labouring the fields in the environs, many hearth-stones and other remains have been dug up.

* From Mr. Pennant's *View of Hindoostan* it is evident, that the original pagodas were single *towers*, like those in Ireland. Vol. II. p. 123.—speaking of the *circars* granted to the French, he says, “All the people of this part of India are Hindoos, and retain the *old religion*, with all its superstition: this makes the pagodas here much more numerous than in any other part of the peninsula; their form too is *different*, being chiefly buildings of a *cylindrical* or *round tower* shape, with their tops either pointed or truncated at the summit, and ornamented with something eccentric, but frequently with a round ball, stuck on a spike: this ball seems intended to represent the SUN, an emblem of the deity of the place.” And at p. 27, speaking of the great pagoda of *Chilambaram*, the most celebrated for its sanctity of any in *India*, he says,—“According to Mr. Ives, it has three precincts, and the *towers* are in the inner.”

The tower of *Ardmore*, in the county of Waterford, still preserves its pointed top. See a view of it in Smith's history of that county. I have caused the ground floor of many to be opened, and ashes of burnt wood have been found, the remains of the perpetual fire kept burning in the bottom, in honor of the deity, the SUN.—C. V.

SECT. 4. *Military Antiquities.*

UNLESS we include in this class the different strengths, which are composed of earth thrown up in various forms, and a few warlike instruments of ancient fashion, that have been found at several times and places, we shall find that there is nothing, which can with propriety be referred to the above-mentioned denomination, that is not of undoubted English origin ; and that all the castles, erected at different periods, were constructed by English artists, so that they are in nothing different from those, which were built at the same times in England. The continual change of habitation, and the unsettled state of property amongst the Irish, the consequence of their laws and regulations respecting inheritance, prevented that attention to places of permanent residence, which we find to have been paid by other nations not in a higher degree of civilization ; for nothing could be more natural than their negligence in the article of improvements, which must have been attended with trouble and expense, when they had almost a certainty that they should not descend to their heirs. But after Ireland was conquered by the English, and the lands were restored to any of the original proprietors to hold from them, they were granted under

the condition of inheritance in the direct line ; in consequence of which some of them began to provide for their descendants, by erecting castles and fortified houses, and by attending to such improvements as were most in fashion at the time they lived. Yet how slowly this idea operated, may be collected from the small number of buildings of strength erected by the old Irish, in comparison with the English. A slight sketch of the history of those ancient buildings, which are to be found in many parts of this county, will add strength to this observation ; and will shew, that the three great families of the O'Neil's, Mc. Cartanes, and Mc. Gennises, who possessed nearly the whole of this county, so far from portioning out their territories like the English, and having places of strength erected upon them, scarcely possessed a strong hold for their own residence. Con O'Neil, who held so great a portion of Castlereagh and the Ards, seems to have had no other fortified place than his seat at Castlereagh, which was situated on the summit of a hill of the same name, in a fort encompassed three fourths by a deep ditch. Mc. Cartane, whose lands extended into the barony of Kinelearty, and the south part of Castlereagh, resided at Annadom, nor do I find mention made of any other place immediately belonging to him. The Magennises indeed are said to have had Newcastle, built by Felix (according to the History of the County of Down) in 1588 ; a house also at Castlewellan, and a castle on the hill

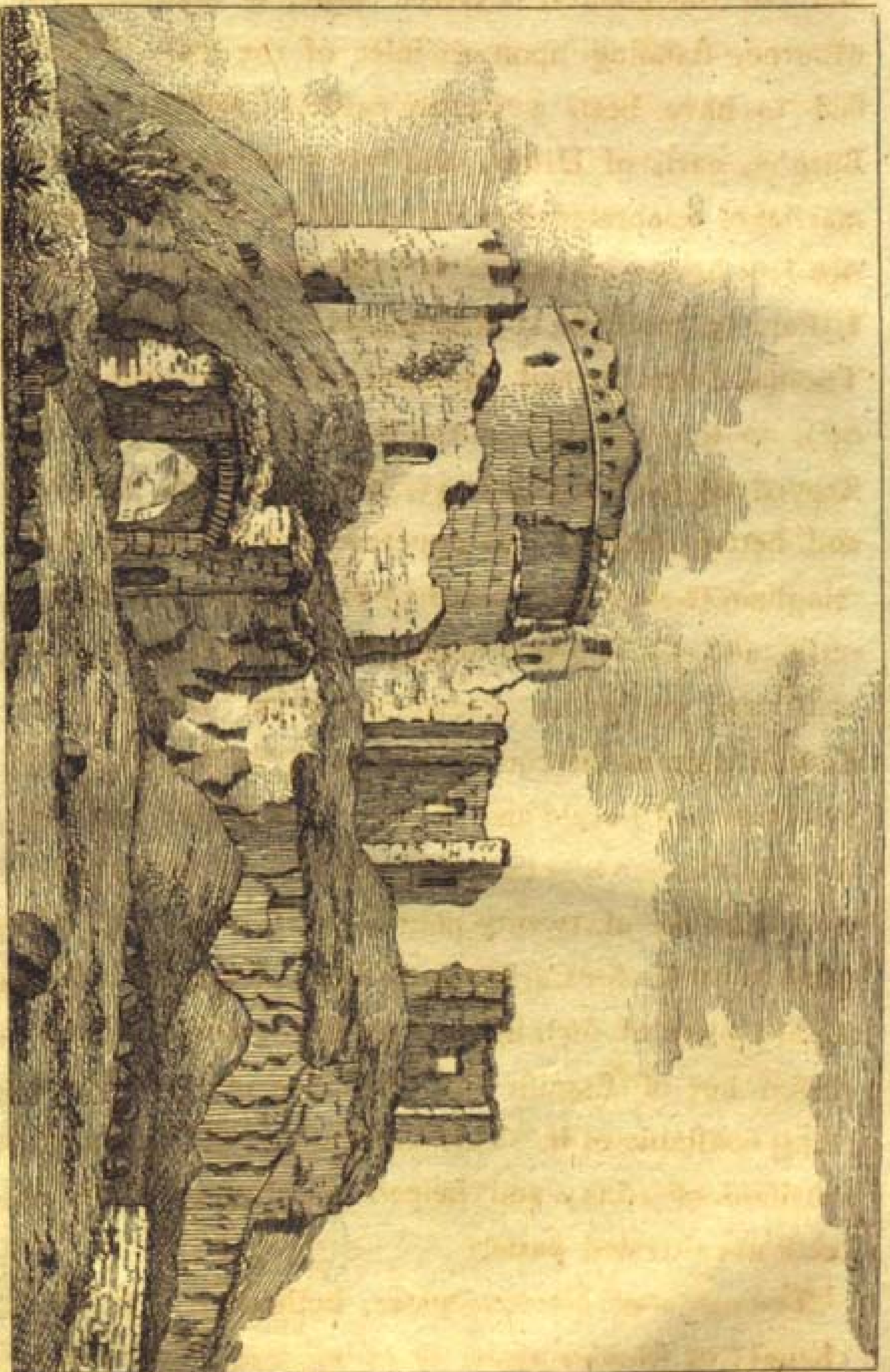
hill at Rathfryland. Another and a very satisfactory reason might be adduced for the frequency of the English castles, when compared with the Irish; the former came in as invaders, and consequently were obliged to secure themselves against the inhabitants; whilst the latter relying on the fidelity of their countrymen thought they had a sufficient security in their numbers and attachment, and probably looked forward to the time they should expel them, and take possession of their labours.

A note upon the following passage from page 279 of Lyttleton's History of Henry II. book V. will in some degree account for the few buildings erected by the Irish chiefs, after the invasions of the English: "The cause of this was a fixed opinion in the Irish, that walled towns and forts were dangerous to their freedom, and that to them it would always be more advantageous to destroy than to possess them." The note says, this opinion prevailed so long among them, that Con O'Neil, whom king Henry VIII. created Earl of Tyrone, cursed all his posterity, who should build any houses, saying "that by building they would but do as the crow doth make her nest to be beaten out by the hawks." The word *houses* here meant houses of brick or stone, such as the English built in Ireland, which were generally castles or edifices in walled towns; whereas the Irish dwelt in huts, readily raised or pulled down, like the ancient Britons and Germans.

The

The first military antiquity we meet with to the south of this county, is Green castle, in the barony of Mourne, standing upon an inlet of the sea. This is said to have been a strong castle, fortified by the Burghs, earls of Ulster, and was remarkable for two marriages celebrated here in 1312, one between Maurice Fitzthomas and Catherine, daughter of the Earl of Ulster, on the fifth of August, and the other between Thomas Fitzjohn and another daughter of the same earl, on the sixteenth of the same month. It was destroyed by the Irish in 1343, but afterwards repaired and better fortified. It appears by a record in Bermingham tower, of the first of Henry IV. that Green castle and Carlingford castle were governed by one constable, to secure a communication between the English pale in the county of Louth, and the English settlements in Lecale and the northern parts; and that Stephen Gernon was that year constable of both castles, with a salary of twenty pounds for Green Castle and of five pounds for Carlingford. In 1495 it was thought to be a place of such importance to the crown, that no person but of English birth was declared capable of being constable of it. This castle was a garrison in the rebellion of 1641, and helped to restrain the Irish in those uncultivated parts.

The castle of Narrow-water, built on a rock in the channel of Newry river, is of modern date, having been erected by the Duke of Ormond after the Restoration.



DUNDRUM CASTLE.

Newry was fortified by Sir Nicholas Bagnal, about the year 1578, as appears from a stone on the outside of the steeple of the church, which he built. Shane O'Neil at this time lived at Fedom, about a mile from Newry, suffering no subject to travel from Dundalk northward; but after the fortifying of the former the passages of the country were opened.

Dundrum castle is finely situated on a rock, commanding a view of the whole bay of that name, the sea to the south, a great part of Lecale to the east, and of the mountains of Mourne to the south and south-west. There are still considerable remains of this castle, particularly a circular tower, and near it, a little lower, the ruins of an ancient mansion. This castle is said to have been built by Sir John de Courcey for the Knights templars, who possessed it till the year 1313, when that order was abolished. It was afterwards granted to the Prior of Down, who held the same, with a small manor adjoining, till the first suppression of religious houses: the reversion of this house and manor, with the yearly rent of 6*l.* 13*s.* 4*d.* reserved out of it, was granted to Gerald earl of Kildare. This castle, with seven townlands, was granted to the family of Magennis; on their forfeiture it became the property of the Earl of Ardglass, and afterwards came into the possession of the Lord Viscount Blundell, in whose representative, the Marchioness of Downshire, it now remains. When this castle was in repair, it often proved a good guard to the
pass,

pass, and as often an offensive neighbour to the English planted in Lecale, according to the hands that possessed it. In 1517, the Earl of Kildare, then lord-deputy, marched into Lecale and took it by storm; it being garrisoned at that time by the Irish, who had driven out the English some time before. It was again possessed and repaired by the Magennises, and retaken by Lord-deputy Gray, with seven castles more in Lecale, in 1538. It afterwards got into the hands of Phelim Mc. Ever Magennis, who was obliged to yield it to Lord Mountjoy, the sixteenth of June, 1601. It met with another fate during the progress of the war in 1641, when it was demolished by order of Cromwell, though garrisoned by Protestants, and has ever since been suffered to run entirely to ruins.

Newcastle, in a village of that name in Upper Iveagh, was built by Felix Magennis, in the memorable year 1588; it was very strong, and is now converted into a commodious dwelling house, situated on the verge of the sea, which washes the foundation of some of the offices.

Ardglass, though now a small village, has the remains of considerable fortifications. King's castle, Horn castle, and Coud castle, are still in part remaining; besides Jordan's castle, memorable for the defence made there by the valiant owner, Simon Jordan, who held it out three years till he was relieved by Lord Mountjoy, the seventeenth of June, 1601. It is uncertain by whom these castles were erected, yet it is probable

bable that Jordan's castle was erected by one of that family, whose arms, a cross and three horse shoes, are fixed in a stone near the top. St. Patrick founded a church at Ardglafs.

Another considerable building, extending on a platform near 234 feet, including a flanker at each end, with a battlement breast high towards the sea, and which the author of the History of the County of Down thinks was anciently a place where wares were fold, as well as a fortification for strength, has been converted by Lord Lecale into a most elegant habitation, who has with great judgment and taste preserved the antique castellated appearance. The above mentioned author thinks, that this building was formerly erected to preserve the merchants from the insults of the Irish.

Kilclief castle is situated on the entrance of the bay of Strangford. This was once the see-house of the bishops of Down; it was here that John Celey, bishop of that see, publicly lived with Lettice Thombe, a married woman; for which scandal, Swain, archbishop of Armagh, in 1441 served him with a monitory process in his castle at Kilclief; and there was a chamber in the castle called the hawk's chamber, where it was said the bishop kept his falconer and his hawks. This tradition might have been taken from the figure of a bird resembling a hawk, carved on a stone chimney-piece in a room on the second floor, on which is also cut, in

bas relief, a cross patee. This castle was a large building, the first floor vaulted, with two front wings, in one of which was the staircase, in the other a set of closets.

On the west side of the road from Killough to Downpatrick are the castles of Bright and Screen; the latter remarkable for having been built in a Danish rath; the castle of Clough is also built in a similar one: they are now both in ruins.

Near Strangford, farther up the strait, are two old castles, one called Walsh's castle, the other Castle Audley. This latter, from its bold situation, commands a view of the lake as far as Newtown. The name of this castle shews, that it was built by one of the Audleys, who settled here under John de Courcey in the infancy of the English government.

Portaferry castle was the ancient seat of the Savages. Considerable additions were made to this castle, and finished in 1636.

At Arquin was likewise a castle and dwelling-house of another branch of this ancient family, inclosed within a rampart, and standing boldly over the lake, on a pretty high hill. As this part of the Ards was often the seat of war between the Irish and this family, whose estate it formerly was, and a considerable part of it still is, we shall find several other castles in it, of which, besides those mentioned, there are three yet remaining; Quintin Bay castle, two miles south of Portaferry; Newcastle, three miles east of the same place; and

and Kirkistown, four miles north-east of it. This and Ballygalgot castle were built after the accession of James I. by Rowland Savage of Arquin.

In the barony of Castlereagh are the ruins of that old castle mentioned above, from whence that barony takes its name; they are situated on the top of a ridge of hills, in one of these forts usually attributed to the Danes: this fort has a fosse, which encompasses three-fourths of it; in the midst of the fort stood the castle, formerly the seat of Con O'Neill. Besides this castle, there is Kill Hall, near Drumbo, a square fortification, four flankers; both belonging to the Marquis of Downshire.

In the barony of Dufferin stands the castle of Killileagh, at the western end of the town of the same name. The family of Hamiltons, created first Lords Clanboys, and since earls of Clanbrassil, but whose title is now extinct, had their residence in this castle, which is now the residence of Gawen Hamilton, Esq. who with Sir James Stephenson Blackwood, are the heirs, by the female line, of that noble family.

In the barony of Kinalearty, near the village of Annadom, stood the castle or seat of the Mc. Artanes, on an eminence now called Castle-Hill: the neighbouring church of Loughen-island, situated in a peninsula of a most romantic lake, is thought to have been their burial-place.

The castle of Clough, situated in a Danish fort, and which I have spoken of already on that account, has a more antique appearance than any other I have seen; it has still part of a winding staircase existing, and must have been solely built for defence, as it was too small for the residence of a family of note; the building of it is attributed to the Danes; the outworks which surround it are very extensive, extending behind the town to the east as far as the gardens of Mr. Moore's house; the situation is excellent for defence, the ground sloping from it on all sides, and no hill sufficiently near to command it.

In Upper Iveagh, on the summit of a hill near Rathfryland, are the ruins of an old castle, one of the seats of the Magennises, lords of Iveagh. This castle was formerly very large, but most of it was pulled down by Mr. Hawkins, the first protestant proprietor of it, after the rebellion in 1641.—Newcastle has already been mentioned; to this may be added those built by Colonel Monk, afterwards General, and Duke of Albemarle, on the passes, which separate this county from Armagh, namely, Scarvagh, Pointz, and Tuscan passes; there are still some remains of these fortifications.

At Hillsborough, in Lower Iveagh, is a small castle, formerly the gateway to a more extensive fortification; the room over this is elegantly fitted up in the ancient stile; within the walls of a square fort, with bastions, is a beautiful green, and a walk round the rampart, which

which overlooks a fine cultivated country, and from whence there is a view of the noble plantations in the park, which are seen over a fine piece of water, which lies to the east of the walk. The family of Downshire are hereditary constables of this castle.

SECT. 5. *Detached pieces of Antiquity, that have been found in different Places.*

BESIDES the antiquities, which are enumerated under the different heads at the beginning of this article, there are many others, which have been accidentally met with in different parts of this county. Some years ago one of those beautiful plates of gold, shaped like a half-moon, was dug up from a bog in the barony of Castle-reagh, which is now in the possession of the Downshire family, it having been found on their estate; it is very thin, the gold remarkably fine, without any other ornament than a narrow waving line cut along the edge; part of it was broken off in taking up; the colour of the metal is uncommonly fine, and the workmanship neat.

To the Bishop of Dromore, who has devoted a great deal of his attention to the ancient history of Ireland, I owe, amongst many other favours, the following information, respecting a curious golden relique of the ancient monastic establishment of this county, found in
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the parish of Ahaderig, near Loughbrickland, in the barony of Upper Iveagh, within the manor of Dromore (which has many great and uncommon privileges; for the Bishop appoints a coroner to his own manor, and may require the King's writs to be executed, not by the sheriff, but by his own officer). This piece of gold appears to have been part of the branch of a golden candlestick, being three very thick gold wires or plates, twisted into a triple cord, so strong as to be able to support the nozzle of a sconce for a candle, with a solid gold cone at the end to go into a socket, &c.; but the part now found is imperfect, and another perhaps larger piece has been left behind, or has been carried off before. Mr. Neilson, the watchmaker, who first bought the gold, told Mr. Brush, his Lordship's agent, that a great deal of treasure has from time to time been found there, as gold cups, dishes, &c. probably chalices and patens, and other monastic or church furniture, of which this piece of a sconce or chandelier was apparently a part. The same person bought some years before from thence a great quantity of ancient gold, which he afterwards sold in Dublin. This piece was found by a woman, as she was passing through the townland of Drumsallagh, in some rubbish, thrown up for the purpose of making room for an addition to a cabin; on her return home she gave it to her husband, who sold it

it to a watchmaker in Banbridge for six guineas; from this person the Bishop of Dromore might have easily recovered it as treasure trove within his manor; but, to encourage the people in future to bring to him whatsoever they so found, he was content to purchase it from the watchmaker at double the price he paid for it.

In consequence of this discovery, an enquiry was set on foot by the Bishop's desire; from which Dr. Shiel, then vicar-general of Dromore, found, that in the townland of Drumfallagh there had formerly been a monastery of the order of St. Francis; that after the dissolution of the religious houses in Ireland there remained several mendicant friars, who still housed round the ruins of their monastery, which was situated about two hundred yards from the old church of Ahaderig, in the same townland; the ruins of the church remain until this day, but most of the ruins of the monastery, with its choicest stones, were removed about an English mile, to the place where the church now stands. Dr. Shiel found, upon further enquiry from an old man, whose name was Fegan, and above ninety years of age, that he remembered the walls of this building standing, to the height of three or four feet, and about ninety feet in length, but that above forty years ago they had been removed to make room for a bleach-green. From this enquiry the situation of the monastery of Tamlach Umhail, mentioned by Archdall as unknown, is fully ascertained.

ascertained. In his *Monasticon Hibernicum* he says, the monastery of Tamlach Umhail¹ was near Lough Blisklau, in the barony of Iveagh; his words are; “There was an ancient abbey there, wherein the feasts of the three saints, Nassad, Beoan, and Mellan, who flourished about the middle of the seventh century, were observed on the 26th of October;” he adds, “it is now unknown;” but in a note he says, “the lough in ancient times was called Lough Bricreann, or Bricirne.” From Extracts, ex *Acta Sanctorum*, per R. P. I. Johan. Colganum, page 271, in notis, the situation of this religious house is pointed out, as appears from part of note 1. “Saint Mellanus de Tamlachta, who is worshipped, with the Saints Beoan and Nassad, in the church of Tamlachta Umhail, near the lake Bricreann in Ulster (Ultonia), 26th October;” and in note 19, p. 90, this Tamlachta Umhail is said to be in the country of Iveagh in Ulster (Ivechia in Ultonia), near the lake Bricreann (juxta lacum Bricreanum): now the name of Loughbrickland is properly Lough breac lan,* or of the speckled trouts, and it lies in Iveagh in Ulster. Besides, Dr. Shiel found the old name of this abbey to be Tamlachta Umhail; and it also appeared, that an annual festival of the three saints had kept up the tra-

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* *Breac*, in the Irish language, signifies both a trout, and speckled; it is the participle of the verb *breacam*, to checquer; and *lan* signifies either the scale of a fish, or fulness. *Shaw's Celtic Dictionary.*

dition to the present times; all which proves, that the Tamlachta Umhail, mentioned by Archdall as unknown, must have been the abbey, in the precincts of which this golden branch was found. A number of detached pieces of antiquity are likewise in the Bishop of Dromore's possession; amongst these is a boat, or canoe, found in a bog not far from the see-house of Dromore; this canoe is of an oak tree, the length about thirteen feet, the breadth in the middle near three feet, with a ledge around, of the same plank, which serves as a gunwale. His Lordship has also two stone hatchets, such as were used before metals were found out; likewise several heads of spears of brass, of different sizes and forms.

Urns of various kinds have been found, some of them neatly worked and ornamented, others of ruder formation. Two of the former kind, found in the parish of Garvaghy about two years ago, are thus described by the Rev. Thomas Beatty, who saw them; they were discovered on removing the stones of a cairn in the townland of Balliely: "These urns were made of a yellowish clay, handsomely finished, and ornamented with festoons wrought in the clay around the centre; they were in a perfect state of preservation, one about twelve inches in diameter, and the other about half that size; they were each nearly half full of the ashes of the dead; they were found placed on smooth flags, defended on all sides by perpendicular

stones, and a large one on the top. As the workmen wrought but a small way into the cairn, it is probable there are many urns contained in it yet." And I am informed by Mr. James Black of Dromaragh, that on the removal of two very large upright stones, which lay in the line of a road, the workmen, who were employed, broke an urn with their pickaxes before they were aware. These stones were so large, and so difficult to break, the idea was at first to go round them : we may therefore judge of the difficulty there was in placing them above the urns.

An earthen lamp of curious form was some years ago dug up near Moira, at a considerable depth ; the figures upon it were more remarkable for their indecency than their elegance.

At Dundonald very considerable ruins have been found, 120 feet by forty ; and also at Seafin, in the parish of Drumgooland ; probably some of the monasteries mentioned as unknown. Many other curious remains are met with in different places, but it would be foreign to the purpose of this Report to enlarge on the subject, however interesting it might be to pursue it farther.

SECT. 6. *Some particulars of the State of the County of Down in the Years 1635 and 1657.*

SOME particulars respecting the state of this country in 1635, extracted from a manuscript journal of an English gentleman, who travelled from his own house at Handford in Cheshire, June 12, 1635, and made a circuit through Yorkshire, Durham, Northumberland, into Scotland, through Edinburgh, Glasgow, Air, Port Patrick, thence to Ireland through Carrickfergus, Belfast, Lisburn, Dromore, Newry, Dundalk, &c. to Dublin. The writer seems to have been a gentleman of the Egerton family, rather leaning to puritanism, but very attentive to the state of agriculture in the countries he passed through, and to other similar objects. This manuscript belongs to General Vallancey, the antiquarian, who bought it at an auction, January 1791. This extract I owe to the attention of the Bishop of Dromore.

On July the fifth he landed at Carrickfergus, which he describes, and particularly Lord Chichester's very stately house there, or rather like a *princess's pallace*; from Carrickfergus to Belfast you ride all upon the *lock* (lough) side, *itt* is a most bare way, and deep in winter and wet weather, though *itt* is hard and *drie*. This

town of Carrickfergus is governed by a *maior*, *sheriffe*, and aldermen, endowed with great *priviledges*, and is the shire town. At Belfast my Lord Chichester hath another dainty stately *pallace*, which is indeed the *glorye* and beauty of that town also, where he is most resident, and is now building another brick wall before his gates; this is not so vast and large as the other, but more convenient and commodious; the very end of the *lock* toucheth upon his garden and backside; there are also *daintie* orchards, gardens, and walks planted.

Neere hereunto Mr. Arthur Hill (son and heir of Sir Moyfes Hill) hath a brave plantation,* which he holds by lease, and which has still forty years to come; the land is my Lord Chichester's, and the lease was made for sixty years to Sir Moyfes Hill by the old Lord Chichester. This plantation, it is said, doth yield him 1000*l.* per annum. Many Lancashire and Cheshire men are here planted; they sit upon a rack rent, and pay five or six shillings an acre for good ploughing land, which now is clothed with excellent good *corne*.

From Belfast to Linsley (Lisna) Garvin, is about seven miles, and is a paradise in comparifon of every part of Scotland. Linsley Garvin is well feated, but neither the town or country thereabouts well planted, being almost all woods and moorish, until you come to *Drommoare*; this town belongs to my Lord *Conorway*, who

* Plantation means an estate planted with people.

hath there a good *bainsome* house, but far short of both my Lord Chichester's houses; and this house is seated upon a hill, upon the side whereof is planted a garden and orchard, and at the bottom of the hill runneth a pleasant river (the Lagan), which abounds with salmon; though the land hereabouts be the poorest and barrenest I have yet seen, yet may it be made good land with labour and *charge*. From Linsley Garvin to Drommoare is about seven miles; here we lodged at Mr. Haven's house, which is directly opposite to the Bishop of Drommoare his house, which is a little timber house of no great state nor receipt (reception). His chaplain's name is Leigh, born in Manchester. This is a very dear house; 8*d.* ordinary for ourselves, 6*d.* for our servants, and we were overcharged in *beere*. This town as *itt* is the *seate* of the bishop of this *sea*, so he is lord of *itt*, and *itt* doth wholly belong unto him. In this diocess, as Mr. Leigh his chaplain reported, is the worst part of the kingdome, and the poorest land and ground, yet the best church livings *bee*: there are no impropriations.

July 7th. *Wee* left Dromoare and went to *the Newrie*, which is sixteen miles; this is a most difficult way for a stranger to find out; herein *wee* wandered, and being lost fell amongst the Irish *townes*. The Irish houses are the poorest cabins I have seen; erected in the middle of the fields and grounds, which they farm and rent. This is a wild *countrie*, *nott* inhabited, planted, nor inclosed,

inclosed, yett *itt* would *bee corne* if *itt* was husbanded. I gave an Irishman to bring us into the way *a groate*, who led us like a villain directly out of the way, and *foe* left us; *foe* as by this deviation it was 3 *houre* before we came to *the Newrie*. Much land there is about this *towne*, belonging to Mr. Bagnall, nothing well planted. *Hee* hath a castle in this *towne*, but is for the most part resident *att* Green castle; a great part of this *towne* is his, and *itt* is reported he hath 1000*l.* or 1500*l.* per annum in this *countrie*. This is but a poor *towne*, and is much Irish; and is navigable for *boates* to come up unto with the tide. Here *wee* bailed at a good inn, the *signe* of the *Princess* arms; hence to Dundalke is eight mile; stonye, craggye, hilly, and uneven, but a way *itt* is nothing difficult to find.

The following extracts from the Down survey, made in the year 1657, and likewise furnished to me by the Bishop of Dromore, will shew from the state of some of the best parts of this county, that in the twenty-two years subsequent to the writing of the above journal, things had changed for the worse; bad as they are represented to have been by the writer of it.

Magharally.

There are no observable buildings in this parish, only an old ruined church at Magharally.

Magheralin.

Magheralin.

The quality of the *soile* thereof is generally arable, meadow, and pasture, intermixt with unprofitable mosses and boggy grounds, whereon *growe* many large timber trees, but most of them are decaying with age. There are no buildings thereon, only moveable creaghts.*

Dromore.

There's *noe* buildings in this parish; only Dromore, it being a market town, hath some old thatched houses and a ruined church standing in it; what other buildings there are in this parish are nothing but removeable creaghts.

SECT. 7. *The Antiquity of the Linen Manufacture.*

DR. LELAND, in his preliminary observations to the history of Ireland, affords a striking proof of the anti-

* Creaghts were houses framed with strong wattles, which were removed from one place to another, as suited the convenience of the owner. The wattles were set up and covered with mud and straw, or rushes.

quity of the linen manufacture in this kingdom; his words are, "Irish writers minutely describe the ancient dress of their country, the vest, the trowse, the mantle, the enormous *linen* sleeves dyed with saffron," &c. And in a picture of the famous Earl of Tyrone, drawn in Spain after his banishment, which picture is in the possession of the Earl of Leicester, one of his galloglasses is represented as attending on him, exactly in the dress above mentioned.

SECT. 8. *Some Notice respecting the natural History, ancient as well as modern, of this County.*

Fossil Horns.—The author of the History of the County of Down, who has furnished so much valuable information, has wholly omitted those gigantic horns and bones of the deer kind, which are found in this as well as in other counties of Ireland, generally in marle pits. It has been the opinion of many naturalists, that no species of animal is so utterly extinct as to be entirely lost to the world; yet I believe it may be asserted, that there is an example in Ireland, which forms an exception to this opinion; for there is not in any part of the known world a species of the deer kind, capable of supporting horns equal in magnitude to those so frequently met with in many parts of this island; nor is there amongst us the least record, nor
any

any manner of tradition, that even makes mention of the name; therefore whatsoever discoveries are made of this creature, can only be from the parts of it dug up by accident, and preserved in the earth so many ages from corruption, by lying deep and close underground; whilst so many bodies of a nature more durable moulder away and perish, by being exposed to the various changes of the air and injuries of the weather. These quadrupeds must have been numerous; as their remains are found in every part of the kingdom, and in some places several of their heads close together. What an idea does this suggest of the fertility of a country equal to the support of a graminivorous animal of so stupendous a size? Amongst the many exuviae of this kind, that have been found in this county, the most remarkable are those horns and bones dug up in a marle pit near Dromore, in August 1783; they are now in the Bishop's possession: the dimensions are, of the head and horns measured from tip to tip, following the curve, fourteen feet six inches, from tip to tip in a right line, ten feet three inches, the entire horn seven feet three inches, the other, of which the point was broken, six feet nine inches, round the root of the horn sixteen inches: the bones of this stately creature were of suitable magnitude; the head in length, beginning at the vertebræ, twenty-three inches in breadth, at the eyes eleven inches; most of the vertebræ were found along with the horns, also the thigh bones, the shoulder

blades, and many other parts. The bones of a horse sixteen hands high, which lie beside them, are well calculated to impress the beholder with astonishment at the comparative inferiority of the latter. The palmated brow antlers of these fossil horns, I am informed, distinguish them from the horns of every kind of deer now known, except from the rein-deer of the North of Europe.

The fir-trees, that are so often found under the turf-bogs, form another curious article in the ancient department (if I may use the expression) of the natural history of this kingdom, as there is not any species of that tree now indigenous; from the texture of the bark, which is coarse and rough, the kind seems to have been the Scotch fir, the *boletus ignarius*. Agaric, or touch-wood, is found in many bogs in this county, and in considerable quantities, but growing I have never met with it; pieces of the bark of the trees, on which they have grown, are sometimes found adhering to them, by which it can be ascertained, that oak and birch afforded their support.

The pearls found in the rivers Lagan, and in the Bann, must not escape our observation; they are obtained from muscles bred in these rivers, in shape and colour like sea muscles, but of a larger size. The fish of this muscle cuts like an oyster, is of a dark green colour, and soon corrupts; being insipid, it is seldom eaten. The shells are fastened by two cartilages near the ends, differing in this particular from the oyster, &c.

&c. which have only one in the middle. The common method of fishing for these muscles, was by wading into the water in summer, and thrusting sticks into the opening of the shells to take them up; this, however, could only be done in shallow water, whereas the largest fish, and the greatest number, were found in deep smooth water. This business now is nearly given up, nor are the pearls found of sufficient value to tempt people, for the chance of finding them, from their more regular and more profitable occupations. The pearls found were generally of a muddy colour, and sometimes full of specks, which very much diminished their value. Pearls have been found in the county of Tyrone, of considerable price, so early as the latter end of the seventeenth century, as appears by a letter of Sir Robert Reading to the Royal Society in October 1688. One of these, bought from a miller for four pounds ten shillings, was afterwards sold for forty pounds to Lady Glerawly, who refused eighty pounds for it from the old Dutchess of Ormond.

The introduction of frogs into this county, from whence they have spread in such numbers through the rest of the kingdom, though in itself a subject of no importance, must form a curious and interesting object in the eyes of a naturalist. That they are not indigenous, and that they first made their appearance near Moira, in the western parts of this county, can be proved beyond contradiction; but by whom they were

first imported is not so certain. I was assured by an old gentleman of the greatest veracity, who died some years ago above the age of eighty, that the first frogs he ever saw were in a well near the above mentioned town, from whence he brought some of them to Waring's-town, where, until that time, they had never been seen; the quickness, with which they multiplied, and the rapidity, with which they spread, are surprising, especially the latter, in a creature not very well adapted, at least in appearance, either to move with celerity or with perseverance; and there are many stories still current of the terror and surprise excited by the view of this disgusting though innocent animal, which seems formed to be the prey of every voracious creature, either by land or water, within whose reach it comes.

Amongst the rare birds, which sometimes make their appearance in this country, is the Cornish chough, which has been met with on the shore near Killough; likewise that beautiful, most solitary, and shy bird, the kingfisher: its feathers are of the most lively colours; the head of a dark green, intermixed with azure spots; the back, wings, and rump of a more vivid green; the breast, belly, sides, and feathers under the wings are red, or inclining to red in the last mentioned parts. Their habits lead them to retired glens, through which flows generally some limpid stream, from whence they draw their support; their food being fish of the smallest kinds.

The bittern, *ardea stellaris*, is sometimes met with in the marshes on the sea-coast. Ouzels of different species (*merula*), are seen on the mountains of Mourne; eagles also are frequent there. The cross-bill (*loxia*) has often been observed at Waring's-town, where one of these birds was shot a few winters ago. The birds of passage, which make their appearance in spring, are the swallow, the cuckoo, the rail or corncrake, the quail, besides some others not so generally noticed. Those, which appear at the commencement of winter, are the woodcock, the fieldfare, barnacles, and widgeon; these two come in astonishing numbers, and take up their winter abode in the lough of Strangford, and in Carrickfergus bay, where they stay until they are invited by the change of season to return to the northern climes, from whence they came; these birds are much more regular in their time of coming than in their leaving this country, seldom being later in coming than the latter end of August, but often remaining until May, though they sometimes depart so early as April.

Of quadrupeds the only one, I have seen deserving to be mentioned for its rarity, was the marten, of the weasel kind, as high as a fox, but much longer; it was killed several years ago at Moira; the skin was stuffed, and kept a considerable time at Montalto; it was of a brownish colour, with the under part of its neck and belly

belly white, resembling the common weasel in every thing, except in the superiority of its size.

Since writing the section on fossils, I am informed that the quarries, opened near Moira, of dark blue stone in contact with the limestone, are basalt; and that a quarry, opened in the demesne of Dromore house, being inspected by a gentleman of great ingenuity and experience in natural history, has been declared to be of the same species; and that on taking away sand at Bangor for manure, turf-bog was found under it, on the shore near the bridge; and on boring near Belfast, a bed of muscles was found, nearly an hundred feet under the surface.

SECT. 9. *Of raising White-thorn Hedges from Cuttings, both of Branches and Roots.*

MR. HERON, watchmaker in Lisburn, shewed me a hedge of some years growth, one part of which, consisting of several perches in length, was planted with cuttings of white-thorn, when the other was planted with quicks; the part planted with cuttings was in every way equal to that planted with quicks; the cuttings a part of the shoots of two years. Mr Heron practised this mode in the Ards several years ago. Another way of raising quicks is by scattering the roots, cut from quicks about to be planted, on a bed

of

of fresh dug earth, and covering them out of a slight trench on each side; in this situation they will throw out stems, equal to those raised from haws; one precaution, however, is necessary in taking them up, to loosen the ground lest they break, as the stem is at an angle with the root. This information I owe to the Rev. Holt Waring.

